

Occupational risk prevention in hospitals based on the Cultural-Historical Activity Theory

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Abstract *Hospital managers should target occupational risks and harm prevention since this can contribute to the quality of life at work and patient safety. This article aims to elucidate the activity of prevention of occupational risks and injuries in the hospital setting based on analysis of historical and empirical contradictions of the activity system. An exploratory qualitative study grounded in the Cultural-Historical Activity Theory was conducted at a university hospital in the state of São Paulo. Data were collected between September 2021 and January 2022 via individual semi-structured interviews of 9 professionals from the Occupational Health and Safety services and of five hospital managers, involving 20 hours of field observation and document analysis. Despite the expansion of the object of prevention activity, the other elements of the activity system did not adapt to the new demands, causing incompatibilities and contradictions that compromised the attainment of the expected outcomes. The main response actions observed were centered on complying with regulatory items, such as team composition, medical examinations and others, that contribute little toward promoting occupational health and safety.*

Key words *Occupational health, Occupational health services, Health management, COVID-19, Hospitals*

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Introduction

In health services, the care categories are the most exposed to occupational risks given the nature of the work goal (direct care of patients) and working conditions. Stress, physical fatigue, vulnerability, shift work and work overload are all factors which contribute to illness of workers in this context^{1,2}.

The pandemic caused by SARS-CoV-2 raised major concerns in health services over prevention of risk and harm to workers' health. Despite the role of personal protective equipment (PPE), poor management of these inputs, low availability, improper use and lack of training contributed to occupational contamination. These issues were further aggravated by the challenge of incorporating new technology, intense workload, a shortage of physical and human resources, unpreparedness, long work shifts, sleep deprivation, burnout and clinical instability of patients^{3,4}.

In response to these new circumstances, health facilities, particularly hospitals, needed to respond by mounting and implementing a crisis management plan covering not only clinical care, but also the occupational health and safety (OHS) of workers, as a precondition for continuing the provision of care. Worker and patient safety hinged largely on previously adopted management decisions without input from OHS managers, based on the principles of the hierarchy of risk control.

Specialized Services in Safety Engineering and Occupational Medicine (OHS) in Brazil are responsible for ensuring the health and safety of the workforce⁵. In the context of the pandemic in hospitals, these services need to be coordinated with the other sectors and professionals to keep workers healthy and guarantee uninterrupted health care. Historically, however, OHS services have been facing constraints and operational problems stemming from a lack of adequate infrastructure, limited resources and instruments, professional duties out of step with health practices, and health and safety driven by business productivity and profits, distorting these activities⁶.

This scenario prompted the following research question: "How was the activity of the prevention of occupational risks and injuries conducted in the hospital setting before and during the COVID-19 pandemic?". Thus, the objective of the present study was to elucidate the activity of prevention of risks and injury to workers' health in hospitals, drawing on the historical and

current empirical contradictions of the activity system.

To this end, the study was grounded in the 4th generation of the theoretical-conceptual framework of the Cultural-Historical Activity Theory (CHAT) by Engeström and Sannino (2020)⁷, which retains the underpinnings of dialectic materialism. In this interpretation of activity theory, the challenge is dealing with the complex transformation of the object of human activity and its ramifications, denoted *runaway objects*. This influences and permeates the objects of numerous activities, no longer able to be treated as isolated questions to be controlled by technical means⁷. This generation shares the foundational ideas of the preceding generations, seeing that work needs to be analyzed as object-oriented practice, mediated by instruments and contradiction-driven. Work is to be understood in its constant development and transformations, making learning a central aspect⁷.

The activity system, seen as a dialectic unit of analysis, involves interaction among its elements (subject, object, outcomes, rules, instruments, division of labor, and community), with the aim of conferring shape to the shared object which the activity, constructed collectively, is oriented toward⁸. In their historical development, these interactions can generate contradictions, defined as structural strains and incompatibilities existing within and/or between activity systems⁹. Disturbances, problems, dissatisfactions, accidents and illnesses are understood as manifestations of contradictions found in activity systems. While the former aspects are easily identified, contradictions are invisible, constituting essential analytical conceptual tools which aid understanding of the origins of incompatibilities which disturb the activity.

Contradictions can be classified as: primary: inherent to the capitalist form and situated within the elements of the activity system; secondary: emerging between elements of the activity system, causing disturbances or preventing the subjects from performing the activity in the same way, driving the search for new solutions, technologies or expansion of the object; tertiary: with the implantation of the new model of activity, new contradictions arise, i.e., new incompatibilities between the old model and elements of the new expanded version; and quaternary: where the implementation of the new model can cause new dysfunctions, in as much as the new activity starts to come up against parallel activities still adhering to the previous logic¹⁰. In order to iden-

tify the contradictions, the evolution of the activity system and its history must first be grasped.

Against this backdrop, the objective of the present study was to analyze the activity system of occupational health risks and injury prevention, and to map its contradictions to build hypotheses of potential challenges and opportunities for future intervention strategies.

Method

A qualitative explorative study to generate empirical data and hypotheses of contradictions in the activity of prevention in a hospital setting, to be applied in a future intervention, was conducted. The studied centered on the activity carried out by OHS service of a medium-sized university hospital located in São Paulo state, serving solely the Brazilian national health system (SUS) and managed by the Brazilian Company for Hospital Services (EBSERH).

A total of 14 workers were included, comprising nine affiliated with the local OHS service (one technician and one occupational safety engineer; two nurses and two occupational medicine physicians and one nursing intern, in addition to an occupational physiotherapist dedicating four hours weekly and one occupational nurse who had worked at the hospital from 2017 to 2019) and five general managers of the hospital (senior management) engaged in the areas of education and research, administration and health care.

Data collection took place between September 2021 and January 2022. This process was planned so as to meet the premises of the CHAT, namely, gathering historical and current empirical data and information to help understand the activity system according to its elements and contradictions¹¹. This analysis entailed the use of three concomitant techniques: individual interviews, field observation and document analysis.

The participants were invited in-person by the researchers, who explained the objectives of the study, provided two copies of the Free and Informed Consent Form, and scheduled the best time for holding the interview. The semi-structured interview took an average of 40 minutes to perform and was conducted on-line with audio and video recorded. Interviews were later transcribed and analyzed by researchers with expertise in this type of approach. The interview probed the activity of OHS prevention and promotion prior to and during the COVID-19 pandemic,

with an emphasis on its objectives, forms of organization and relationships with other services and professionals, demands requiring response by the OHS service; changes over time; facilitators and difficulties; and role of management.

Field observations were performed in blocks of five 4-hour periods for a total of 20 hours, adhering to the restrictions in movement in care areas imposed as a result of the pandemic. This stage included observing the routine of the OHS service, the prioritizing of activities and organization of the work process performed by the professionals, the physical environment, the flows and treatment of the workers. The field notes were recorded in a field diary in the form of dialogue with the professionals from the OHS service.

Document analysis included access to the institution's website to collect any information supporting the research question and examine work rosters and plans, consultation forms, absenteeism data, COVID-19 contingency plan reports and the Occupational Health Medical Control Program (PCMSO).

The data derived from the interviews, document analysis and field notes underwent thematic content analysis (TCA) involving three stages: pre-analysis; exploration of material; and treatment and interpretation of results obtained¹². The pre-analysis included skimming all the material, and organizing the initial ideas and key events. Exploring the material entailed analysis of the speech corresponding to the meaning units to select the elements of the activity system, contradictions and hypotheses. Treatment included categorizing and interpreting the findings as per CHAT and the materialistic dialectic^{8,11}, expressed descriptively (including excerpts of speech, notes in field diary and document data) and illustrated in the form of the activity system triangle.

The project was approved by the local Research Ethics Committee under CAAE permit no. 44105621.3.0000.5504. All ethics precepts of Resolution nos. 466/2012 and 510/2016 of the National Board of Health were observed and all participants provided formal consent by signing the Free and Informed Consent Form. In order to assure secrecy and anonymity of the participants, the name of the hospital, together with the associated city and university were removed; the name of professionals from the OHS service was replaced by the letter P and that of managers by the letter M, followed by the sequential interview number.

Results and discussion

The results showed the evolution of the activity of prevention of occupational health risks and injury of workers in a hospital setting, revealing the expansion of the object over the years and its incompatibility with the other elements of the activity system. However, the transformations failed to accommodate this new runaway object, generating primary and secondary contradictions (and consequent disturbances and problems), which can be broken down into 3 categories: 1) expansions of the object of the activity of prevention of occupational health risks and injury of workers; 2) disturbances (manifestations of contradictions) resulting from the expansion of the object of the activity of prevention of occupational health risks and injury of workers; and 3) hypotheses that can explain the contradictions of the activity system of prevention of health risks and injury of workers.

Expansion of object of activity of prevention of health risks and injury of workers

Although the hospital had been operating before 2015, this year was used as the reference point for analysis, given that changes to the management model were made (control taken over by EBSERH) with mass dismissals of the workers and subsequent rehiring of the workforce through admissions screening tests. The OHS service commenced operations in 2015, following the hiring of a OHS technician and engineer (and several failed attempts to engage an occupational medicine physician), with occupational safety actions focused on physical, electrical and water infrastructure issues. The process of hospital revitalization was hampered by major structure issues, which ultimately modulated a fragmented activity system and partially influenced the object of activity, with an emphasis on occupational hygiene.

The OHS service was established under Brazilian Regulatory Standard (NR) 4 and its actions are governed by other standards, such as NR1, which contains provisions on the management of occupational risks; NR7, which underpinned the PCMSO program; and NR32 which lays down the basic guidelines for implementing protective measures for health and safety of workers in health facilities⁶. This service plays an important role for organizations, given its ability to act in the prevention of work-related accidents and diseases,

thereby contributing toward improving institutional performance and reducing expenses with damages, sick leave absence and physical losses¹³.

With regard to the compulsory nature of OHS services in companies, the interpretation of Brazilian law results in conferring a more corrective than preventive approach, with a predominance of actions taken only after the occurrence of work-related accidents, with superficial investigations of their root causes¹⁴. The standards introduce the notion of a hierarchy of risk control measures (eliminate, substitute or reduce, engineering and administrative controls and personal protection), with little influence on decisions related to the top of this hierarchy. These standards, based on Occupational Medicine (OM) – i.e. an individual, uncausal and biologicistic perspective, and on Occupational Safety and Hygiene (compliance with minimal standards and parameters of occupational safety, in which the worker remains the object of the actions), are still not strongly oriented toward Occupational Health (actions for health promotion and prevention of illness on a collective, organizational level and of the social determination of the health-diseases process)¹⁵. These incongruences can be regarded as a secondary contradiction between object and instruments and a contradiction intrinsic to the object of the service⁹.

Even after expanding the team in 2017, through hiring of an occupational nurse and temporary hire of an occupational medicine specialist to oversee pre-admission, discharge and routine screening tests, it became apparent that the way the service was structured would serve as a starting point toward understanding the origin of the historical contradictions which persist to this day. This holds particularly true for the low protagonism in strategic decisions of the system, especially those related to the structuring of the team and to the top of the hierarchy of controls in the hospital.

The structure was the most complicated thing, because there was no physician, so we did the absolute basic occupational health procedures. We couldn't comply even with the PCMSO program. We were stronger on the vaccines side. We were focused on the administrative part, providing sick notes; we knew that they (the workers) were calling in sick, but our hands were tied as to what we could do about it. What did we manage to do with the ICD M [Diseases of the musculoskeletal system and connective tissue]: for all cases of staff handling in sick leave requests for musculoskeletal diseases, we had an arrangement with a physiotherapist

from the hospital and she dedicated one afternoon a week to perform ergonomics. We referred the case to her, she analyzed the work area, provided guidance on the movement, the work activity, together with students (P8).

The occupational health and safety sector still took a very reactive approach, there was still a lack of diagnostic and intervention instruments of a more proactive and preventive nature. The sector adheres closely to the routine regulatory standards and legislations, but it's a sector that needs to develop further (G3).

The excerpts reveal 2 secondary contradictions: the undersized team, which may have been the result of prioritizing the hiring of professionals specifically for the target activity (care provision) and preventing the attainment of the complexity of the occupational health and safety of the hospital staff (subjects x object); this is exacerbated by the focus on complying with the regulatory standards which, according to the view of managers, are clearly insufficient to guarantee the needs of OHS (rules x object).

The field observation work led to the identification of 2 contradictions; the health team (nurse and physician) and safety team (engineer and technician) occupied different physical spaces, with no specific room for seeing workers (subjects x instruments). This, in addition to the fact that the occupational medicine physician was not exclusively dedicated to the OHS service, where the engineers performed other duties in the institution which accounted for the bulk of their working hours (subjects x division of labor).

The lack of human resources and physical infrastructure for carrying out occupational health surveillance actions had been previously flagged in the literature, both within the sphere of institutions⁶ and public policies¹⁶. The cited partnership with the physiotherapist constitutes an attempt to overcome this contradiction toward more integrated actions, but still on a temporary, individual and reactive basis – referrals were made after sick leave and diagnosis of the worker (a form of secondary prevention, given the damage was already done). The team failed to recognize, *a priori*, its limited scope of operation for actions situated at the top of the hierarchy of controls.

These contradictions persisted throughout 2018 and 2019, despite visits by the occupational medicine specialist for 12 hours a week. An important aspect began impacting the expansion of the object: the shift in the profile of illness seen among workers, with an increase in mental and behavioral disorders.

Mid 2019 we managed to bring in an occupational medicine physician. From that point onwards, we were able to improve occupational care in terms of absenteeism, sick notes. We were able to see the causes of sick leave first hand, where the leading causes of absenteeism were muscular diseases and the ICD F group [Mental Diseases and other Disorders] (P8).

The rise in mental illness among health workers prior to the COVID-19 pandemic, predominantly work stress, anxiety and burnout¹⁷⁻¹⁹, were early indicators of a new scenario looming for OHS professionals and managers. This expansion of the object would require a commensurate expansion in instruments, review of rules and of division of labor, besides an expansion in the community via a new systemic and organizational approach⁹ far removed from the prevailing working conditions in Brazil. The activity system and contradictions prior to the COVID-19 pandemic are presented in Figure 1.

Disturbances (manifestations of contradictions) arising from the expansion of the object of activity of prevention of occupational health risks and injuries

The pandemic was accompanied by both new and expanded old health needs, requiring a number of changes in hospitals, such as reorganizing flows; suspending out-patient consultations, elective surgeries and family visits; setting aside wards and beds specifically for treating COVID-19; increasing the number of beds and creating dedicated beds in Intensive Care Units^{4,20}. Many of these measures are preventive, were associated with the top of the hierarchy of controls and could potentially have sparked debates on the participation of the OHS service in the respective decision-making processes.

In order to meet the new demands, the university hospital hired, as an emergency measure, around 110 health professionals, having a significant impact on the routine of the OHS service, with an increase in pre-admission screening exams, changes in function (reallocation of workers in high-risk groups) and monitoring of suspected and confirmed COVID cases. These actions were made feasible by expanding the team (hiring an Occupational Medicine physician and nurse on an emergency basis), suspending routine exams, providing the health team with a dedicated office, and support from the crisis committee for some actions.

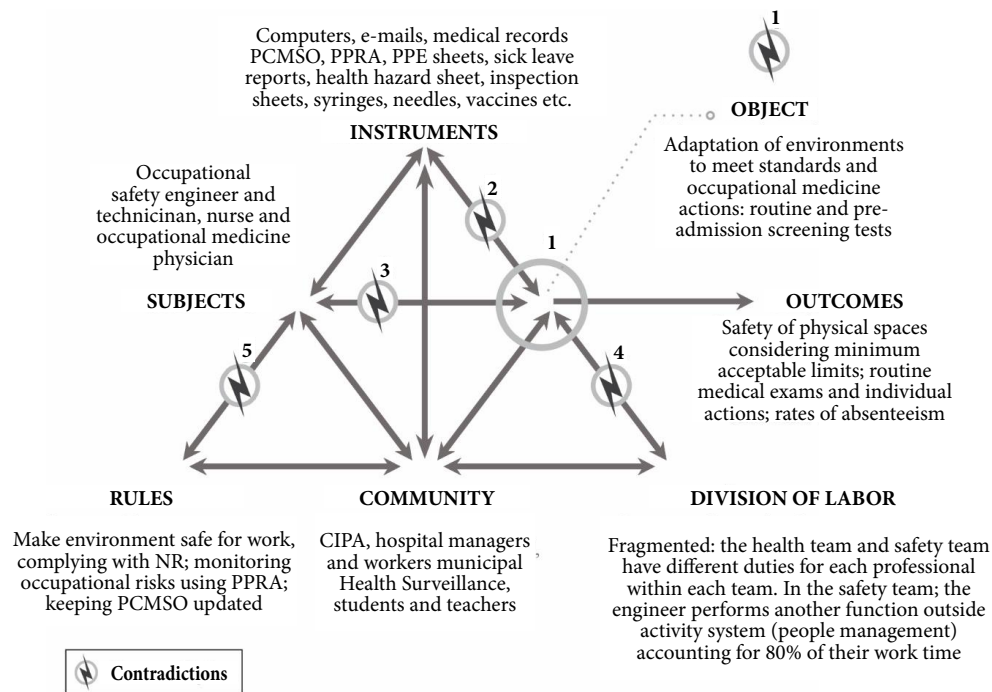


Figure 1. Activity system of prevention of occupational health risks and injuries before the COVID-19 pandemic.

Contradictions in activity system: 1 = primary contradiction: reduction of object of prevention; 2 = secondary contradiction instruments x object: lack of infrastructure x need to provide worker care; 3 = secondary contradiction subject x object: undersized team x workers' demands and needs; 4 = secondary contradiction subject x division of labor: professionals with OHS service roles x those in other sectors; 5 = secondary contradiction subjects x rules: emphasis on rule compliance x rules not covering growing complex needs of workers. Abbreviations: CIPA = Internal Board for Accident Prevention; PPE = personal protective equipment; NR = regulatory standard; PCMSO = Occupational Health Medical Control Program; PPRA = Environmental Risk Prevention Program; SCIH = Hospital Infection Control Service; AS = activity system.

Source: Adapted from Engeström (1987).

With 2 physicians and 2 nurses available, we now have a fully-fledged service [...] we are able to do more on the planning and prevention side (P1).

All our contingency action for the pandemic, always counted on a daily operations center set up in response to the pandemic, we had daily meetings part of which were always dedicated to how many PPEs they had available, what we would do to acquire more PPEs, along with rate of internal contamination, cases of sick leave, and I can safely say that PPEs never ran out (G4).

The pandemic led to the redesign of the prevention activity system (Figure 2), with expansion of the team (subjects); creation of new flows, protocols and routines (rules); dedication of a specific room for consultations (albeit with limitations); redefinition of work processes (division

of labor); and involvement of other professionals and sectors in the prevention activity, involved in crisis management (community). Despite institutional efforts to achieve the expanded shared (with need for healthy workers fit for work no longer a concern solely of the OHS service), run-away (extrapolating beyond the institutional context) object, the prevention activity was still limited, centering on preventing spread of the virus within the hospital environment, where changes in the elements of the activity system were also restricted and insufficient⁹. This is illustrated by the narrative of the manager, emphasizing the importance of providing PPE for preventing transmission of the virus.

The communication difficulty between the OHS service team and other workers was a dis-

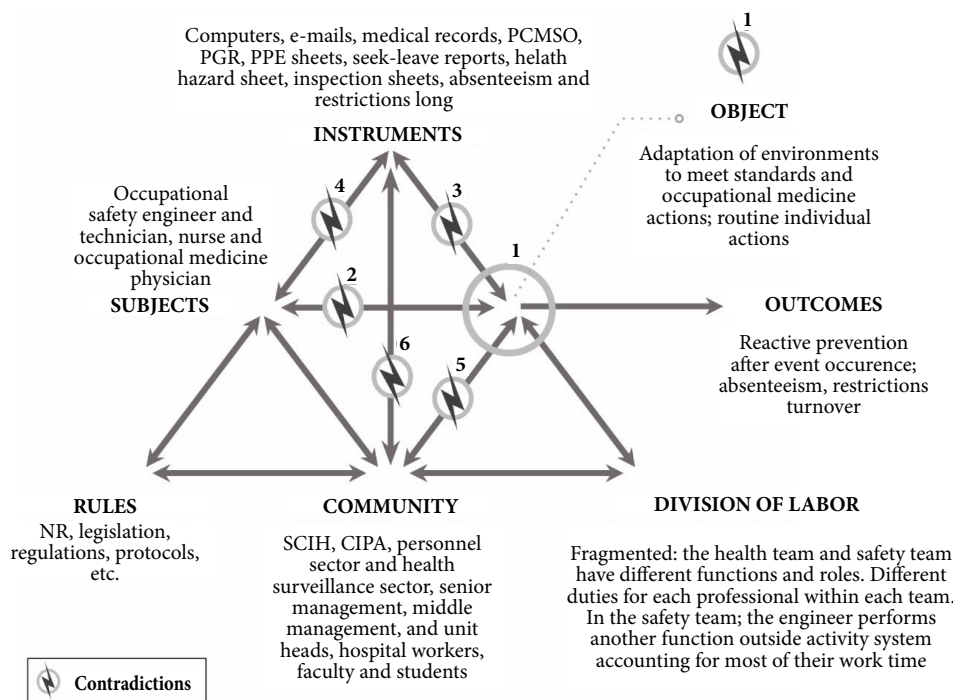


Figure 2. Activity system of prevention of occupational health risks and injuries amid the COVID-19 pandemic.

Contradictions in activity system: 1 = primary contradiction: reduction of object of prevention; 2 = secondary contradiction subject x object: undersized team x workers' demands and needs; 3 = secondary contradiction instruments x object: limited physical space x need to provide worker care; 4 = secondary contradiction subject x object x instruments: increased mental health demand (object) x unpreparedness of team to meet these demands x lack of support instruments; 5 = secondary contradiction subject x instruments x object x community; communication breakdowns (instruments) x OHS team (subjects) x for workers' care (object) x and in relation to other sectors of hospital (community); 6 = secondary contradiction rules x object x community: insufficient set of standards (rules) x new health demands of workers (object) x poor coordination with other sectors involved in management of crisis (community). Abbreviations: CIPA = Internal Board for Accident Prevention; PPE = personal protective equipment; NR = regulatory standard; PCMSO = Occupational Health Medical Control Program; PPRA = Environmental Risk Prevention Program; SCIH = Hospital Infection Control Service; AS = activity system.

Source: Adapted from Engeström (1987).

turbance stemming from these contradictions. Even after adopting new strategies, such as notices at clocking-in devices, warnings in internal systems and active seeking, the low attainment gave rise to delays in receiving exams and sick notes, hampering health assessment and monitoring and, consequently, affecting the number of sick leave days and impacting the rotas of care units.

Concerning the sick leave notes, they are sometimes delayed and, depending on the cases involving COVID, this can have an impact, because we need to know when symptoms began, when testing was done... this has an impact internally, on the

rota scheduling. Sometimes, you know, we realize the personal is a suspected cases and is late coming in, and this can be impactful (P5).

The effectiveness of actions that guarantee safe healthy conditions in the workplace, particularly during times of crisis, depends on open dialogue between employers and workers and on communication tools which enable exchange of materials and information on OHS²¹. The strategies for preventing infection of health professionals by SARS-CoV-2 have proven effective at reducing spread of the disease, particularly with the aid of surveillance systems^{22,23}, presumably demonstrating effective communication and co-

ordinated joint efforts. However, this only partially catered for the local occupational health needs, in that actions targeting other forms of illness and human anguish were not included, creating problems such as a rise in absenteeism due to common or severe mental disorders.

The decline in COVID-19-related admissions during late 2021 prompted the suspension of emergency temporary contracts and the OHS service resumed operations with a skeleton health team (1 occupational medicine physician for 20 hours a week and an occupational nurse for 40 hours a week), resulting in a build up of work and difficulties meeting new demands, now predominantly involving mental health.

One thing I noticed, as did the team, was the shift in type of diseases. Before the ICDs were more musculoskeletal, ICD M codes, and this gave way to a rise in ICD F (mental and behavioral disorders) and in the influenza syndrome cases, but something I see we are in dire need of is support, training, a team to deal with the mental health side of the employees, and now they are all tired, right? They are absent on sick leave and this is an issue... (P2).

We proposed training courses that we would head up (...) the mental health WG (work group) and choice of the group was "Non-violent Communication", so we devised strategies for training up colleagues related to this topic, to reduce conflicts, enjoy better quality of life at work (G1).

The discourse indicates learning problems on the part of the team. The classic distinction among Occupational Medicine (OM), Occupational Health (OH) and Workers' Health¹⁵ already highlights that the emergence of work-related diseases is rooted in the organization of work, and that prevention and management require different instruments to those used for OM and OH. The pandemic amplified and conferred dramatic shape to this problem, which continues to be viewed in a manner limited to its manifestations.

Health workers faced stressing situations in the workplace driven by increased work loads, longer shifts and shorter rest breaks²¹, as well as fear and uncertainty surrounding the disease itself²⁴, generating new demands which overwhelmed the preparations of the OHS service, which was never conceived or implemented to handle the complexity and subjectiveness of workers' health. With the aim of overcoming this contradiction, a manager involved in the general administration of the hospital proposed the creation of a working group to promote mental

health in the workplace, showing that the runaway object involves interactions with other activity systems.

The challenges of interventions aimed at preventing mental illness at work were revealed in a literature review showing that, of the 117 studies included, only four reported educational interventions, and these had a low level of certainty²⁵. This points to the need for investment by management addressing the psychosocial demands of workers toward the prevention of illness and psychic anguish, promotion of quality of life at work and of organizational wellbeing.

Hypotheses explaining contradictions of activity system of prevention of occupational health risks and injuries

The changes brought on by the pandemic were tackled by pre-existing elements of the activity system that proved inadequate to flatten the transmission curve, provide adequate care in severe cases, or protect workers. Considering only the activity system of prevention within the hospital, several hypotheses can be put forward to explain these contradictions.

The first hypotheses is associated with the historical primary contradiction identified, namely, the reduction or limitation of the object of the activity of prevention, still centered on visible standardized factors of risks and on individuals, focused on training and awareness, based on approaches from OM and Occupational Hygiene. Transforming the environmental aspects and risk factors into those limited by legislation is absurd given the social imperative of making work safe and healthy. These approaches overlook the determinants and process of work as objects of intervention, representing limitations for more effective prevention of risks and injuries. Even when interviews cite ergonomic interventions, for example, these are associated with physical aspects of work areas and postural education of the individual, without considering organizational and cognitive issues, or the operating strategies developed both individually and collectively to overcome the challenges and difficulties encountered.

The second hypothesis pertains to the profile of the OHS service, devised to address the safety parameters and standards which fail to cover the subjectiveness and complexity entailed in workers' health in these new work arrangements. If the regulatory standards are unable to accommodate this runaway object, then the training

of professionals who work in these services will necessarily be more technically oriented with a limited systemic perspective.

The quantitative-qualitative undersize of the OHS service constitutes the third hypothesis. In order to solve understaffing during the pandemic, the university hospital hired a nurse and an occupational medicine specialist (20 hours weekly) to join the team for the first 2 years of the COVID-19 pandemic, a situation reversed in early 2022, revealing the transient nature of the measure. In qualitative terms, no reconfiguration of the team took place, which continued operating as per the regulatory standards. By contrast, other countries such as Germany, France, the UK and Japan, deployed multi-disciplinary teams made up of different professionals according to the nature of the service and type of activities involved, such as psychologists, ergonomists, physiotherapists and health educators²⁶.

The fourth hypothesis suggests a lack of institutional priority given to the activities performed by the OHS service, which often lacks the space and infrastructure needed to deal with workers¹⁶ or has not had its demands embraced as fully as other services such as care provision. Given that the end goal of a hospital is delivering quality care and that this is only possible with healthy workers in the broader sense, then neglecting the health and working conditions of workers translates to barrier in the attainment of the desired outcomes.

The COVID-19 pandemic accentuated historical contradictions as a result of the expansion and sharing of the object of prevention in face of the characteristics of the elements making up this (and other) activity systems which, despite having expanded, was unable to attain the desired outcomes. This situation led to disturbances such as high rates of absenteeism, presenteeism, turnover and restrictions, causing multiple impacts on the institution, besides being deleterious for workers, family members and society.

Expansion of the object implies reviewing other mediators of the activity system, such as rules governing the work of subjects, which are often outdated and do not cover the needs of the expanded object, restricting actions and culminating in failure to achieve the desired results¹⁰. This also includes reviewing the levels of autonomy of the OHS team to allow more independent working with greater powers to act within the organization and flexibility to work beyond the limits stipulated in the regulatory standards.

Lastly, the fifth and final hypothesis is the non-recognition of the prevention activity as

a shared object which involves coordination among different activity systems, with interventions integrated at several different levels for early recognition of the course of actions and associated risks, and mitigating undesirable outcomes. This underscores the fact that the object of prevention is also a matter for the institution's management, which should consolidate practices, policies, goals and actions toward achieving its results in an effective way. This organizational approach should expand its object in search of timely action affecting the determinants of work, building upon individual factors with collective action, by using participative methods and instruments that can predict signs in advance, i.e. before the accident or illness has taken place.

The present study has some limitations, such as the fact that only professionals of the OHS service and hospital managers were interviewed, and not other classes of workers, potentially influencing the results and hindering the identification of contradictions. Because this weakness was identified only toward the end of the present study, the authors now plan to interview the other workers in a future investigation. Another limitation involves the inability to carry out immersion in the field for a more in-depth study of the prevention activity, owing to restrictions imposed by the pandemic.

Final considerations

The activity of prevention in the hospital context is considered part of the remit of the OHS service, whose practices are based on Occupational Hygiene and OM with little commonality with the complexity of the expanded object. In the field studied, the incumbent system failed to adequately meet demands, with a reactive tendency highly constrained to regulatory standards, with few early preventive and intervention actions centered on work-related illness and accidents. Most notably, there was a lack of involvement of the OHS service in management decisions driven by the need to mount a response to the pandemic with preventive measures, according to the principles of the hierarchy of risk control. In general, the role of the service is governed by the rules stipulated in statutory provisions (prescribed), but falls short of meeting the true complex needs of the workers (actual), with actions predominantly triggered only after the exacerbation of problems.

The objective of the present study was to analyze the activity of prevention of occupational

risk and injury performed by the OHS service. The study results showed that the activity goes beyond the remit of this service and interfaces with several other sectors of the hospital, i.e., other interacting activity systems, which must also be analyzed to glean a full picture of the object of the activity of prevention in the workplace.

Furthermore, this is an object shared with the institution's management, whose aims should include, besides delivery of care to users and family members, the safeguarding of the welfare of workers, as a *sine qua non* condition for the provision of quality services.

Collaborations

BE Ferreira: data analysis and interpretation, article drafting, and approval of the final version for publication. RAG Vilela, A Nascimento, IM Almeida, MGR Lopes, D Braatz: data analysis and interpretation, critical review of the manuscript, and approval of the final version for publication; VA Mininel: study conception and design; data analysis and interpretation, critical review of the manuscript, and approval of the final version for publication.

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