Health and Technology: Worker in Focus

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Saúde e Tecnologia: Trabalhador em Foco

Salud y Tecnología: Trabajador en el Punto de Mira

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ABSTRACT

Introduction: The intensification of technological and scientific advances is a contemporary reality and, therefore, some reflection about the impacts this process has on health professionals is required. **Objective:** To reflect about the incorporation of hardware technologies in a highly complex public health institution, overcoming apparent and immediate understanding and giving voice to health professionals. **Method:** Semi-structured interview was adopted with the Intensive Care Unit (ICU) workers, who deal in their daily lives with these new technologies. **Results:** It was possible to verify, from the workers' narratives and their analysis, the contradictory character that technology assumes in the capitalist context, since despite its importance, it also brings negative aspects that impact the worker-patient relationship and even the worker's health. **Conclusion:** The hegemonic and immediate trend present in the bourgeois society is to think of scientific and technological advances as undoubtedly positive and that in themselves will benefit society, decontextualizing and depoliticizing these innovations, especially when focused to health, as in general, they have the potential to diagnose and cure various diseases. However, the contradiction between technological development in health and the capitalist mode of production was revealed. Despite the potential benefit to health, it also brings negative impacts for the health professional.

Key words: health; work; technology.

RESUMO

Introdução: A intensificação dos avanços tecnológicos e científicos é uma realidade na contemporaneidade e, portanto, faz-se necessária uma reflexão sobre os impactos desse processo, sobretudo junto aos profissionais de saúde. **Objetivo:** Refletir sobre a incorporação de tecnologias do tipo *hardware* ou dura em uma instituição pública de saúde de alta complexidade, superando a compreensão aparente e imediatista, e dando voz aos profissionais da saúde. **Método:** Entrevista semiestruturada com os trabalhadores do Centro de Tratamento Intensivo (CTI) que lidam no seu cotidiano com essas novas tecnologias. **Resultados:** Foi possível constatar, a partir das falas dos trabalhadores e da sua análise, o caráter contraditório que a tecnologia assume no contexto capitalista, visto que, apesar da importância do arsenal tecnológico, ela também traz aspectos negativos que impactam a relação trabalhador e paciente e, inclusive, a saúde do trabalhador. **Conclusão:** A tendência hegemônica e imediata presente na sociedade burguesa é pensar nos avanços científicos e tecnológicos indubitavelmente como positivos e que, por si só, irão beneficiar a sociedade, descontextualizando e despolitizando as inovações tecnológicas, especialmente quando voltadas para a área da saúde, pois estas, de maneira geral, trazem um potencial para diagnósticos e cura de diversas doenças. No entanto, há uma contradição entre o desenvolvimento tecnológico em saúde e o modo de produção capitalista, a despeito do potencial benefício para a saúde, que também traz impactos negativos para os profissionais de saúde.

Palavras-chave: saúde; trabalho; tecnologia.

RESUMEN

Introducción: La intensificación de los avances tecnológicos y científicos es una realidad contemporánea y, por ello, es necesaria una reflexión sobre los impactos de este proceso, especialmente con los profesionales de la salud. **Objetivo:** Reflexionar sobre la incorporación tecnológica, del tipo *hardware* o *hard*, en una institución de salud pública de alta complejidad, superando la comprensión aparente e inmediata y dando voz a los profesionales de la salud. **Método:** Entrevista semiestructurada con los trabajadores de una Unidad de Cuidados Intensivos (UCI) que tratan diariamente con esas nuevas tecnologías. **Resultados:** Se pudo constatar, a partir de las declaraciones de los trabajadores y su análisis, el carácter contradictorio que asume la tecnología en el contexto capitalista, ya que, a pesar de la importancia del arsenal tecnológico, también trae aspectos negativos que impactan en la relación trabajador-paciente, e incluso en la salud del trabajador. **Conclusión:** La tendencia hegemónica e inmediata presente en la sociedad burguesa es pensar en los avances científicos y tecnológicos como indudablemente positivos y que en sí mismos beneficiarán a la sociedad, descontextualizando y despolitizando las innovaciones tecnológicas, especialmente cuando se enfocan en el área de la salud, ya que estas, en general, traen un potencial para diagnosticar y curar diversas enfermedades. Sin embargo, se reveló la contradicción entre el desarrollo tecnológico en salud y el modo de producción capitalista que, a pesar del beneficio potencial para la salud, también trae impactos negativos para el personal de salud.

Palabras clave: salud; trabajo; tecnología.

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INTRODUCTION

Contemporary society has numerous challenges and technological development, paradoxically, is one of them. Currently, the exponential level of techno-scientific growth is notorious. Although science and technology are not exclusively circumscribed to capitalist society, since they are the fruits of the fundamental achievements of humankind and result in their own achievements, in this society, these advances assume particularities: on the one hand, they bring a favorable potential for collective well-being, at the same time and contradictorily produce their opposite.

Science and technology are not alien to the development and complexification of the social being, in fact they are part of this process and, therefore, carry within themselves the ontological and historical character of humanity. Thus, if they also have a historical dimension, they bring specific aspects that relate to the structure of the society in which they are inserted. Thus, technological advances correspond to the development of the means of work that are modified by humanity, in order to meet certain needs, according to the current social structure. Given the above, technological development in a given society corresponds to the needs, worldviews, and interactions that men and women carry out in that society and, thus, is not neutral, it is marked by the socioeconomic structure in which it is inserted, acquires meaning and responds to certain interests.

This article aims to reflect on the impact of technological incorporation, *hardware* or hard, in the work process of the Intensive Care Center (ICU) in a highly complex public health institution.

METHOD

This is a research with a qualitative approach and discourse analysis, from the perspective of unveiling the appearances of the relationship between technology and health work. Therefore, the intensity of the characteristics of the object and its specificities that enabled the understanding of its singularities were privileged. According to Minayo[1], a research that "works with the universe of meanings, motives, aspirations, beliefs, values and attitudes, which corresponds to a deeper space of relationships, processes and phenomena [...]".

This research brought a reflective critical theoretical analysis, in the light of historical materialism – which uses the Marxist dialectical method of understanding reality. This method presupposes that it is reality that builds thought, that is, the object of research is already given in reality, but in a chaotic, diffuse way. From the concrete, the researcher will reach the abstraction, will reflect on the real, on its object. Then, after abstraction, the researcher must follow the opposite path, that is, return, from reflection, to reality, to the concrete, but now reality will no longer be diffuse, chaotic, because its foundations, its structure, its components will be unveiled, revealed.

Semi-structured interviews were used as a research technique. For this, a script was adopted with 22 questions that guided the entire instrument, applied to 16 workers who used *hardware technologies in their daily lives,* who voluntarily expressed themselves in favor of participating. Among the 16 workers are the following categories: nursing technician and nurse, physician and physiotherapist.

The field research took place in the adult ICU of the Cancer Hospital I of the National Cancer Institute (INCA) – a reference institution in cancer treatment located in the State of Rio de Janeiro, which has a large universe of *hardware* technologies, especially those from the mechanical, electronic and materials-based industry, especially equipment and machinery. For Iriart and Merhy[2], there are three types of health technologies: hard technologies: instruments, equipment, and devices for therapeutic uses; light-hard technologies: technical knowledge structured in a given area of knowledge; and light technologies: they are found in the relationships between the subjects and the service management processes that have materiality in the action itself.

The sample was composed only of statutory public servants, since those who are bound under another type of contract have more precarious and unstable working conditions and, consequently, have other issues that generate suffering and dissatisfaction, which need differentiated analysis and which were not analyzed in this research.

This study began after submission and subsequent approval by the Ethics and Research Committee (CEP) of the institution where the research took place, under the number of consolidated opinions 3617608 (CAAE: 20020019.4.0000.5274) in compliance with Resolution 466/12[3] of the National Health Council for research with human beings. The interview was preceded by the presentation of the objectives, clarification of doubts, presentation and signature of the Informed Consent Form (ICF), thus certifying that the information was passed on to the research participants and that their questions and doubts were resolved and clarified.

RESULTS AND DISCUSSION

The increasing exaltation of technology in a pseudo neutrality bias stimulates indiscriminate and uncritical technological innovations in a technology fetish, as

"the practices adopted as a result of the objective trends and pressures of the development of modern capitalism are apologetically rationalized through the convenient ideology of 'technological innovation [...]'"[4] There is a tendency in this social order of exaltation of technology and this apology produces an idea that everything that is new is good and, in turn, everything that can be replaced by the new is of inferior quality. In other words, the new is seen as better simply because it is new, forming an uncritical understanding of technology, which is seen from its pseudo neutrality. The following statements highlight this issue:

> People get a little like that with some things: 'oh this is not a good thing, no', when the thing is old (Worker 2).

> When a new technology arrives, we always try to use it, right? And sometimes you don't even need to (Worker 9).

The hegemonic and immediate tendency present in bourgeois society is to think of scientific and technological advances as undoubtedly positive and that, in themselves, will benefit society, decontextualizing and depoliticizing technological innovations, especially when focused on health, as these, in general, bring a potential for diagnosis and cure of various diseases. However, Mészáros[4] points out that technological resources and equipment are means of work and, therefore, in this social order, they are "taken" by capital and guided by the logic of its interests.

Thus, technology in the capitalist structure assumes a contradictory character: on the one hand, it enables a range of benefits for the collective and has a unique potential for social well-being, especially in the field of health. On the other hand, it is used to serve the interests of the bourgeois class, the accumulation and expansion of capital. In capitalism, technological innovations are intensified exponentially, in order to obtain greater profits and greater capitalist expansion, this generates a tendency to direct technological advances exclusively to the economic dimension. Barra et al.[5] bring this class character focused on the market linked to the intensification of technological innovations in health in the capitalist structure:

> The growing technification of health care procedures makes this sector one of the most dynamic regarding the absorption of new technologies that are produced and consumed according to the logic of the market, much more from the perspective of the interests they represent than the needs[4].

It is in this sense that it is perceived that hard technology or *hardware*, in this social order, leads to the subsumption of labor to capital. Here there is a central contradiction present in technology in the capitalist order, if on the one hand it is fundamental for the enrichment of the human race and even comes from it, on the other hand, it is taken by the capitalist logic of wealth accumulation, privileging exchange value, that is, leading to the hypertrophy of exchange value to the detriment of use value. Therefore, the exchange value of commodities assumes centrality rather than social utility. In the words of Mészáros[6]:

> [...] science becomes, not only in fact, but by necessity – by virtue of its objective constitution under the given social relations – ignorant and unconcerned about the social consequences of its profound practical intervention in the process of expanded reproduction [6].

The statements of the interviewed professionals indicate the relationship of the technological arsenal with the logic of the market, making the health of the patient and the health professional secondary:

> [...] we know that behind this there is the interest of the market. Then it conflicts. [...] we are thinking about patient safety, they are thinking about money (Worker 13).

> [...] our training is to deal with care, you do not take care of a computer, you do not take care of a pump, you do not take care of it, but as it began to be introduced and charged as a work tool, our patient was staying for another time (Worker 3).

> [...] so polluted with sounds that you have to protect yourself to survive, I don't listen [...] (Worker 10).
> We work in a noisy environment, and it is a 24-hour noise (Worker 1).

> I think we work too fast because of this technology (Worker 15).

The prioritization of the technological arsenal to the detriment of the human, based on a discourse of providing the best care to the health user, can lead to the dubious quality of care and the secondaryization of health, including the professional who provides care. For Lacaz and Sato apud Passos and Gomes[7]:

> This subordination of work agents by production units has as a consequence not only the implications identified as 'deficiencies' in meeting the needs of

> the subjects who suffer, as is the case of current criticism of the dehumanization of health services, but also establishes a scenario in which working conditions, as they are alien to the intentions and feelings of their agents, can prove to be producers of suffering also for them.

However, the research participants were unanimous in recognizing the positive aspects of technological incorporation, especially in the ICU, with regard to the specific characteristic of the sector, the need of the patient in a critical state of health and the speed and ease of work of professionals. They agree that technology provides fundamental clinical parameters for work, enabling early intervention in the face of complications, vital sign readings and other aspects that facilitate the provision of care to the user, as well as favoring the work process. The following statements stand out:

> It is necessary to help us, to give support to the patient, especially a critical patient [...] he is totally dependent on both our care and technology (Worker 13).

> I see a bright side, for sure. Because everything that brings agility, precision in patient care is valid (Worker 7).

> Really important, really important. It facilitates the work process, speeds up, gives more efficiency, many times (Worker 4).

However, following the interviews, other issues arose, indicating the contradictory character present in technology in the capitalist structure. Thus, at first, the workers brought statements that highlighted the positive character of the technology and then presented more unfavorable or limiting aspects. Such questions show that technology, paradoxically, brings positive components (present at a first glance), but later other aspects that make up the varied and complex determinations present in health technology are revealed.

Thus, it should be considered that the positive aspects presented reflect the real gains that technological resources and equipment bring and that, therefore, represent a part of reality. According to Ianni[8], "appearances are a real dimension of the real. But they are one dimension among other dimensions, among other implications."

Despite these real gains mentioned by workers, it is considered that there is a process of apology for technology present in modern society, in which values and discourses praise it indiscriminately, especially in the field of health, emphasizing its techno-scientific bias, as if it were endowed with a neutrality. This question leads us to the mystifying character inherent to technology in the capitalist system, which is possible, on a more careful look, to understand other determinations of technology in its mediation with the totality.

It is noteworthy that some statements, which presented the positive characteristics of the use of technology, then mentioned other aspects, drawing attention to the need for a more critical look at technological resources. Such statements show the importance of thinking about technology from the contradiction inherent to it in this order.

> [...] a very important survival differential. Technology has come in the direction, to provide several data, of several variables that greatly facilitate your analysis of what is happening. But we also have to be aware because we can be hostage to technology (Worker 8).

> [....] the technology was arriving, we were getting very technical [...] at all times there was an exchange, and with the technology, no, we arrive, we are already aiming at the bomb, the monitor, behind the graphics, the numbers that that machinery brings us (Worker 3).

> Basic education But it will never replace the human process and today what I realize, people are getting closer and closer to technology and forgetting that care is fundamental (Worker 16).

The latter speech, in particular, refers more directly to the issue of the human aspect, which is essential for the health area, but which in capitalism is secondary or even forgotten, leading to the objectification of the human and the exaltation of technology. For Steps and Gomes[7]:

> If, on the one hand, scientific-technological development is a fundamental constituent of the process of complexification and enrichment of the human race [...], on the other hand, [...] it can present itself as an important reproducer of reifying and alienating dynamics.

Thus, technology can lead to a gap in the relationship between the professional and the user of the health service, which in turn leads to reduced quality of care, since this relationship cannot be built with such distance. According to Barra et al.[5], "[...] the relationship with the machine can mechanize care, to the point that the patient becomes a technological apparatus, not realizing how far the machine goes and the human being begins" Correa apud Barra et al.[5]. CTI workers portray this issue:

> [...] but we got colder, it got very machine. [...] even the relations between people became very bad, it brings closer those who are far away and distances those who are close (Worker 3).

> What technology does: Technology takes you away from the patient [...] while you fit the entire patient, you no longer have to get your hands on them. What I think, the great setback of technology is this, is that you are held hostage, perhaps, to an illusory measure (Worker 8).

> We end up somehow relying too much on machines, we give up paying attention to the patient. We focus less, we trust the monitor so much, and the clinic. [...] people are getting closer and closer to technology and forgetting that care is fundamental (Worker 16).

That is, although technology is the result of the ontological and historical development of humanity, contradictorily, in this society, it leads to alienating work practices, objectifying social relations, especially between the health worker and the user.

According to data collected in the field research, the incorporation of technology *per se* did not lead, in the adult ICU of the research institution, to the reduction of jobs, and there was no replacement of live labor by dead labor, due to the introduction of technology.

According to Merhy and Chakkour[9], health work "[...] cannot be globally captured by the logic of dead work". In this sense, Pires[10] presents the following statement:

> The use of state-of-the-art equipment in the health field has not replaced the human work of research, evaluation and therapeutic decision, nor the human work in treatments in general. [...] A significant part of the state-of-the-art equipment is used for diagnostic investigation and does not replace clinical investigation work [...][10]

The workers interviewed in this survey were unanimous in stating that the technology itself did not generate layoffs in that sector. Here are some lines:

> [...] technology alone gives you various data, indicators, but if you do not have the professional (Worker 3).

> There is no technology that has replaced work, thus reducing labor (Worker 13).

> I don't think, I don't see interference from this, I can't see [...] I don't know if because nursing always works at the limit of strength [...]. I can't dissociate, no, there is more machine, and we will do less, sometimes we work even a little more, you know? (Worker 16).

However, technological resources and instruments can favor the increase of work-related diseases and the increase of the workload, especially in neoliberal or ultra neoliberal times.

The neoliberal project has gained strength in recent years, in accordance with the context of the de-financing of social policies and the "new management model" in the health area, following the perspective of public services guided by the logic of the market, in a privatist direction in parallel to the process of greater fiscal renunciation by the State and financing of capital through the Public Fund. This project was intensified in the ultra neoliberal context, of radicalization of state counter-reform and destruction of social services and policies, which brings the Administrative Reform Project, PEC 32/2020, as one of the emblematic modalities of dismantling public services.

The counter-reform of the State decisively and negatively impacts the work process, including increasing the workload, stress, fragmentation and political fragility of workers. Finally, there are numerous challenges arising from the counter-reform of the State, which include the precariousness of the employment contract and the reduction of the workforce in the field of public health. Thus, issues related to working conditions and their precariousness are intensified.

The precariousness of work, embodied in the informality and deregulation of labor rights, and structural unemployment are related to the current productive restructuring, which, in turn, is related to the intense technological development, due to the need for capitalist expansion and the requirement of production aimed at "destructive consumption"[4].

Although, at first and immediately, the use of technology is associated with a decrease in the work pace and effort of the professional, as well as a reduction in fatigue and stress, contradictorily, technology is a component that can also increase the work pace, weariness, tiredness and stress of the worker. According to a study by Perez Junior[11]:

> [...] the physical and psychological workload that involved the care process, the fear of making mistakes in relation to the handling of equipment, among other factors, made the work process exhausting and suffered, interfering with activities and affecting the psychophysical health of professionals due to the stress and wear and tear caused[11].

Thus, unveiling what is beyond immediacy, it is clear that technology can be a source of more work,

intensification of the work pace, need for more workers and stress. In the interviews, these questions were highlighted by the participants:

> [...] we receive products that are not of quality that enter the hospital and we have to deal with them, which generate errors, generate stress, waste of time, you have to redo the same thing two, three, four times, anyway (Worker 12).

> [...] we work faster. It intensifies our routine more. / [...] a lot of technology, I think there have to be more people, more training (Worker 15).

The latter points to the need for training and training arising from technological incorporations, which in turn brings greater demand for constant qualifications for handling resources. Padula, Noronha and Mitidieri[12] emphasize: "The health-related industry composes an extensive and complex fabric with the innovation system, which requires highly qualified labor." Thus, the worker needs to be constantly technically trained. In this sense, the necessary valorization of capital and its relationship with technological development requires a highly qualified and specialized workforce. This, in turn, leads to over-specialization and fragmentation of the work process, which, in late capitalism, invades all sectors of life[13], including health.

Thus, workers have to adapt to the new requirements arising from the introduction of technology, assuming new functions in addition to patient care, otherwise they will not enter or may be replaced in the labor market. There is a trend towards greater qualification for entry into the labor market, at the same time as the process of disqualification of workers intensifies. This "[...] ends up configuring a contradictory process that over qualifies in several productive branches and disqualifies in others"[14]. In health services, the worker has to be in constant technical training, following the speed and intensity of technological innovations. Some of the workers' statements were representative of the need to adapt to the technological arsenal, providing constant training and qualification.

> The technology itself also requires dedication from you, right? So, the monitor, you have to learn to move (worker 13).

> The technology was arriving, we were getting very technical, the need for people to follow this demand [...] there is no way not to be updated in the face of this machinery (Worker 3).

Training in general is linked to the purpose of learning to handle a particular technological resource or equipment. In this sense, the training is more focused on the mastery of a specific technique/procedure in a Fordist logic and is exhausted in this sense. The study carried out by Martins[15] demonstrated that there is:

> [...] the conflict between an instrumental model of training oriented to the mastery of technique, typical of the Fordist model, in which workers were prepared, and the model aimed at understanding processes, oriented to knowledge and reflection on the concepts that underlie them, introduced in the proposal for training the technological model [15].

Despite the importance of the technical dimension, it is considered that training is necessary beyond merely technical learning. A permanent education process is essential for these workers, so that they understand beyond the technical issue, enhancing their creative and propositional role, as well as opening possibilities for the development of greater autonomy in the work process. The process of permanent education presupposes a collective moment of learning, which promotes an interaction between workers and not just an individual technical learning. That is, it should not be considered only a punctual and individualized moment of the work process. Thus, it must focus beyond the technical-operative dimension, involving workers in the process and, therefore,

> the configuration of the problem, in accordance with the complexity of health work, is at the center of the organization's educational project, feeding the process of knowledge construction, not only technical, but also related to the work process and its management. Thus, it is assumed that not all problems result from the lack of technical knowledge of health professionals [16].

The continuing education process brings the need to articulate planning, management and operationalization with regard to the integration of managers and professionals in training as active participants in the process in order to collectively conduct training activities not centered only on technical procedures and based on quantitative criteria, but with reference to the qualitative dimension of the work, generating an impact on the provision of care in its entirety and not in a fragmented and technical way.

The low stimulus to the active participation of the worker in the work process is not restricted only to the training and qualification process, since there is a general discomfort of ICU workers about the low or restricted participation with regard to the incorporation

of technology, that is, prior consultation with workers to introduce equipment or machinery in the sector is restricted, ignoring the knowledge of the professional. Fonseca[17] conducted a study with nursing professionals in which he found:

> The problem, therefore, is not the implementation of hard technologies, with their complex adjustment processes, but the displacement of an idealized technology to the detriment of real work processes and the fundamental knowledge of care operators so that these technologies, in fact, also serve the work of those at the cutting edge of services. The way in which this technology was implemented resulted in feelings of lack of recognition of real work and, consequently, in resistance, which can manifest themselves as boycotts or disinvestment of work[17].

This issue demonstrates the need for the institution to value more the knowledge and reflections of the worker, so that the professional is an active subject in the process, reducing the components that lead to demotivation and alienations, since "[...] the dynamics that promote alienation are all the more hegemonic the less the creative, reflective element of the work in action is present in the face of mechanizing tendencies"[18].

However, although the worker, in the capitalist mode, is subject to the alienating process, according to Passos and Gomes[7], in the field of health:

> [...] there is no small evidence that agents react in constant attempts to regain their protagonism, and the root of such reaction lies in the peculiarity of health work that prevents the 'real subsumption' of its agents, an aspect that constitutes, in our view, a permanent creative dynamic that configures scenarios for the potential development of counter-alienating movements[7].

According to Pires et al.[19] "[...] studies have shown that when the worker is included in all stages of the process – from planning to evaluation – the negative effects are minimized and the effects on workloads decrease". The interviewed workers portrayed dissatisfaction with regard to listening, by the institutional management, about the incorporation of technologies:

> When we see, they have already put bad equipment, which is a problem, which is a problem for the patient (Worker 2).

> What I think is wrong is that those who put technology [...], do not consult those who deal with technology (Worker 2).

> [...] because like this, someone comes and says: 'from today the bomb will be this one.' At no time were we asked: 'do you prefer this one or that one?' (Worker 6).

> Many things we say no and then we see that it was incorporated, yes. I see it like this, as now, the case of these bombs, we did not agree, she entered [...] (Worker 16).

Technological development is present in contemporary society and advances exponentially, especially in the capitalist structure, which commodifies various dimensions of social life and creates new needs, including those aimed at "destructive consumption"[4]. Therefore, it is necessary to be clear about the responsibility in the development and indiscriminate and intense use of technological resources and equipment. Who and what are they really for? What interests do they respond to?

Capital is very concerned with its accelerated and global expansion and, as a strategy, in the monopoly era, fosters disposable consumption, which Mészáros[4] called "planned obsolescence", thus enabling the expansion of capitalist accumulation. In the words of said author:

> Our current 'disposable society' often makes use of the baffling 'productive' practice of scrapping entirely new machinery after very reduced use, or even without inaugurating it, in order to replace it with something 'more advanced' [...][2].

The apology for technological resources and the mystification of technology, in the ideological production of the certainty of its benefits, present in contemporary society, cause dependence on the worker and even a certain insecurity before the machine or equipment, which refers to the fetishism of technology.

> [...] if you do not have a CT scan, nothing is done, if you do not have an ultrasound at the bedside [...]. The sovereign clinic, the physical examinations were only in the words, right? Because nowadays it brings this dependence. [...] That's what brought, the insecurities of technology, I think that's what changed us became dependent (Worker 3).

Thus, the role of examinations becomes central and not complementary and subordinate to the health professional. And, thus, the worker is subject to the control of equipment and technological resources, their evaluation and reflection are limited, and they are held hostage by technology. Instead of the exam being a means to achieve an end, it becomes an end of the professional's action. Therefore,

> this elevation of an intermediary, a means, to the condition of potential leader of the medical activity is one of the manifestations of the emergence of alienation/estrangement relations of the agent in relation to their work instruments, seen as endowed with their own autonomy [...][7].

However, it is necessary to pay attention to the fact that this is not a characteristic of technology itself, of its nature, that is, technology *per se* does not have the ability to control the worker and assume autonomy in the production process, but rather is the contradictory character of the capitalist mode of production that, when separating the producer from his instruments of labor, subjects the means of production to his control, alienating workers from the means of production and promoting the objectification of social relations and, with it, the subordination of the worker to the means of labor, in this case, specifically, to technology. Thus, in the health area, this contradiction is evident to the extent that this sector has an important technological arsenal for the diagnosis, treatment and cure of various diseases, which can result in enormous benefits for the community, but which, when focused on the capital appreciation process, reduces or annihilates this enormous potential, often with negative results for health.

CONCLUSION

The scientific-technological development and its reflection in the production of equipment and resources aimed at the health area, within the scope of the capitalist logic, also impact, in a contradictory way, the work processes. The relationship between the health professional and the means of work has specific determinations that must be mediated with the broader and more complex totality and, thus, the analysis of the capitalist structure is fundamental to understand the impact of technology on the work process. Scientific advances and their technological incorporations, in this structure of society, decisively influence the relationship of health workers with the means of production, and may constitute alienating processes of work, but also of contestation, contradictorily.

Despite the various work processes in the health area, there are some impacts of *hardware* technology on the ICU of a highly complex public health institution. Scientific and technological advances are essential for patient care, especially in an ICU, bringing positive results for users as well as for the work process. On the other hand, the capitalist mode of production ends up making use of and, thus, intensifying this development in favor of its interests, in an increasingly accelerated process. This, in turn, leads to the secondaryization of potential health benefits, both for users and workers. The latter are fundamental to the work itself and are directly impacted by technology in the work process.

The research confirmed the importance of technology for health, but also showed the contradictory character that technology assumes in this structure, especially impacting the health work process, since, despite the potential benefit to health and its ability to bring positive aspects to this process, it brings, at the same time, unfavorable consequences for it. Therefore, critical reflection that is able to go beyond cost/benefit economic analysis is fundamental, enabling mediations with the totality, so that the potential benefits of scientific advances and their technological application can be considered.

In a context of increasingly rapid and intense development of scientific and technological innovations, it is necessary to think about the impact of these changes on the work process, since this rebound will reflect on the worker and this, in turn, depending on this impact, may have a richer and more critical potential and, consequently, contribute in a more active and reflective way to the process and the user of a given service. Therefore, it is essential to reflect on these aspects, since more critical agents tend to develop more powerful actions, in a collective and equitable health perspective.

CONTRIBUTION

Erika Schreider participated in all stages of the construction of the article, from its conception to the approval of the final version to be published.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interest to declare.

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