

## **Accounting for the impact of the COVID19 pandemic on healthcare professionals: informing sustainable practices to achieve SDGs**

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### **Abstract**

**Purpose:** While most studies have investigated healthcare responses to emergent health needs during COVID-19 crisis, scant research has addressed accounting for the pandemic's impact on healthcare personnel' quality of life.

**Methodology:** A survey has been conducted to gather data from professionals working for a Northern Italian public local healthcare organization, to understand their perceptions on their self-efficacy, work environment, working conditions and quality of life during COVID19.

**Findings:** Positive work environment was found to reduce negative effects of COVID19 on the quality of life of healthcare personnel. At the same it brought a better achievement of work-life balance. Nevertheless, increased self-efficacy caused a sense of malaise due to the heavy workload and additional responsibilities.

**Originality/Value:** This study takes a broader stance on "accounting" as non-financial information relevant for sustainability decision making and adopts such a perspective to account for the COVID-19 pandemic's impact on healthcare professionals operating in a local health organization; this approach allows to inform sustainable human resource management practices in the light of SDGs in such knowledge-intensive organizations.

**Keywords:** accounting, pandemic, sustainability, healthcare

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## 1. Introduction

In 2018, the Global Action Plan for Healthy Lives and Well-being for All (GAP) was launched by the WHO and the United Nations pushing the One Health approach to enhance the transition toward sustainable healthcare. The Plan aimed at accelerating the progress of the countries towards the SDGs Agenda; to this regard special attention was devoted to the Goal 3 of the SDGs, *Health and Wellbeing for All*, recognizing its interconnectedness and complementarity with the other SDGs such as decent work conditions, sustainable production and consumption, etc. The SDGs Roadmap signed by all the WHO European Member states called healthcare providers to adopt the 4EA action framework to develop sustainable healthcare interventions: the framework is composed of four building blocks named—engage, align, accelerate and account—to achieve SDGs (Menne et al., 2020). Nevertheless, when looking at healthcare organizations, their sustainable development transition is still slow. Sustainability in healthcare relies the most on fragmentary projects as well as on informal organizational structures to deal with sustainability decision-making and is not driven by strong strategic planning and control activities (Cavicchi, 2017, Cavicchi and Vagnoni, 2017). Research in this field has been mainly dedicated to understanding the drivers and barriers of sustainable development in public healthcare organizations considering their nature as knowledge intensive public organizations. In this regard, studies focusing on intellectual capital assets as enablers of SDGs have been produced (Secundo et al., 2020). On the contrary, studies on accounting and control for healthcare organizations' sustainable development have been largely neglected with the consequence that accounting and control in these organizations is still in its infancy (Cavicchi, 2017). The development of accounting tools in knowledge intensive public organizations is also made complex by their hybridity: in fact, the different actors' views on values and mission of the organization can also cause ambiguity in the definition of performance areas to be monitored (Grossi et al., 2020). This is especially true for healthcare organizations, where the sustainability debate (and thus, accounting) has been predominantly confined to studying the balance between resources' availability and quality of health services, neglecting dimensions such as social sustainability of healthcare professionals (Paparatto et al., 2023; Amrutha and Geetha, 2020).

SDGs achievement has become even more relevant when considering the effect that the pandemic has caused on the health systems and their services providers. Accounting for the impact of the pandemic on public healthcare organizations is necessary to inform decisions (Sidaway et al., 2023), especially in the field of sustainable development. As a result, scholars have called to study accounting, accountability and performance measurement in public healthcare organizations in times of global pandemics, focusing on their infrastructures' ability to provide relief to human beings (Grossi et al., 2020, Sargiacomo, 2015). During the COVID19 pandemic, the tenure of the healthcare system has been possible especially thanks to healthcare professionals which are the engine of those knowledge intensive organizations. They were called to do their best to care for COVID-19 patients, especially in times that were characterized by shortage of individual protection devices exposing them to heavy risk of contagion (Walton-Roberts, 2021; Brolan et al.,

2022). At the same time, the pandemic has caused many mental health problems to healthcare practitioners due to exhaustion, post-traumatic stress disorders and burn-out (Walton-Roberts, 2021; Brolan et al., 2022). Addressing the call of scholars (Grossi et al., 2020; Rinaldi et al., 2020, Rinaldi, 2022), this paper accounts for the impact of the pandemic on healthcare professionals of public healthcare organizations, to inform sustainable human resource practices. Such a perspective is consistent with the wider definition of accounting that has been proposed by the literature (Carnegie et al., 2020; Carnegie et al., 2022; Sidaway et al., 2023) to include non-financial information that can support users' decision-making and drive positive behaviors that can impact society at large (Sidaway et al., 2023). Indeed, there has been a major call to study accounting as a technical, social and moral practice (Carnegie et al., 2020; Carnegie et al., 2022; Sidaway et al., 2023), focusing on how accounting is performed, how it can affect individuals' behavior and how it should promote a change.

## **2. Accounting for the impact of the pandemic**

Accounting for the impact of the pandemic has been recently the object of scholars' attention (Rinaldi et al., 2020; Grossi et al., 2020). Regarding the public sector, literature showed how accounting transformed COVID19 into an accounting subject, to problematize it and make it more manageable (Rinaldi, 2022; Parisi and Bekier, 2022; Huber et al., 2021). Sidaway et al. (2023), based on the framework of Carnegie et al. (2020) on *accounting as technical, social and moral practice*, showed how non-financial information in the healthcare setting had informed public sector's decision-making in organizing responses to the pandemic. Nevertheless, little is still known on how accounting is used to inform future sustainable strategies, considering its implication in the "reorganization of life" (Rinaldi, 2022, p. 17). In this regard, whether and to what extent accounting has been used to account for the impact of the pandemic on healthcare professionals and possibly inform sustainable human resource practices deserves further deepening. In the next sections, the impact of the pandemic on healthcare professionals is discussed, especially considering healthcare organizations' human resource practices that have been deemed to improve the quality of life of healthcare personnel, both from a personal and professional perspective. Based on the literature, some hypotheses were drawn and tested with the aid of a questionnaire survey, to understand how accounting for the impact of the pandemic on healthcare personnel can help inform decision-making.

## **3. The impact of the COVID19 pandemic on healthcare personnel**

In the next subsections, the impact of the pandemic on healthcare personnel is discussed with reference to: the relation between personal conditions, self-efficacy and the capacity of healthcare professionals to bear the stress related to the COVID19 (section 3.1); working conditions and their effects on the quality of life of healthcare professionals (section 3.2); working environment and its effect on the quality of life of healthcare professionals (section 3.3).

### **3.1 Self-efficacy and its effect on healthcare personnel's quality of life**

Studies have shown that healthcare professionals who experienced work-family conflicts due to COVID19-related working conditions also had lower self-efficacy (Zeb et al., 2021). On the contrary, a healthy workplace environment can help tackle the negative effects of COVID19, increasing self-efficacy and improving work-life balance (Zeb et al., 2021). Higher self-efficacy was shown to reduce the perception of stress and burnout, increasing healthcare professionals' willingness to work during the pandemic (Garcia et al., 2021).

Based on these premises, the following hypotheses were stated:

*H1: increased self-efficacy allows to better tolerate the working conditions due to COVID19.*

*H2: increased self-efficacy positively allows to better tolerate the effects of COVID19 on healthcare personnel's quality of life.*

### **3.2 The working conditions and their effects on healthcare personnel's quality of life**

Front-line healthcare professionals perceived a sense of abandonment by top management and felt to be subjected to a disproportionate risk; this was exacerbated by insufficient protection devices and programs but above all to poor risk assessment strategies (Bennet et al., 2020). Furthermore, the overwhelming workload associated with the ambiguity of information on protocols, prevention and treatments, were causing a perceived feeling of losing control on work, and a sense of feeling worthless in front of patients (Ardebili et al., 2021).

COVID19 also impacting healthcare professionals' work-life balance. Increasing working hours negatively impacted the work-life balance (Ayar et al., 2021). Furthermore, factors such as gender, work addiction, and living with other people influenced mental health and work -life balance of the healthcare professionals (Ayar et al., 2021). Covid-19 pandemic has caused relevant changes to daily life, especially concerning social interactions, family relationships, and work life: being afraid of contracting the virus and transferring it to others, including family members, as well as forced isolation and fear of dying alone have profoundly impacted social relationships and relationships with family members, increasing the emotional stress of healthcare professionals (Ardebili et al., 2021). In this regard, the quality of life<sup>1</sup> of healthcare professionals, including the dimensions of sociability, ability to manage work-life balance and trust in the future, has worsened with the pandemic. Based on these premises, the following hypothesis was stated:

*H3. Negative working conditions increase the negative effects of COVID19 on healthcare personnel' quality of life.*

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<sup>1</sup>Quality of life has been extensively studied in the medical literature. In this study, in line with the cited literature, the most significant dimensions of quality of life were identified. In this regard, quality of life has been intended as composed by the dimensions of sociality, work-life balance, and trust in the future, which were also those dimensions on which COVID has had the greatest impact.

### **3.3 The work environment and the effects of COVID19 on healthcare personnel' quality of life**

The lack of support by top management, along with COVID-19 traumatic experience, brought the healthcare professionals to feel hopeless and disillusioned with their career (Bennet et al., 2020). When, on the contrary, positive work environment that provides spaces for collaboration, solidarity between colleagues, support among peers and from top management, motivational leadership, presence of psychological support structures and feeling valued by society helped healthcare professionals manage the daily stress related to the pandemic (Vindrola-Padros et al., 2020; Walton-Roberts, 2021; Brolan et al., 2022).

*H4: A positive work environment allows a better management of COVID19 negative working conditions on healthcare personnel' quality of life.*

*H5: A positive work environment reduces the negative effects that COVID19 generates on healthcare personnel' quality of life.*

## **4. Methodology**

Following the broader definition of accounting proposed in the literature, a questionnaire survey has been developed to investigate the impact of the pandemic on the healthcare professionals' life of a local healthcare organization located in the north of Italy. The survey was strongly desired by the top management for two reasons: the first reason was linked to the fact that a better assessment of the impact of the pandemic on healthcare personnel could inform decisions for the long-term social sustainability of the local health organization; the second reason was linked to an accountability path that the organization had undertaken, thanks to the adoption of gender budgeting. The collection and communication of data to stakeholders was therefore seen as an opportunity to be able to gather ideas in terms of positive actions for local health organization's personnel. The questionnaire included five main sections:

- a. The first section was intended to investigate the main characteristics of the healthcare professionals involved in the study. It was aimed at understanding the gender, role (administrative staff, healthcare practitioners, or technicians) and managerial responsibilities held by the respondent. In addition, further closed questions were included to identify if the respondent worked in strict contact with COVID19 patients during the pandemic, and its familial situation. Regarding the latter, the respondent was asked to clarify if he/she had to take care of dependent family members, and if she/he asked for some support from other caregivers (including the family and social network, or the external caregiving services).
- b. The second section was aimed at investigating the impact of the pandemic on working conditions, especially focusing on the perception of workloads due to the management of COVID19' patients.

- c. The third section was aimed at investigating the presence of a positive and collaborative working environment,
- d. The fourth section was aimed at investigating healthcare professionals' self-efficacy, especially the self-confidence dimension.
- e. The fifth section was intended to analyze the effects of COVID19 on personal and professional life of healthcare professionals; concerning this latter, the perceived work-life balance was deepened.

The sections from 2 to 5 of the questionnaires were providing open questions in which the respondents had to rate their agreement with specific statements, using a 7-point Likert scale (from 1=totally disagree to 7=totally agree).

In table 1, a summary of the items investigated for each variable is provided.

**Table 1: Summary of the variables and their items from the questionnaire**

Variables	Items	Literature
Self-efficacy	<ul style="list-style-type: none"> <li>• Skills awareness</li> <li>• Self-confidence</li> </ul>	Zeb et al., 2021; Garcia et al., 2021
Work environment	<ul style="list-style-type: none"> <li>• Top management' support</li> <li>• Recognized efforts</li> </ul>	Vindrola-Padros et al., 2020; Walton-Roberts, 2021; Brolan et al., 2022; Bennet et al., 2020
Working conditions	<ul style="list-style-type: none"> <li>• Changes in tasks</li> <li>• Workload</li> <li>• Decision-making responsibilities</li> </ul>	Bennet et al., 2020 Ardebili et al., 2021 Ayar et al., 2021
COVID19 effects on personal and professional life	<ul style="list-style-type: none"> <li>• Loneliness</li> <li>• Uncertainty</li> <li>• Difficulty in managing work-life balance</li> </ul>	Ardebili et al., 2021 Ayar et al., 2021
Control variables	<ul style="list-style-type: none"> <li>• Gender</li> <li>• Role</li> <li>• Contact with patients</li> <li>• Managerial responsibility</li> <li>• Support to take care of dependent family members</li> </ul>	Walton-Roberts, 2021; Wenham, 2020; Brolan et al., 2022

The survey was administered to the population of healthcare professionals of the local healthcare organization (2,721 employees) using Qualtrics, in Autumn 2021. The hypotheses identified in the literature section were then tested using structural equation modeling. Furthermore, results were controlled for gender, role, managerial responsibility, contact with patients and caregiving for family members. In fact, frontline health workers showed high degrees of infection and death, and these latter were correlated to factors such as being immigrant, having a minority status, gender, and healthcare profession (Walton-Roberts, 2021; Wenham, 2020; Brolan et al., 2022). For instance, male health

professionals' work life balance was negatively impacted by gender (Ayar et al., 2021). Living with others, increased healthcare professionals' work addiction that in turns, negatively affected their mental health (Ayar et al., 2021).

## 5. Results

887 complete questionnaires were collected starting from a population of 2,721 employees recording a good result in terms of response rate (response rate equal to 32.6%). The 77% of respondents were women, while the 23% were men. 51% of respondents had children living with them, and the 41% had parents or elders living with them. In general, 76,3% of the sample had family members living with them to take care of. When considering the need for support for caregiving, 50,5% of the respondents declared that they did not need support to manage dependent family members (either because they did not have dependent family members, or because, although they did, they managed them alone); whilst the 49,5% declared to have counted on external support to manage dependent family members. 79.1% of respondents also declared to have been in direct contact with COVID19 patients doing their job, while 20.9% have not. Regarding the role, healthcare practitioners were the majority (76%), while administrative staff and technicians represented 13% and 10% of the sample. Furthermore, 38.6% of the respondents had the responsibility for operating unit management, while the 61,4% had not.

Regarding the reliability of the constructs, Cronbach' alpha values were: 0,82 for WORKCOND; 0,7 for WORKENV; 0,8 for SE; 0,76 for COVID19EF, testifying acceptable scale reliability (Cortina, 1993). Furthermore, confirmatory factor analysis was performed to confirm the validity of the measurement model: in this regard, the items of each construct significantly loaded on the related factor. The results indicated that factor loadings were higher than the 0.70 (Hair et al., 2010).

The discriminant validity of the constructs was tested by assessing the average variance extracted (AVE): results showed that AVE for all the constructs was greater than 0.50 (SE: 0,81; WORKENV: 0,73; WORKCOND: 0,78; COVID19EF: 0,71) (Collier, 2020).

A positive work environment, characterized by top management support and recognition of healthcare professionals' efforts, was found to reduce negative effects of COVID19 on the quality of life of healthcare personnel. At the same it brought a better achievement of work-life balance. Such a direct path was significant at the 0,001 level (p-value: 0,000; B for the direct effect: -0,263). The relationship between positive WORKENV and COVID19EF on quality of life was partially mediated by WORKCOND (p-value: 0,008; confidence interval: -0,122; -0,016; Beta for the indirect effect: -0.064).

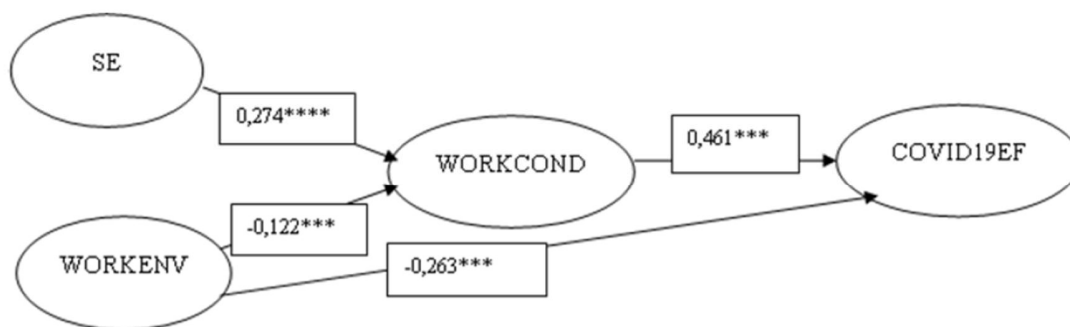
Working conditions worsened COVID19 effects on the quality of life of healthcare personnel (p-value = 0,000; B = 0, 461).

Increased SE related to acquired skill-awareness and self-confidence, on the contrary, negatively impacted on working conditions. In fact, self-efficacy brought a sense of meaningful changes in the tasks and responsibilities, and increased the perceived workload, that in turn, increased the

sense of malaise related to COVID19. As a result, the path between self-efficacy and COVID19 effects on quality of life of healthcare personnel was fully mediated by the working conditions (p-value = 0,000; confidence interval = 0,080; 0,205; B for the indirect effect = 0,138).

The results of fit indices for the measurement model showed a reasonable model fit because  $\chi^2/df$  was less than 5 (Schumacker and Lomax, 2004). All of the goodness-of-fit indices (GFIs) were higher than 0.90: GFI: 0.971, adjusted goodness-of-fit index (AGFI): 0.944, comparative fit index (CFI): 0,963; normed fit index (NFI): 0,953, Tucker–Lewis index (TLI): 0,943. The root mean square error of approximation (RMSEA) was less than the 0.06 threshold and the standardized root mean square residual (SRMR) was equal to 0.0412; both indices indicate a good model fit (Hu and Bentler, 1999).

Figure 1: Model



When controlling for gender table 2 summarizes the model fit indices and the model estimates.

**Table 2: Model fit and model estimates when controlling for gender**

	F Standardized estimates (t-values)	M Standardized estimates (t-values)	Group differences
SE on WORKCOND	0,233 (4,616)	0,356 (3,963)	3,944 (0,047*)
WENV on WORKCOND	-0,105 (-2,088)	-0,163 (-1,645)	0,394 (0,530 n.s.)
WORKCOND on COVIDEFFECT	0,472 (8,892)	0,393 (4,214)	4,122 (0,042*)
WORKENV on COVIDEFFECT	-0,216 (-4,027)	-0,435 (-3,808)	2,099 (0,147 n.s.)
SE on COVIDEFFECT	-0,025 (-0,527)	0,309 (3,407)	11,902 (0,001*)

$X^2 = 168,321$ ;  $df = 58$ ; p-value = 0,000 (<0,001); CFI = 0,960; IFI = 0,961; RMSA = 0,046



As from the results, in men increased self-efficacy brought a sense of major change in tasks and workload (p-value: 0,047); nevertheless, it helped to better manage work-life balance and the malaise due to Covid (p-value: 0,001), compared to women. For women, worsened work conditions during COVID19 generated negative feelings of uncertainty, loneliness and a perceived difficulty in balancing work life with family commitments (p-value: 0,042).

When controlling for roles, we did not find any significant difference between healthcare professionals and staff.

Then, we controlled for differences between those that were in direct contact with patients and those that were not (table 3).

**Table 3: Model fit and model estimates when controlling for the contact with patients**

	Contact Standardized estimates (t-values)	No contact Standardized estimates (t-values)	Group differences
SE on WORKCOND	0,242 (4,827)	0,329 (3,225)	0,864 (0,353)
WENV on WORKCOND	-0,161 (-3,142)	0,017 (0,186)	3,393 (0,065)
WORKCOND on COVIDEFFECT	0,492 (9,528)	0,301 (2,915)	9,350 (0,002*)
WORKENV on COVIDEFFECT	-0,231 (-4,502)	-0,302 (-2,934)	0,564 (0,453)
SE on COVIDEFFECT	0,021 (0,436)	0,220 (2,080)	2,469 (0,116)

$X^2=168,195$ ;  $df=58$ ; p-value = 0,000 (<0,001); CFI = 0,96; IFI = 0,96; RMSA =0,046

For those professionals that were in strict contact with patients during the pandemic, the perceived workload and increased responsibilities brought greater uncertainty for the future, a sense of loneliness and a worse capacity to balance work with family commitments, compared to those that were not in contact with patients (p-value = 0,002).

We also controlled for differences in those who hold managerial responsibilities compared to those that did not (table 4).

**Table 4: Model fit and model estimates when controlling for managerial responsibility**

	Managerial responsibility	No managerial responsibility	Group differences Cmin E PVALUE
	Standardized estimates (t-values)	Standardized estimates (t-values) REG WEIGHT E CR	
SE on WORKCOND	0,227 (3,342)	0,293 (5,1)	1,363 (0,243)
WENV on WORKCOND	-0,057 (-0,869)	-0,196 (-3,296)	1,997 (0,158)
WORKCOND on COVIDEFFECT	0,479 (6,514)	0,448 (7,463)	0,894(0,344)
WORKENV on COVIDEFFECT	-0,345 (-4,812)	-0,205 (-3,418)	4,183 (0,041*)
SE on COVIDEFFECT	0,039 (0,585)	0,051 (0,931)	0,026 (0,872)

$\chi^2 = 153,509$ ;  $df = 58$ ;  $p\text{-value} = 0,000 (<0,001)$ ; CFI = 0,965; IFI = 0,965; RMSA = 0,043

For those that hold managerial responsibilities, the support from top management and the perception to be valued for their efforts contributed more to reduce the malaise related to COVID19 (sense of loneliness, uncertainty, and difficulty in managing work-life balance) compared to those that did not hold managerial responsibility.

Finally, we did not find any significant differences between those healthcare professionals that needed external support to take care of their dependent family members and those who did not need it.

## 6. Discussion

The results of the structural equation modeling showed that a positive work environment, inspired by top management support and the valorization of the role of healthcare professionals, was found to reduce negative effects of COVID19 on the quality of life of healthcare professionals (Vindrola-Padros et al., 2020; Walton-Roberts, 2021; Brolan et al., 2022). At the same it helped to achieve a better work-life balance (Zeb) et al., 2021. Feeling understood, especially in the presence of complex family situations that require continuous caregiving activities, is certainly an aspect that helps to better tolerate the stress associated with reconciling work with family commitments. Furthermore, in addition to the canonical measures that guarantee the use of special permits for caregiving activities, the healthcare organization under investigation was thinking of creating an

internal kindergarten service that can help those people who have children of preschool age to care for and cannot rely on their family members' or external help.

Heavy working conditions also worsened the quality of life (personal and professional) of healthcare personnel. In this regard, the creation of listening groups and the implementation of psychological support actions can help to the extent that, through the sharing of experiences, they can act as an outlet for the personnel, reducing the sense of loneliness and uncertainty of the future. It is hoped that these results can inform human resources' decision-making in future crises, such as the one from COVID19, where these feelings have been worsened by isolation and by problems related to the safety of patients and operators.

When considering self-efficacy, the increased skill-awareness and self-confidence during COVID19 negatively impacted on working conditions. COVID19 has undoubtedly been a "training ground" for healthcare professionals, who have been able to see increased skills and knowledge for patient care, experimenting directly on field, in the absence of consolidated therapies. This was possible thanks to a sharing of information between professionals, both inside and outside the organization. However, it also triggered a mechanism whereby the individuals totally immersed themselves in the work (Garcia et al., 2021) contributing to an increasing sense of work addition and perception of heaviness. Perceived increased responsibilities and tasks, in this sense, increased the feelings of loneliness, uncertainty and difficulty in managing work-life balance. In this regard, practices to promote emotional release, such as group physical exercise within the local health organization, can contribute, on the one hand, to guaranteeing an outlet for personnel, and on the other hand, to maintaining that sociability that has been lost with the pandemic.

## **7. Conclusions**

The paper showed how accounting for the impact of the pandemic of healthcare professionals can inform sustainable human resources practices (Rinaldi, 2022; Grossi et al., 2020). To conclude, non-financial information gathered through the survey made it possible to quantify the effects of the pandemic on healthcare personnel, and to identify appropriate solutions that public healthcare organizations can implement to prevent or reduce these negative externalities. Although the transition to sustainable healthcare systems has been warmly recommended by international institutions operating in the healthcare world, the implementation of sustainable practices is still rather slow, especially about the human resources' dimension. The study contributes to prove the key role of accounting systems to facilitate the sustainability transition, as accounting allows to monitor not only the consequences generated by the sustainable practices aimed at providing greater support to healthcare professionals during crises, but above all, to identify others that can help limit (if not even prevent) the negative effects on the quality of life of healthcare professionals. This way, accounting can act as a moral practice (Carnegie et al., 2022; Sidaway et al, 2023), enabling positive actions that contribute to the long-term social sustainability of human resources

(Rinaldi, 2022). Limitations of the study lies in the fact that a single case study has been considered for the analysis. As a result, extending the analysis to other cases may support a greater generalizability of results. Furthermore, the study focuses on the ability to gather data that can inform decisions in times of crisis to ensure human resources' sustainability, but only partially it captures how the collected information has been used to inform further practices. In this sense, the local healthcare organization under analysis has currently embarked on a process of consultation with the stakeholders, to identify appropriate human resource practices able to consider the complexity of the personnel' situations emerging with the pandemic. In this regard, conducting a longitudinal case study would be appropriate to understand whether this consultation can lead to the implementation of human resource practices aimed at improving the professional and personal conditions of the personnel.

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