Functioning of the citizen's electronic medical records in the prison system

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Abstract *This paper aimed to describe the implementation and operation of the e-SUS AB strategy in the Prison Primary Care Teams in Paraíba. A qualitative study was conducted through semi-structured interviews with 21 professionals, doctors, and nurses, from 11 primary care teams in prisons in Paraíba and the health management of the Penitentiary Administration Secretariat. A semi-structured roadmap was adopted for the interviews from the script previously established by the Ministry of Health for the implementation of the e-SUS AB system, which resulted in three thematic categories after being transcribed and analyzed per Bardin's content analysis proposal: the health information system and the prison setting; management actions for the implementation of the e-SUS AB and; skills and competencies of professionals to use the e-SUS AB system. The e-SUS AB was implemented in the prison system with some obstacles concerning the physical and technological structure of the setting, the insufficient professional training, and the lack of skills with information technologies highlighted by the respondents. People feel the need to implement the citizen's electronic medical records to ensure continuity of care for people deprived of liberty.*

Key words *Prisoners, Primary health care, Health information systems*

Introduction

The Health Information System (SIS) is not a separate and independent component of the health system and must be designed in line with the service delivery system. It is used to collect, process, store, retrieve and transfer the necessary information for improving data processing to extract useful information for health planning, decision-making, and resource allocation through different sources to provide quality services and guarantee a comprehensive health system with improved health of the population[1].

The SIS structure must allow the generation of information necessary for decision-making at each health system level with specific resources. It is grouped into two components: the information process and the management structure. The information process involves collecting, transferring, processing, and analyzing data and presenting information for use in management decisions. The information management structure encompasses components such as information systems' resources and supplies, which are adopted to produce high-quality and timely data for decision-making[1].

Specifically, within primary health care (PHC), a well-structured information system can contribute to better health outcomes, with more significant equity and lower care costs, provided it is designed to cover all essential services provided at this care level, improving access to services, their efficiency, and providing reliable health information for use at the local level[2].

Thus, in 2013, the Brazilian Ministry of Health established the e-SUS Primary Care (e-SUS AB) strategy to computerize PHC across the Brazilian territory. The e-SUS proposes increasing the management of information, automating processes, and improving infrastructure conditions and work processes through three software, the Citizen's Electronic Medical Records (PEC), the Simplified Data Collection (CDS), and Applications (App) for mobile devices[3].

In 2017, with the enactment of the new National Primary Care Policy, the Ministry of Health incorporated the Prison PHC Teams into the list of teams geared to specific populations to ensure increased access to health services for people deprived of liberty[4], as provided in the National Comprehensive Health Care Policy for People Deprived of Liberty in the Prison System (PNAISP) enacted since 2014, which guarantees comprehensive care in the SUS to people deprived of liberty in the prison system. The PNA-ISP provides for health services in the prison system and is a point of care of the Health Care Network (RAS) of the SUS. Thus, it establishes PHC in the prison environment as a gateway to the system for people deprived of liberty (PDL)[5].

In this sense, this public's need for accurate and reliable health information qualifies its care, while its updated records provide longitudinal care outside and within the prison system, providing the opportunity for health workers to secure care continuity. In light of these aspects, this study aimed to describe the implementation and operation of the e-SUS AB strategy in the Prison Primary Care Teams in Paraíba.

Methods

This cross-sectional, qualitative study was conducted from August to December 2019 with health professionals from 11 prison primary care teams in Paraíba, besides the health management of the Penitentiary Administration Secretariat.

Initially, the State Penitentiary Administration Secretariat (SEAP) was asked to identify the prison units with an established health team and authorize our study. After an administrative procedure, we presented the project to professionals who met the criteria of working for at least six months in the units, besides their valid registration in the CNES as members of prison primary care teams, totaling 22 professionals among doctors and nurses.

One professional on vacation was excluded. In the shifts indicated by the team, the researcher was in the unit, waiting for an opportune moment to hold the interview. Thus, the sample was concluded by exhaustion, approaching all eligible professionals (21), besides the prison system's health coordinator, totaling 22 people.

Some precautions were taken during the interviews that were audio-recorded and lasted an average of 30 minutes: the recorder's proper operation and the environment's comfort/inviolability; an adequate and unambiguous language by the interviewer, and attention to gestures, voice intonation, or silent moments of the respondents. A semi-structured roadmap was adopted for the interviews based on the script previously established by the Ministry of Health to implement the e-SUS AB system, divided into six sections[6]: professionals' previous experience with the health system; diagnosis of human resources capacity in teams; available technological capacity; technological qualification of professionals;

computerization support team; and deployment strategy.

In due course, the interviews were transcribed and presented to the professionals for comments, additions, or deletions. Subsequently, the statements were systematized and submitted to Content Analysis, as recommended by Bardin[7], and the categories were extracted and analyzed based on the assumptions of the theoretical and methodological framework.

As the National Health Council recommended, the Research Ethics Committee of the UEPB approved the research through CAEE 16301319.2.0000.5187. The respondents signed the Informed Consent Term and the Voice Recording Authorization Term before data collection. The letter "P" was employed to identify the professionals (service staff and manager) followed by sequential Arabic numerals to preserve anonymity.

Results and discussion

Ten of the 22 interviewed were doctors, with a mean age of 48 years and a mean working time of 4.5 years (five males and five females). We had 11 nurses, with a mean age of 38.4 years and a mean working time of 5.5 years (four males and seven females; one female manager, 27 years, psychologist, with five-year activity in the penitentiary administration, without practical experience with the e-SUS. Approximately 76.2% of respondents responded positively regarding having other professional bonds, 66.6% work or have worked in Primary Health Care, and only 23.8% have had experience with the e-SUS.

Three categories of analysis emerged from the respondents' statements: the Health Information system and the prison setting; management actions for implementing e-SUS AB; and skills and competencies of professionals to handle the e-SUS AB system.

The health information system and the prison setting

In general, the low quality of data from health information systems is associated with several factors that range from insufficient human resources with core competency in data management, to low motivation, lack of incentives, poor infrastructure, inadequate resources to conduct comprehensive supportive supervision, and lack of standard operating procedures[7]. As mentioned

by the management, this reality was also reported in the prison setting.

The prison backdrop is challenging. The prison population only grows while we always have the same number of professionals. We could have one more person entering production and another assisting the team in managing healthcare flows. Moreover, the number of computers is insufficient [...] Some units have several difficulties: some do not have internet, the health center does not connect to the internet signal, and most professionals do not have a computer (P1).

The prison setting has structural features that hinder the implementation of a well-structured information system. Although PHC teams are in place in the studied prison units, they do not seem to be apt to the realities of a computerized work process, as per some statements:

The population is under guardianship. Here everything happens as in primary care, but we are not prepared to act in this setting. Diseases do not change, but an organized and structured service makes all the difference (P6).

The technological capacity available is insufficient. There are no computers. The medical records (service sheets) stay with us and are not digitized. In case of transfer, the medical records accompany the convict, and in case of release, the records remain in the unit. However, as the e-SUS is not implanted, the information is lost if the subject is officially released (P8).

We have some limitations at the moment (we do not have a computer, printer, or internet). All our data are manual and monthly/quarterly: we keep feeding the system (P15).

Nothing guarantees that it will be informed exactly as I sent it. We believe that the ideal would be to have the computer with the electronic medical records so that you can enter data and not pass it on to a third party, as such material can be lost en route (P18).

A study carried out in Palestinian territory shows that data are still collected manually in many health institutions instead of being digitized, which gives rise to data inconsistency or incompleteness and greater difficulty in monitoring patients and analyzing epidemiological data[8].

The poor quality of information entered is of little use for programming health actions for the population on which the system's data are based. Also, the extent the SIS consider the real needs of care professionals for the analysis, investigation, and structuring of health actions is questioned. Good use of information systems generates consistent reports, which will portray a clear and

correct picture of the service's situation, facilitating monitoring activities[9].

A systematic review study gathered five different groups of hindrances related to the implementation and functioning of health information systems: technical issues, usage problems, quality, operational functionality, and maintenance and support issues. Technical issues include obstacles related to SIS installation, hardware availability, and network speed and availability. The root of these issues lies in the inadequate infrastructure of information and communication technologies[10].

The use of the information will be more critical and routine-like the better the technology embedded in the machine represents the reality of the health professional's work. The electronic records reduce errors and standardize concepts that can be grouped into a dataset, giving visibility to actions that facilitate diagnosis for management, monitoring the health care line of individuals, and enabling planning and decision-making in health. Furthermore, the technological incorporation of health information systems brings the production of information closer to the professional who records the data, which tends to reflect the reality experienced truthfully[11].

Management actions for the implementation of e-SUS AB

In July 2013, through Ordinance n° 1.412, the Ministry of Health established the Health Information System for Primary Care (SISAB) for all types of primary care teams in Brazil. SISAB becomes the current information system for funding and adherence to the programs and strategies of the National Primary Care Policy (PNAB)[3].

Considering the National Comprehensive Health Care Policy for People Deprived of Liberty in the Prison System (PNAISP) and the update of the PNAB in 2017, which integrated the Prison Primary Care teams as a point of care and gateway to the Health Care Network of the SUS, these teams must also use the current Health Information System to record health actions in PHC to support management, planning, clinical and epidemiological investigation, and the evaluation of health services[4]. Regarding the implementation of the e-SUS AB system in prisons, people said:

The secretariat staff supported us for the implementation. One day for explanations and another for training in the electronic medical records at the Secretariat, showing the stepwise process. Nevertheless, I do not remember anymore. The Health Secretariat did it (P2).

We had a call to present the system; nothing more than this: lecture-type training (P10).

The implementation action was the one lasting a month. They brought someone from the Ministry to train the state's primary care team; but it would have had to be a much more fine-tuned strategy, and we would have had to have the materials to operationalize this, and we did not have it (P1).

According to the PNAISP, among the attributions of each federative entity in the implementation of prison PHC teams, the municipal manager should plan the training of health teams and support professionals for information technology[5]. Managers should learn about experiences in other municipal and state Secretariats and the Ministry. They should also share difficulties and achievements for the collaboration and create opportunities for interagency agreements in this process. Furthermore, together with the academy, they should encourage the exchange of knowledge among professionals concerning health information technology through conversation circles and activities that can help professionals to know the tools they have for decision-making[9].

The implementation of an SIS is complex and depends on organizational, structural, technological, and human factors to succeed. The reality of studies in Arab countries points to some barriers that interfere with the proper functioning of an SIS in hospitals, such as the lack of well-trained staff, poor management, bureaucracy, and the devaluation of its importance[8].

In the Brazilian reality, the e-SUS AB represents possibilities for advances and qualifications in using information. However, its success depends not only on its technical features but on the acceptance among the various stakeholders involved and their mobilizations[12]. Regarding the e-SUS AB strategy, none of the units surveyed reached the stage of implementing the Citizen's Electronic Medical Records, as shown in the following statements:

There are no Electronic Medical Records. It does not use the e-SUS PEC system to provide certificates, request tests, prescribe medication, make referrals to professionals in its team or other units: it is all handwritten (P1).

It is preferable if we could actually use the electronic medical records. It would make our lives a lot easier. We already use electronic medical records in hospitals; everything is simpler because all you need from the patient is to enter the file, which is available (P3).

What I can add is that implementing electronic medical records would be crucial to the prison

system as a whole because most patients are not aware of their previous care history (P8).

In the context of the Primary Health Unit (UBS), all the clinical and administrative information of patients is stored in the Citizen's Electronic Medical Records (PEC), mainly to computerize the flow of citizen care provided by health professionals, allowing fast access to health information and interventions, enhance care effectiveness, possibly reduce costs with streamline resources, and improve and automate the process of sending information from PHC to the Ministry of Health, impacting the qualification of information systems[13].

Studies carried out on the implementation of the patient's Electronic Medical Records in Brazil show that this tool has been set in several segments of public and private health services, with prevalent positive results, despite several hurdles due to difficulties related to the Brazilian health system, primarily: improvement of access and quality of information, organization of tasks and facilities in patient monitoring, contributing to improving the quality of care; information content gains, cost reduction in handling paper records, and streamlining access to information[14].

Skills and competencies of professionals to handle the e-SUS AB system

One of the guidelines of the National Health Information and Informatics Policy, established by the Ministry of Health in 2015, is implementing information and communication technology solutions that improve the organization of the health work process and, in this sense, support professional practice, facilitating and organizing routine records, providing the opportunity to conduct visits and reports on the information produced, facilitating the scheduling, referral, and counter-referral of users and enhancing the use of information and health informatics[15]. Therefore, professionals must be qualified to develop this practice so that the data entered in the SIS are actually transformed into valuable data. In this regard, we could extract the following from the interviews:

But I believe that training may not have been sufficient. They understood the sheets, but technical ability to record on the computer is visibly compromised either by poor technological handling skills or, despite skills and competencies, they resist and make use unfeasible (P1).

These training sessions do not empower or guarantee skills if one does not use them daily.

There was sampling and a presentation of the system. All the printed forms were shown and how we would act, but no one had access to the electronic medical records (P4).

The only skill required is knowing how to practice. Handling or implementing a system does not impact care. If that were the case, no child would have more vaccine-preventable diseases. After all, the PNI system dates back from the last century (P7).

Besides the lack of necessary professional training to develop sufficient technical skills to handle the e-SUS system, we still identify resistance, especially from doctors, to adopt information technologies to qualify their care. A systematic review study on the adoption of electronic medical records by doctors concluded that the doctors' lack of technical knowledge and skills to address this tool is one of the critical barriers to its adoption. As they are the significant user group of patient care, their intention to adopt technology in health care determines the overall success of its implementation[16].

In 2019, the World Health Organization launched a Global Digital Health Strategy project to advance and apply digital health technologies to achieve the vision of health for all. In the meantime, health professionals must be prepared to implement or use health technologies in their work and, to this end, it is necessary to plan sessions that include the training of the workforce, ranging from professionals in information and communication technologies to health professionals providing health care and services, in order to instill capacities, attitudes, and skills that can range from computer science to strategic planning, finance, and management[17].

Final considerations

The e-SUS AB was implemented in the prison system with some hindrances related to the physical and technological structure of the setting, insufficient professional training, and the lack of skills with information technologies highlighted by the respondents. Notably, we observe people's dissatisfaction concerning the lack of the Citizen's Electronic Medical Records software, which would facilitate the coordination of care for people deprived of liberty, and also the lack of ability and resistance of some professionals to work with a computerized service.

Recognizing and knowing the obstacles that characterize the implementation and operation

of the e-SUS AB in the prison system can contribute to a differentiated perspective by the management toward a reality different from the traditional PHC Units, providing better conditions so that the effective use of the health information system can lead to a better qualification of care for people deprived of liberty, ensuring the consideration of the essential PHC attributes.

Collaborations

GMC Costa participated in the conception and design of the paper, data analysis and interpretation, writing and critical review, and the approval of the version to be published. IM Andrade participated in the conception and design of the paper, data analysis and interpretation, critical review, and the approval of the version to be published. SDM Celino participated in the data analysis and interpretation, the paper's writing and critical review, and the approval of the version to be published. RQ Souto participated in the data analysis and interpretation, critical review, and approval of the version to be published. AEO Mendonça participated in the data analysis and interpretation, critical review, and approval of the version to be published.

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