Articles

Working conditions of community health workers in a digital health context: old and new challenges

Condições de trabalho dos agentes comunitários de saúde em um contexto de saúde digital: velhos e novos desafios (resumo: p. 17)

Condiciones de trabajo de las agentes comunitarias de salud en un contexto de salud digital: viejos y nuevos desafíos (resumen: p. 17)

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The use of digital health tools has grown in intensity in Primary Health Care (PHC) and in the practices of Community Health Workers (CHWs). This article aims to analyze the challenges imposed by the working conditions of CHWs in the context of digital health. It is a qualitative study, with triangulation of methods involving union leaders, managers and health professionals. The results indicate the re-emergence of old challenges surrounding the work of CHWs, such as greater bureaucratization, control, social and technical division of work. However, new challenges emerge around maintenance, quality of tools and professional training. In conclusion, there is a need for logistical, financial and political safeguards for the implementation of digital health in the work of CHWs.

Keywords: Primary health care. Community health workers. Working conditions. Telemedicine. Work.

Introduction

Community Health Workers (CHWs) are mid-level professionals who are known for their work in developing and strengthening Primary Health Care (PHC), through a work process based on care, surveillance, communication and health education practices, as well as intersectoral and territorialized work[1].

The institutionalization of the CHW profession in Brazil has been accompanied by transformations, in the political, but also technical and material spheres, as a professional category. Whether it's the achievement of labor rights such as a salary floor, recruitment by public examination or a law on the profession[2]; or the formulation of guidelines and orientations for technical level training[3] are part of a new CHW landscape. Added to these transformations, there are increasingly incorporating new material tools in their work routine, such as blood glucose meters, blood pressure monitors, tablets, computers, health information systems and, more recently, the intensification of cell phone use in the Covid-19 pandemic[1,4].

It should be noted that these latest instruments based on digital technologies, in addition to giving CHWs a new practical and social morphology, also have the capacity to enhance old or create new forms of precariousness, from the point of view of working conditions, including the risk of emptying the meaning of work. The end result would be the capture of living work in act by dead work[4,5].

With regard to the precariousness of work, it is necessary to put into context that its expansion around the world began in the 1970s, driven by a structural crisis in the capitalist production model, as well as in the principles of the welfare state[6]. In this context, a new development model emerged, based on labor setbacks and loss of rights, with the strengthening of neoliberalism[7]. It should be noted that the current configuration of the precariousness of the working class does not only converge in labor rights and security, around employment relationships, remuneration and predictability, but "combines economic, social, political and legal elements that ratify the exploitation of labor"[8] (p. 2), in other words, precariousness is associated with the objective and subjective conditions of a given work process in which workers carry out a given activity[9].

According to Morosini[10], health work, in the contemporary configurations of capitalism, is crossed by tensions that advocate rationalization of resources, optimization of results and simplification of activities, in a certain way imposing a process of precariousness. However, this precariousness does not affect all workers in an all-encompassing and equal way; it reflects the specific characteristics of the categories according to their training, attributions, social value and organization.

In the case of the work of CHWs, for example, the context of technological incorporation into PHC makes it necessary to use new digital resources that make it possible to carry out tele-surveillance, telemonitoring, tele-education and data collection activities using apps or mobile devices. There are international and national initiatives to advance these resources in the health sector and the advantages are widely documented for the CHW work process, such as expanding

coverage, qualifying territorial care and decentralizing diagnoses and exams[4]. This technological crossroads associates CHWs in PHC with a new paradigm of care currently understood as digital health, in which according to Rachid et al.[11]:

> [...] it is presented as a field of practice that employs new technologies, such as mobile and wearable devices, as well as processes interconnected at a distance. (p. 2144)

Despite the important contributions of digital health in the practices of CHWs, it is noteworthy that their work process seems to be adapting to a new stage in the productive restructuring of capital which, after more than 30 years of this profession's existence in Brazil, is shifting its territorial action towards an interaction mediated by digital technologies which needs to be better understood[4]. Given that a given work process is not static in time, but open to new possibilities according to the historical needs imposed by the day-to-day of services[12].

There is a consensus in the literature that there is a lack of elements that can support political decisions on incorporating technology into PHC, even though the level of funding for these technologies in national health systems is growing[13], with an increase in demand from society, the state and the market[14]. However, this scenario is exacerbated when we consider that this missing evidence could also ensure that the capacities and potential of the CHW workforce are fully exercised[4].

The shortcomings caused by this gap in the literature that discusses the repercussions of technological incorporation, such as those caused by digital health, on the work processes of CHWs can be seen from two perspectives: the first points out to the risk of uncritical incorporation, mainly driven by the interests of the private sector in the public policy arena, disregarding its influence on the lives of workers[15]. The second perspective emphasizes a lack of professional recognition of CHWs as strategic health workers who need to be trained, supported and monitored, taking into account the health care model that is being fought for and disputed in the Brazilian National Health System (SUS)[1].

The aim of this article is therefore to analyze the challenges posed by the working conditions of CHWs in the context of digital health.

Methodology

This is a qualitative study based on interpreting the meanings that the subjects attribute to their experiences, behaviors and values. This research was carried out in the state of Bahia considering the positions of union leaders, managers and health professionals at state, municipal and local level, through a triangulation of methods[16] (Frame 1).

The data was produced between June and September 2023, with one semi-structured interview with a representative of the Council of Municipal Health Secretaries of Bahia (Cosems-BA) and two interviews with the Bahia Union of Community Health Agents (Sindacs-BA); for the municipality of Salvador-BA, a representative of the Primary Health Care Coordination was interviewed, and for the local section, two senior professionals from a Family Health Unit (FHU), totaling 06 interviews with key informants[17]. To complement

the data, two other techniques were used: a focus group with 5 CHWs from the same FHU as the nurses interviewed as key informants, and a set of non-participant observations of the CHW work process[16] (Frame 1).

The eligibility criteria for participants were those who had worked for at least one year in the position, for managers, union representatives, or in the FHU for professionals; and those who had been reassigned or were on leave were excluded.

Frame 1. actors, insertion and data production techniques

Actor	Insertion	Technique used
State level		
Sindacs-BA 1	CHW	Semi-structured interview, field journal
Sindacs-BA2		
Municipal level		
Cosems-BA	Management	Semi-structured interview, field journal
PHC Municipal coordination		
Local level		
Nurse 1	University-trained professionals from the Unit	Semi-structured interview, field journal
Nurse 2		
CHW 1	CHW	Focus group, non-participant observation and field journal
CHW 2		
CHW 3		
CHW 4		
CHW 5		

Source: Authors

The interviews lasted an average of 50 minutes each and the focus group 90 minutes. They took place in private rooms where only two researchers and the participants of each technique were present. They answered questions about digital health and the technological communication and information tools used in the CHW work process; advantages, disadvantages and working conditions in the context of digital technologies; as well as power relations, training and perspectives on the CHW work process with the use of such technologies. It should be noted that the speeches obtained were recorded using a digital device and then transcribed and reviewed.

Non-participant observation of the CHWs' work process lasted a total of 30 hours, also carried out by two researchers, and this strategy took into account the ways and expressions in which the CHWs interacted with digital technologies in their day-to-day work. The field diary was a cross-cutting data production technique for all the research subjects, serving as a means of recording reflections on the meanings experienced and constructed during the course of the work, which later helped to interpret the data[16].

Finally, as soon as the information obtained showed redundancy, the production of new data was suspended once theoretical saturation was considered[18].

The data obtained was systematized using content analysis in three stages: pre-analysis, exploration of the material and treatment of the results with their thematic organization[19] and subsequent interpretation under the light of the meaning of working conditions in which it is expressed whether or not work is precarious, taking into account its objective aspects such as employment relationship, contracting, remuneration, other labor rights, as well as the physical, chemical and biological environment, hygiene conditions, safety and general characteristics of the workstations; and its subjective aspects, which are related to the division of labor, the content of the task, the hierarchical system and the modalities of command, power relations and the social legitimacy of the work[9].

The original project of the study was cleared by the Research Ethics Committee and is registered with Plataforma Brasil under CAAE: 68844323.3.0000.5030. All the participants signed a free and informed consent form, as well as an authorization form and an assignment of image rights.

Results and discussions

The growing positive interest regarding the supposed advantages of digital health[20] cannot be assumed as a process of uncritical incorporation, dislocated from reality. It is necessary to know and debate its limits, risks and ethical issues, both to promote better health care and to improve health work processes[21]. Here, specifically, we will focus on CHWs in the SUS and their socially and historically delimited position within the PHC labor market. Thus, we present the results and discussions from the perspective of old and new challenges surrounding the material and immaterial conditions of CHWs' work.

The old challenges of the CHW work process in digital health: bureaucratization, control and the social and technical division of labour

Historically, the CHW work process has been strained by the disputed direction of health policy in Brazil, with strong losses of the immaterial instruments of their work such as active listening, cultural competence and bonding[22] and intensification of elements characteristic of industrial and managerial work[1].

In the new reality of CHW work processes mediated by digital technologies, especially with the use of tablets (Figure 1) as a material tool for data collection and report production, there seems to be a strangeness to the work of CHWs associated with increased bureaucratization. According to a representative from Sindacs-BA:

This takes away the whole work process that was created at the time [...] back in '92, which was the issue of health promotion, prevention, where you worried about the weight of the children [...] you went there on the vaccination card, you weighed them [...]. So, all of that went away [...] and today we're working on the question of how many pregnant women were seen in the month, how many hypertensive patients were seen in the first quarter? Today it's more concerned with a database, with providing information [...] Today you can't do that anymore, because you're too tied to the tablet, you have to prove the visit there, prove the data there [...] if you don't do it, the Ministry cuts off funding, the municipality doesn't want to pay and it becomes a mess. (Sindacs-BA1)

It is well known that work is central to the constitution of humans, and the peculiar characteristics of their know-how distinguish them from animals, not because of the mode of production, but because of their creativity and image-objective[12,23]. However, the above discourse reveals that the use of a particular digital technology has produced intentionality in the activities (Figure 1) of the CHWs' work process, relating them to the achievement of goals through financial nudging[24].

Figure 1. CHW using the tablet during a home visit.
Source: authors.

A similar landscape of induction of work by digital technology was also reported in the study by Fonseca and Mendonça[25] on the use of Health Information Systems by CHWs. According to the authors, this device:

> [...] is related to the content and purpose of the work, since it delimits aspects to which the professional's attention should converge. The system instructs the professional on the elements around which they should organize their work in order to produce a certain piece of data, the completion of which will be charged to them by management[25]. (p. 46)

In this way, the social and mobilizing function of the CHWs[26] is devalued by inducing an objective and subjective reduction of what is done in the territory and passed on in the form of reports typed up and recorded in these systems.

The above discourse can also be understood in the light of Mendes-Gonçalves' contributions[22], when he highlights the historicity of health work, verified by the transformation of its objects and purposes over the years. It is possible to identify the reconfiguration of work instruments and the production of a new logic of action in the territory and of care itself. The use of material or immaterial resources in the work of the CHWs expresses a mode of existence that is in permanent change, contradiction or tension, in the healthcare model, where as a result there is a strangeness to the work of the CHWs due to the non-recognition of their new activities[27], thus generating a loss of individual and collective identity based on coercion through fear, in this case, of the lack of financial transfer[28].

Also aggravating this crossroads of the use of technologies in the wake of digital health, key informants from the municipal management and the FHU object of this research, bring up elements of the control of the CHWs' work, which moves away from the professional supervision common in the relationship between higher and middle level professionals, to supervision mediated by technology:

> [...] the data he records only comes in if he's in the area, in that residence, if he's not in the residence he can't feed his visit, you know? Geoprocessing is used for this. So that's already creating a problem for us, because with the health at school program, they're not only carrying out the activity in the homes [...] they're also in the schools [...] but they can't record it because the tablet. (Municipal management)

> I think it helps in the sense that before, if I wanted to look at the binder, I had to ask the health agent, because it was kept with them [...]. So, it's easier to control, because I have access to everything they do. (Nurse 2)

The above speeches and non-participant observation pointed to a constant georeferenced monitoring of CHWs that doesn't recognize their activities beyond on-site home visits, the purpose of which is to generate value-information[22]. This leads to a possible subsumption of CHWs in the way they work in PHC, adaptations which can render the objects and purposes of their work meaningless[29,30].

The FHU surveyed has an institutional WhatsApp in which the community has direct access to the unit's health professionals:

> [...] what can be done with teleconsultation is done, renewing prescriptions for medicines for continuous use, in the form of contraceptives, some exams [...]. When it's just to show a test, I ask, I do the teleconsultation, and if I need to, I ask for a face-to-face visit. (Nurse 2)

> A duplicate prescription [...] to say something [...] a medical report. He (the patient) takes a photo and sends it, the doctor looks at it. (Focus group - CHW5)

However, it is noteworthy that although the community has this additional resource to access the health team, the CHWs have been forbidden at the USF from handling institutional technology, and it is exclusively for higher education professionals to respond to health demands. The nurses' justifications reaffirm the CHWs' place in a social and technical working position of subordination and of still not being health professionals:

> [...] When we started using WhatsApp as a tool, we didn't receive any kind of protocol or anything, so we kind of adjusted to the routine of the unit [...] patients started giving us information that is sometimes confidential [...] we had to restrict it to us (professionals with higher education) [...] (Nurse 1)

> [...] Ethical confidentiality. [...] then I call the health agent and show him the conversation, he answers and so on, but he doesn't stay to see everything [...] (Nurse 2)

This perspective of the socio-technical division of CHW work within the health team is already known in the literature[31], but has not yet been debated in relation to the use of digital technology support. The speeches reveal that the CHWs have no place in the team as a health professional with little legitimacy, approaching a form of subjective precariousness in this category[9] which places them within a class struggle with a concentration of power[32]. In this sense, what can be observed about CHWs in digital health, in this USF, is teamwork based on domination "in other words, someone with knowledge who provides a way of doing things that becomes power in the relationship with others"[33] (p. 670).

Finally, in the focus group interviews, it is noteworthy that none of the CHWs spoke of a sense of work process linked to greater bureaucratization, control or even an increase in its technical and social division, diverging from other international studies[4]. However, the relationships not recognized by the CHWs were perceptible in the interviews with the key players in this article, as well as in the actual observation of their work in the unit surveyed, pointing to a scenario of romanticization of technology by these workers[34,35].

We understand that working conditions and their reflection in the precariousness or otherwise of the activities carried out by CHWs occur to the extent that they are reaffirmed by an intensification of the old challenges surrounding the direction of this professional category, which is associated with a larger dispute over the project of society, citizenship and health[1,24,27]. Markers of this scenario include the new ways in which CHWs are hired by social organizations, the lack of funding for health, the logic of industrial production in health, the type of hegemonic health care model with the Family Health and PHC becoming secondary, as well as the failure to prioritize CHWs as actors in a broad, robust and democratic PHC[1]. It is therefore necessary to recognize, as a challenge for the 21st century, a necessary health reform that must also be digital[21].

Maintenance, quality of tools and professional training in times of digital health: the new challenges

In order to carry out activities mediated by digital technologies, CHWs use electronic equipment, especially cell phones and tablets. In this sense, it's worth noting that the quality of the equipment can significantly affect the results of their work. Observations of the CHWs' work at the USF and those that emerged from the interviews show how the loss of information collected due to problems with digital technologies can be detrimental to health care, longitudinal care and territorial planning:

> [...] tablets that arrived defective, tablets that were collected and returned only a year later [...] (Sindacs-BA 1)

> It's not going anywhere [the information about the visit]. [...] I went today for a visit [...] the doctor went with me, checked the blood pressure, did the blood glucose, gave medication advice, looked at him, everything was fine, that was it, the visit was over, the visit isn't recorded on paper, it isn't recorded on a tablet, it isn't recorded on anything. (Focus group - CHW3 with a broken tablet that hasn't been replaced in 4 months)

> When they don't have tablets, it's also bad for us because we have a portal that's out of date. Every now and then I access it to look for children under 1 year old [...] and then I always go to the portal to see how it's doing, because sometimes there are new children, changes of territory and because the CHWs don't have tablets, I end up not accessing the portal as often as I used to, because I think I only had 2 CHWs who have tablets, the rest had tablets that were being maintained. (Nurse 2)

The speeches converge on the need to improve the logistical, financial and also political capacity to guarantee working conditions for the CHWs, with quality, efficiency and in a timely manner. After the implementation and induction of the use of the tablet in the work of the CHWs, its subsequent withdrawal with slow replacement seems to have an impact on the entire work process of the USF, as pointed out above, producing a loss of clinical memory and of users' health conditions, which can lead to unnecessary and inefficient procedures[36].

In addition, the slow response time also seems to cause CHWs suffering, as a new expression of the precariousness of work in the digital age:

> I think it does give me anguish, I miss it, I really need my tablet, it makes things a lot easier and I get a bit lost [...] (Focus group- CHW 2)

According to Ursine et al.[37] precarious working conditions also produce suffering, and in the digital conformation of CHWs' work new possibilities of illness emerge due to the non-materiality of their tools. Further research is needed to assess the impact of technologies on CHWs' quality of life and their satisfaction with their work.

At least since 2010, the WHO has been encouraging strategic plans for incorporating and evaluating digital health into national health systems, whether in terms of care, training professionals or managing services[4]. Data from 2014 shows that some countries in Latin America already have large-scale projects in this area, such as Brazil, Colombia, Ecuador, Mexico and Panama[38]. However, the implementation of this strategy is very diverse, with rural municipalities having the worst levels of computerization of their systems, which may be reflected in difficulties with access to the internet, electronic equipment and training of professionals in these territories39, as pointed out in the speeches below:

> [...] You see that people work on tablets all day, there's no way of synchronizing information because there's no internet, the place where they work doesn't have internet, that's as bad as it gets. [...] I think it's the biggest problem [...] (Sindacs-BA 2)

> [...] we find it a lot, especially in the countryside, in the more remote towns, where you have a category of people of a certain age [...] over 50, and there it has become [...] a difficulty in wanting the person to immediately learn how to use a tablet, where nobody had ever seen it before, they were seeing it for the first time. [...] you have to worry about the internet, synchronizing the data, typing on it, the very small letters. (Sindacs-BA 1)

> The CHW ended up taking on this role of collecting information [....] and much of the monitoring of the health conditions collected [...] the big problem [...] little of what is processed from this data gets back to the CHWs and this is a detriment [...] imagine a professional who has a link with the community [...] but the information doesn't come back for them to plan their actions. (Cosems-BA)

Regarding the use of the internet by workers, research shows that only approximately 35% of the teams taking part in the Program to Improve Access and Quality in Primary Care had access to the internet[40], which suggests that democratizing access to the internet, even for SUS workers, is still an unfinished agenda.

Also noticeable in the speeches is a set of challenges related to personal skills for using digital technologies, knowledge that until then had not been required as a prerequisite for the work of CHWs. For example, the ability to use technological resources and tools is more present in people with a higher level of schooling and younger people, which can reinforce a barrier to access in relation to the development of functional activities[41].

The professional makeup of CHWs throughout the country is diverse, multiple, with workers still reminiscent of a bygone working reality, where the only requirement to enter the category was to read and write in the 1990s[1]. Today, not only are CHWs older, but they may also still have lower levels of schooling and lack specific digital literacy strategies, for example. Research has already shown that CHWs not only had little knowledge of working with digital resources, but also a feeling of fear when searching for information on the internet, fear of sharing fake news due to their limited critical understanding of the news[42].

Bearing in mind that the phenomenon of fake news has increased in recent years, having a considerable impact on the course of the Covid-19 pandemic in Brazil[43], it is necessary to prioritize the creation and development of a technological-critical competence, articulated with the territory and with cultural sensitivity, in the ongoing education of CHWs[33].

Rachid et al.[11] state that digital health is a field of research for collective health that needs to be urgently addressed, as it establishes new relationships between society, health professionals, the state and capital. In this sense, it is worth asking about the future of CHW work in digital health: Is there a risk that the CHW profession will be extinguished by the use of digital technology? Faced with this question, Barros[44] points out that if the international political, economic and social conjuncture for the world of work continues

to be capitalist, man will remain indispensable in the production of wealth. In this line of reasoning and considering the complexity of the health object and the unquestionable need for a set of approaches to guarantee it, the work of the CHWs would remain indispensable, but associated with new forms of precariousness[4].

Finally, as a strategy for overcoming the challenges discussed here, it is necessary to reaffirm the implementation of work management and health education policies that recognize the social value of human work. In the case of CHWs, this will happen through the implementation of programs and actions that enable them to fully exercise their work, including adequate conditions, professional regulation, security and stability of ties in the territories, healthy working relationships, as well as ongoing education for the category.

Final considerations

The issues identified during the course of this study regarding the working conditions of CHWs in the context of digital health are old challenges that are directly related to the historical and social constitution of this category, such as bureaucratization, control and the technical and social division of labor that subjectively shape the constitution of these workers and their recognition or not as health professionals. On the other hand, new challenges arise, such as the use of the internet, maintenance and quality of equipment and digital literacy.

The results point to the need for logistical, financial and political guarantees for the implementation of digital health in PHC, which will enable CHWs to produce a dignified, emancipatory and contextualized work process. Nonetheless, in the new professional scenario for these professionals, it is necessary to consider the formation of a critical technological competence that transforms CHWs not just into information collectors using digital resources, but into health agents involved in transforming the socio-epidemiological reality of the territory.

Although this work was carried out with a specific territorial scope of action of a FHU in the municipality of Salvador, therefore this may be a limitation of the study, bringing contributions at local and state level, it is hoped that other research can be triggered taking into account the various contexts and scenarios of CHWs' work as well as their socio-demographic profile.

Authors' contribution

All authors actively participated in all stages of preparing the manuscript.

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Conflict of interest

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O uso de ferramentas da saúde digital tem sido intensificado na Atenção Primária à Saúde (APS) e nas práticas de agentes comunitários de saúde (ACS). Este artigo tem como objetivo analisar os desafios impostos pelas condições de trabalho dos ACS no contexto da saúde digital. Trata-se de uma pesquisa qualitativa com triangulação de métodos envolvendo lideranças sindicais, gestores e profissionais da saúde. Os resultados apontam uma reedição de velhos desafios em torno do trabalho dos ACS, como maior burocratização, controle, divisão social e técnica. Porém, novos desafios emergem em torno da manutenção, da qualidade dos instrumentos e da formação profissional. Conclui-se demarcando a necessidade de uma garantia logística, financeira e política para a implementação da saúde digital no trabalho dos ACS.

Palavras-chave: Atenção primária à saúde. Agentes comunitários de saúde. Condições de trabalho. Saúde digital. Trabalho.

El uso de herramientas de la salud digital se ha intensificado en la Atención Primaria de la Salud (APS) y en las prácticas de Agentes Comunitarias de Salud (ACS). El objetivo de este artículo es analizar los desafíos impuestos por las condiciones de trabajo de las ACS en el contexto de la salud digital. Se trata de una investigación cualitativa, con triangulación de métodos, envolviendo liderazgos sindicales, gestores y profesionales de la salud. Los resultados señalan una reedición de viejos desafíos alrededor del trabajo de las ACS, tales como mayor burocratización, control, división social y técnica. Sin embargo, surgen nuevos desafíos alrededor del mantenimiento, calidad de los instrumentos y formación profesional. Se concluye demarcando la necesidad de una garantía logística, financiera y política para la implementación de la salud digital en el trabajo de las ACS.

Palabras claves: Atención primaria de la salud. Agentes comunitarios de salud. Condiciones de trabajo. Salud digital. Trabajo.