Moral Dilemmas Among Workers at a University Hospital During the COVID-19 Pandemic in Brazil

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Article

Moral Dilemmas Among Workers at a University Hospital During the COVID-19 Pandemic in Brazil

Anaclaudia Gastal Fassa [1,*], Clarissa Fialho Hartmann [1], Maitê Peres de Carvalho [2], Betina Daniele Flesch [1], Laura Moreira Goularte [1], Felipe Mendes Delpino [3] and Ana Laura Sica Cruzeiro Szortyka [4]

[1] Postgraduate Program in Epidemiology, Department of Social Medicine, Federal University of Pelotas (UFPEL), Rio Grande do Sul, Brazil
[2] Occupational Therapy Course, Federal University of Pelotas (UFPEL), Rio Grande do Sul
[3] Postgraduate Program in Dentistry, Federal University of Pelotas, Rio Grande do Sul, Brazil
[4] Psychology Course, Federal University of Pelotas (UFPEL), Rio Grande do Sul, Brazil
* Correspondence: anaclaudia.fassa@gmail.com

Highlights

Public health relevance—How does this work relate to a public health issue?

- This study examines the occurrence of moral dilemmas and their associated factors among healthcare workers during a public health emergency.
- Moral dilemmas are shaped by work processes and working conditions and have important consequences for workers' mental health.

Public health significance—Why is this work of significance to public health?

- The prevalence of moral dilemmas was high among healthcare workers, particularly among residents and nurses, and was higher among those working both day and night shifts, facing high work demands, low job control, and inadequate access to personal protective equipment (PPE).
- The availability of social support and adequate rest facilities was associated with lower exposure to moral dilemmas.

Public health implications—What are the key implications for practitioners, policymakers, and researchers?

- Promoting adequate staffing, social support, welcoming work environments, democratic and participatory leadership, professional autonomy, and engagement in care-related decision-making is essential to reduce moral dilemmas among healthcare workers.
- These measures should be incorporated into preparedness and adaptation policies for future health crises, including outbreaks, epidemics, and climate change–related emergencies.

Abstract

Background: This study aimed to identify sociodemographic and occupational factors associated with facing moral dilemmas among workers at the Federal University of Pelotas-RS Teaching Hospital who worked on-site during the pandemic. Methods: A cross-sectional study was conducted in 2020 with all workers, including health professionals, support staff, and administrative personnel. Questions about moral dilemmas were grouped into two outcomes: witnessing behaviors or attitudes, and feeling pressured to act in disagreement with what they believed was right. Associations were estimated using Poisson regression with robust variance, based on a hierarchical model. Results: A total of 1,158 workers participated, most of whom were women (76.1%). The prevalence of moral dilemmas was 44% for witnessing and 15% for feeling pressured. Younger age, higher education, being a resident, working both day and night shifts, lack of PPE, and having an active or high-strain job were positively associated with both types of dilemmas, whereas the availability of social support and adequate resting areas reduced their occurrence. Conclusions:

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Reducing moral dilemmas requires promoting democratic leadership, ensuring adequate staffing, strengthening professional autonomy, encouraging social support, and creating rest spaces. These arrangements are essential for promoting workers' psychological well-being.

Keywords: moral dilemma; mental health; occupational health; COVID-19

1. Introduction

During the Covid-19 pandemic, healthcare professionals faced shortages of hospital beds, both in wards and Intensive Care Units, as well as equipment such as ventilators, supplies, and medications. In this context, they were frequently required to make decisions that directly affected patient survival. The spread of anti-scientific narratives generated pressure to adopt treatments without scientific evidence, compromising the technical autonomy of professionals. Furthermore, they faced long working hours, shortages of personal protective equipment (PPE), and delays in accessing vaccines, remaining exposed to a high risk of contamination, with potential consequences for themselves and their families. All these factors may have generated moral dilemmas, that is, conflicts about what is right or wrong based on personal beliefs and values, and ethical dilemmas, related to conflicts about how to act correctly according to a broader system of norms, usually of a professional or social nature [1].

Some studies conducted during the pandemic reported high prevalence of moral dilemmas among healthcare professionals (50%), especially among women, doctors, and nurses, which may be related to gender specificities, professional role, and local context of practice [2,3]. Another study identified an even higher prevalence (66.5%) in a group composed mostly of female medical doctors [4]. In addition, the experience of moral dilemmas among frontline healthcare professionals was reported, especially in situations of resource scarcity (58.3%) and use of PPE which hindered care (31.7%) [5]. Evidence indicates that 60% to 70% of nurses experienced ethical dilemmas involving access to care for patients without Covid-19, the appropriate sharing of information with colleagues, and transparent communication with patients and families [6].

A scoping review highlighted the factors associated with the moral dilemmas faced by this population, such as high workload, need for support, and evidence-based practice. According to this study, in Norway, district physicians had to deal with more responsibilities in decision-making and ethical dilemmas, due to working in larger communities and municipalities. The experiences of community health professionals, in turn, remained limited to the scope of their respective health units [7]. In some studies, female sex was associated with more episodes of moral dilemmas, while older age was associated with fewer occurrences of this outcome. In addition, professionals who worked directly with patients reported greater moral distress, especially those involved in the treatment of Covid-19, who showed higher levels than those not working in this area. [2,8].

Previous analyses prior to this study indicated a high prevalence of moral dilemmas among hospital workers and pointed to the significant impact of moral dilemmas on mental health, finding that workers who faced three or more types of moral dilemmas had twice the risk of experiencing a major depressive episode compared to those who did not face any moral dilemmas [9]. However, further analysis is needed to identify the sociodemographic and occupational aspects that increase the risk of experiencing moral dilemmas. Thus, the aim of this study is to assess the factors associated with moral dilemmas among tertiary-level healthcare workers who were involved in the response to Covid-19. This knowledge is essential for developing strategies that strengthen health system resilience to public health emergencies.

2. Materials and Methods

A cross-sectional study was conducted with all workers (n=1731) linked to the University Hospital of the Federal University of Pelotas, Rio Grande do Sul, Brazil. The study focused not only

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on healthcare professionals, but also on support and administrative staff, including workers contracted by the Brazilian Hospital Services Company, public servants under the Single Legal Regime, and outsourced workers who worked in person during the pandemic period.

Data collection was conducted between October and December 2020, following the first peak of the disease in the municipality. The Teaching Hospital, part of the Unified Health System (SUS), served as a reference center for the care of patients with Covid-19 during the pandemic. Teaching Hospital workers were invited to participate in the study via institutional email and through announcements posted on the hospital's website, social media, and printed posters.

To assess coping with moral dilemmas, it was investigated whether the worker witnessed situations or felt pressured to act in disagreement with what he considered correct. The questions in the present study were inspired by the Moral Injury Events Scale, a self-reported instrument developed to identify morally distressing experiences among military personnel in conflict zones [10]. The questions were:

- How often, during the Covid-19 pandemic, in your work at the Teaching Hospital, did you witness situations related to clinical conduct that disagreed with what you considered to be correct?

- How often, during the Covid-19 pandemic, in your work at the Teaching Hospital, did you witness attitudes among colleagues or towards patients that disagreed with what you considered to be correct?

- How often, during the Covid-19 pandemic, did you feel pressured by colleagues or superiors to act in disagreement with what you considered to be correct regarding clinical conduct?

- How often, during the Covid-19 pandemic, did you feel pressured by colleagues or superiors to act in disagreement with contractual norms?

- How often, during the Covid-19 pandemic, did you feel pressured by patients or family members to act in disagreement with what you considered to be correct?

The response options for each question were “never or almost never”; “rarely”; “sometimes” and “frequently”. From these questions, two outcomes were defined: “witnessing”, derived from the first two questions, and “feeling pressured”, derived from the last three questions. The reference group was considered to be those who answered “never or almost never/rarely” to all questions considered in each outcome, and the positive outcome was considered to be those who answered “sometimes/frequently” to at least one of them.

The independent variables comprised sociodemographic characteristics, aspects related to work organization, and workloads. Sociodemographic characteristics consisted of age in complete years, biological sex, skin color according to the categories defined by the Brazilian Institute of Geography and Statistics, education level, and socioeconomic status based on the Brazilian Economic Classification Criteria (CCEB/ABEP 2020). Aspects related to work organization encompassed profession (medical doctors, resident (several professions), nurse, nursing technician or assistant, support staff, administrative staff, or other health professionals), type of employment (permanent/civil service, resident, emergency/temporary, or outsourced), type of shift (day, night, or an equal number of day and night shifts), and assignment to sectors providing care for patients with COVID-19 (COVID-19 ward or COVID-19 intensive care unit). Workloads included the evaluation of occupational stress assessed using the demand–control model (passive job—low demand and low control; active job—high demand and high control; low-strain job—low demand and high control; high-strain job—high demand and low control), social support (high or low), availability of a place to rest during work breaks, adequacy of staffing levels, the need to postpone physiological needs, lack of PPE, and participants’ concern about PPE quality.

The questionnaire was implemented on the REDCap platform and underwent a pre-test with healthcare professionals from other services to correct possible flaws. The instrument was self-administered and could be completed either in person, using tablets at the hospital in a room designated for research, or online via a link, for workers who were temporarily working remotely or who chose to respond outside of working hours. The field team consisted of four supervisors and 15 trained interviewers, available in person and by telephone to receive workers, guide them in

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completing the questionnaire, and clarify any doubts when necessary. Considering the context of the pandemic, the team followed biosafety standards regarding the sanitization of materials and furniture, as well as the use of personal protective equipment. To minimize losses, interviewers and supervisors contacted non-responding workers by telephone and actively sought them out in hospital departments, inviting them to participate in the study. Department heads were also contacted to request support in inviting and releasing workers to participate. At that time, detailed instructions were provided on completing the online questionnaire for those who preferred this modality.

Statistical analyses were performed using Stata version 15.1. Initially, the five questions related to moral dilemmas, and the two outcomes were described. The association between sociodemographic and occupational aspects with the outcomes was estimated using prevalence ratios and their respective 95% confidence intervals. Statistical significance was assessed using the Wald chi-square test for categorical variables and the test for linear trend for continuous variables. Multivariate analysis followed a three-level hierarchical model, with sociodemographic characteristics at the first level; factors related to work organization at the second level; and workloads at the third level. Poisson regression with robust variance and backward selection was applied. Variables with p-value < 0.20 were retained in the model to control for confounding factors, while those with p-value < 0.05 were considered associated.

The project was approved by the Research Ethics Committee of the Faculty of Medicine of the Federal University of Pelotas (process no. 4.040.039, dated May 21, 2020). All participants were made aware of the research topic, assured of the confidentiality of their personal information and advised of their right to refuse participation or withdraw at any time without penalty. Free and informed consent was obtained electronically, either via tablet or online. The questionnaire was made available only after the participants indicated their agreement with the informed consent terms.

3. Results

A total of 1,158 workers participated in the study, corresponding to a response rate of 67% of the hospital workforce. Among participants, 76.1% were female; 74.4% self-identified as white; 72% were aged between 30 and 49 years; 38.3% had completed postgraduate education; 67.6% belonged to socioeconomic level A or B; 66.1% were married or living with partners; and 62.3% had permanent typo of contract. Nursing technicians and assistants accounted for 17.5% of participants, while and residents from various professional backgrounds represented 4.7% (Table 1).

Table 1. Description of the sociodemographic and occupational characteristics of workers at a Teaching Hospital. Pelotas-RS, Brazil, 2020 (n = 1.158).

Variables	N	% (95%IC)
Sex		
Male	277	23,9 (21,5 – 26,4)
Female	881	76,1 (73,6 – 78,5)
Age (n = 1.156)		
19 - 29 anos	133	11,5 (9,8 – 13,5)
30 – 39 anos	459	39,7 (36,9 – 42,6)
40 – 49 anos	373	32,3 (29,5 – 34,9)
50 anos ou mais	191	16,5 (14,5 – 18,8)
Skin color		
White	862	74,4 (71,8 – 76,8)
Black	142	12,3 (10,5 – 14,4)
Brown	143	12,3 (10,6 – 14,4)
Yellow	7	0,6 (0,2 – 1,3)
Indigenous	5	0,4 (0,2 – 1,0)
Marital status		

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Single or without a partner	393	33,9 (31,2 – 36,7)
Married or with a partner	766	66,1 (63,3 – 68,8)
Education level (n = 1.140)		
Illiterate to High school or technical course complete	332	29,1 (26,5 - 31,8)
Incomplete or complete higher education	371	32,5 (29,9 – 35,3)
Complete postgraduate studies	437	38,3 (35,5 – 41,2)
Socioeconomic level (ABEP) (n=1.139)		
A	165	14,5 (12,6 – 16,7)
B	605	53,1 (50,2 – 56,0)
C-D-E	369	32,4 (29,8 – 35,2)
Profession		
Medical Doctors	108	9,3 (7,8 - 11,1)
Residents	54	4,7 (3,6 - 6,0)
Nurses	135	11,7 (9,9 - 13,6)
Nursing technicians and assistants	318	27,5 (24,9 - 30,1)
Support	242	20,9 (18,6 - 23,3)
Administrative staff	117	10,1 (8,5 - 11,9)
Other healthcare professionals	184	15,9 (13,9 - 18,1)
Employment type		
Permanent/civil servant	721	62,3 (59,4 - 65,0)
Resident	54	4,7 (3,6 - 6,0)
Emergency/temporary	112	9,7 (8,1 - 11,5)
Outsourced	271	23,4 (21,0 - 25,9)
Shift		
Day shift	864	74,6 (72,0 - 77,0)
Night shift	237	20,4 (18,2 - 22,9)
Same number of shifts	57	4,9 (3,8 - 6,3)
Covid ward		
No	989	85,4 (83,2 - 87,3)
Yes	169	14,6 (12,7 - 16,8)
Covid ICU		
No	991	85,6 (83,4 - 87,5)
Yes	167	14,4 (12,5 - 16,6)
Social support		
Low	411	35,5 (32,8 - 38,3)
High	747	64,5 (61,7 - 67,3)
Demand-control model		
Passive job	290	25,0 (22,6 - 27,6)
Active job	388	33,5 (30,8 - 36,3)
Low-strain job	247	21,3 (19,1 - 23,8)
High-strain job	233	20,1 (17,9 - 22,5)
Rest area (n=915)		
No	447	48,8 (45,6 - 52,1)
Yes	468	51,1 (47,9 - 54,4)
Lack of PPE (n=1,156)		
No	773	66,9 (64,1 - 69,5)
Yes	383	33,1 (30,5 - 35,9)
Concern about PPE quality (n=1,156)		
No	299	25,9 (23,4 - 28,5)
Yes	857	74,1 (71,5 - 76,6)

N-Number of observations; %-percentage; CI-confidence interval. ABEP - Brazilian Economic Classification Criteria. ICU – Intensive Care Unit. PPE - Personal Protective Equipment. Source: authors.

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The most frequent moral dilemmas involved witnessing situations related to clinical conduct that disagreed with what participants considered appropriate (37%) and witnessing attitudes among colleagues or towards patients that disagreed with what was considered correct (33.6%). The prevalence of feeling pressured by colleagues or superiors to act in disagreement with what was considered correct regarding clinical conduct was 15.2%, feeling pressured by colleagues or superiors to act in disagreement with contractual norms was 11.2, and feeling pressured by patients or family members to act in disagreement with what was considered correct was 10.9%. The prevalence of moral dilemmas considering the two questions related to witnessing attitudes that disagreed with what the participant considered correct was 44%, while considering the three questions about feeling pressured in the work environment, the prevalence was 15%. (Table 2).

Table 2. Witnessing clinical conduct or attitudes and feeling pressured to act in a way that contradicts what you consider correct. Workers at a Teaching Hospital, 2021, Pelotas, RS, Brazil (N=1.158).

	Witnessing		Feeling pressured		
Variables	**Clinical conduct (%)**	**Attitudes (%)**	**Clinical conduct (%)**	**Contractual norms**	**Patients families**
Sex					
Male	43,3	36,5	17,7	13,7	12,3
Female	36,0	32,7	14,4	10,4	10,4
Age					
19-29	44,4	41,4	21,8	14,3	14,3
30-39	41,4	34,9	17,2	12,4	11,3
40-49	36,2	31,6	10,7	9,4	9,4
≥50	27,8	29,3	14,7	10,0	10,5
Education level					
Illiterate to High school or technical course complete	28,6	25,3	9,6	8,4	9,6
Incomplete or complete higher education	40,4	34,2	13,8	10,8	10,2
Complete postgraduate studies	42,8	40,1	20,8	13,7	12,4
Profession					
Medical Doctors	33,3	31,5	20,4	15,7	15,7
Residents	61,1	57,4	27,8	24,1	25,9
Nurses	57,8	51,9	31,1	20,0	17,8
Nursing technicians and assistants	45,6	39,3	13,8	12,9	12,9
Support	23,1	18,2	7,4	5,8	5,0
Administrative staff	13,7	13,7	4,3	2,6	1,7
Other healthcare professionals	39,7	37,5	16,3	8,2	8,7
Employment type					
Permanent/competitive exam	42,7	38,3	18,3	13,3	12,1
Resident	61,1	57,4	27,8	24,1	25,9
Emergency/temporary	26,8	28,6	6,3	5,4	7,1
Outsourced	24,4	18,5	8,1	5,5	6,3
Shift					
Day shift	35	32,6	13,2	10,2	9,7
Night shift	43,9	33,3	17,7	12,2	12,7
Same number of shifts	50,1	49,1	35,1	22,8	21,1
Covid ward					
No	35,9	31,3	14,0	10,6	9,9
Yes	48,5	46,8	22,5	14,8	16,6
Covid ICU					

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No	33,6	32,5	15,0	11,0	10,4
Ye	44,3	40,1	16,2	12,6	13,8
Social support					
Low	56,9	53,0	28,9	21,7	18,7
High	27,2	22,9	7,63	5,49	6,56
Demand-control model					
Passive job	21,0	18,3	3,5	2,8	3,1
Active job	51,0	44,1	23,7	16,8	16,2
Low strain job	28,7	27,1	4,9	3,6	3,2
High strain job	45,9	42,1	26,6	20,6	19,7
Rest area (n=915)					
No	45,4	39,6	19,9	14,5	13,2
Yes	32,7	28,4	10,3	6,84	7,91
Lack of PPE (n=1,156)					
No	29,5	27,3	9,70	7,24	8,80
Yes	54,6	46,5	26,4	19,3	15,1
Concern about PPE quality (n=1,156)					
No	16,7	17,1	7,02	3,34	3,34
Yes	45,2	39,4	18,1	14,0	13,5
Total	37,7	33,6	15,2	11,2	10,9

% Prevalence. ICU – Intensive Care Unit. PPE - Personal Protective Equipment. Witnessing: Clinical Conduct: How often, during the Covid-19 pandemic, in your work at the Teaching Hospital, did you witness situations related to clinical conduct that were inconsistent with what you considered correct? And attitudes among colleagues or towards patients that were inconsistent with what you considered correct? Feeling pressured: How often, during the Covid-19 pandemic, did you feel pressured by colleagues or superiors to act in a way that was inconsistent with what you considered correct regarding clinical conduct? And regarding contractual norms? And by patients or family members?

Table 3 presents the factors associated with witnessing clinical conduct or attitudes that disagreed with what the participant considered correct. This dilemma was inversely associated with age and directly associated with education level. Residents (PR 1.84, 95%CI 1.40–2.44), nurses (PR 1.50, 95%CI 1.08–2.11), nursing assistants and technicians (PR 1.59, 95%CI 1.19–2.13), and other healthcare professionals (PR 1.32, 95%CI 0.99–1.76) faced this type of dilemma significantly more often than medical doctors. Workers in the administrative sector experienced 51% (95%CI 0.31–0.77) fewer of these types of dilemmas than medical doctors. Workers with the same number of day and night shifts faced 39% (95%CI 1.11–1.75) more of these dilemmas than day shift workers. Those with social support faced 28% (95%CI 0.62–0.82) fewer of these types of dilemmas. Workers with active jobs (PR 1.45, 95%CI 1.15–1.82) and high-strain jobs (PR 1.31, 95%CI 1.03–1.66) experienced significantly more of these types of dilemmas than those with passive jobs. Those who had social support experienced 28% (95%CI 0.62 – 0.82) fewer of these types of dilemmas, while workers who reported a lack of PPE and concern about the quality of PPE faced 68% (95%CI 1.15–1.50) and 48% (95%CI 1.19 – 1.95) more of these types of dilemmas, respectively.

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Table 3. Prevalence and factors associated with moral dilemmas arising from witnessing clinical conduct or attitudes that disagreed with what the participant considered correct. Workers at a Teaching Hospital during the Covid-19 pandemic. Pelotas, RS, Brazil, 2021 (N=1.158).

Variables	Prevalence (%)	Witnessing Crude PR (CI 95%)	p-value	Witnessing Adjusted PR (95% CI)	p-value
Level 1: Sociodemographic Aspects					
Sex			0,093		0,179
Male	48,7	Ref		Ref	
Female	43,1	0,89 (0,77 – 1,02)		0,91 (0,79 – 1,05)	
Age			0,042*		0,094*
19-29	50,3	Ref		Ref	
30-39	47,5	0,94 (0,77 – 1,14)		0,96 (0,78 – 1,17)	
40-49	42,9	0,85 (0,69 – 1,05)		0,89 (0,72 – 1,10)	
≥50	36,6	0,73 (0,56 – 0,94)		0,75 (0,58 – 0,97)	
Education level			0,001*		<0,004*
Illiterate to High school or technical course complete	36,2	Ref		Ref	
Incomplete or complete higher education	46,9	1,30 (1,08 – 1,55)		1,26 (1,05 – 1,51)	
Complete postgraduate studies	49,4	1,37 (0,31 – 0,42)		1,33 (1,12 – 1,59)	
Level 2: Work Organization					
Profession			<0,001		<0,001
Medical Doctors	39,8	Ref			
Nurses	68,5	1,72 (1,30 – 2,30)		1,50 (1,08 – 2,11)	
Residents	64,5	1,61 (1,24 – 2,10)		1,84 (1,40 – 2,44)	
Nursing technicians and assistants	52,5	1,32 (1,02 – 1,70)		1,59 (1,19 – 2,13)	
Support	28,9	0,73 (0,54 – 0,99)		0,85 (0,60 – 1,22)	
Administrative staff	19,7	0,50 (0,32 – 0,76)		0,49 (0,31 – 0,77)	
Other healthcare professionals	47,9	1,20 (0,91 – 1,58)		1,32 (0,99 – 1,76)	
Shift			0,014		<0,005
Day shift	42,8	Ref		Ref	
Night shift	46,9	1,09 (0,94 – 1,30)		0,91 (0,77 – 1,05)	
Same number of shifts	59,7	1,39 (1,11 – 1,75)		1,39 (1,11 – 1,75)	
Level 3: Work Loads					
Social support			<0,001		<0,001
Low	64,2	Ref		Ref	
High	33,6	0,52 (0,46 – 0,59)		0,72 (0,62 – 0,82)	
Demand-control model			<0,001		<0,001
Passive job	28,5	Ref		Ref	
Active job	56,7	1,98 (1,62 – 2,44)		1,45 (1,15 - 1,82)	
Low strain job	35,6	1,24 (0,97 – 1,59)		1,02 (0,77 - 1,34)	
High strain job	53,3	1,86 (1,50 – 2,31)		1,31 (1,03 - 1,66)	
Rest area (n=915)			<0,001		0,053
No	52,1	Ref		Ref	
Yes	38,7	0,74 (0,64 - 0,86)		0,87 (0,76 - 1,00)	
Lack of PPE (n=1,156)			<0,001		<0,001
No	36,1	Ref		Ref	

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Yes	61,6	1,70 (1,51 - 1,93)		1,32 (1,15 - 1,50)	
Concern about PPE quality (n=1,156)			<0,001		<0,001
No	22,7	Ref		Ref	
Yes	52,2	2,29 (1,84 - 2,85)		1,52 (1,19 – 1,95)	

* p-value for linear trend. PR – Prevalence Ratio. CI – Confidence Interval. PPE - Personal Protective Equipment. The "Witnessing" outcome considered the following questions: How often, during the Covid-19 pandemic, in your work at the Teaching Hospital, did you witness situations related to clinical conduct that were inconsistent with what you considered correct? How often, during the Covid-19 pandemic, in your work at the Teaching Hospital, did you witness attitudes among colleagues or towards patients that were inconsistent with what you considered correct? The reference group was considered to be those who answered "no" to both questions, and the positive outcome was considered to be those who answered "yes" to at least one of them.

Table 4 presents the factors associated with feeling pressured by colleagues or superiors to perform clinical conduct that disagreed with what was considered correct, feeling pressured to act in disagreement with contractual norms, or feeling pressured by patients or family members to act in disagreement with what the participant considered correct. This dilemma also showed an inverse association with age and a direct association with education level. Residents faced this dilemma 1.98 (95%CI 1.16-3.38) times more often than medical doctors. Those who had the same number of day and night shifts experienced this type of dilemma 2.53 (95%CI 1.61-3.97) times more often than day shift workers. Workers with active (PR 3.70 95%CI 1.71–8.00) and high-strain jobs (PR 4.30 95%CI 2.02-9.15) experienced significantly more of this type of dilemma than those with passive jobs. Those who had social support and an adequate rest area for their breaks faced 50% (95%CI 0.35–0.71) and 35% (95%CI 0.46–0.92) fewer of these dilemmas, respectively, while workers who reported a lack of PPE experienced 93% (95%CI 1.41–2.66) more of these dilemmas.

Table 4. Prevalence and factors associated with moral dilemmas arising from feeling pressured by colleagues or superiors to perform clinical conduct that disagreed with what was considered correct, to act in disagreement with contractual norms, or feeling pressured by patients or family members to act in disagreement with what the participant considered correct. Workers at a Teaching Hospital during the Covid-19 pandemic. Pelotas, RS, Brazil, 2021 (N=1.158).

Variables	**Prevalence (%)**	**Feeling pressured Crude PR (95%CI)**	**p-value**	**Feeling pressured Adjusted PR (95%CI)**	**p-value**
Level 1: Sociodemographic Aspects					
Age			0,019*		0,006*
19-29	22,6	Ref		Ref	
30-39	16,7	0,74 (0,48 – 1,15)		0,64 (0,43 – 0,96)	
40-49	10,3	0,46 (0,28 – 0,76)		0,44 (0,28 – 0,70)	
≥50	14,9	0,65 (0,38 – 1,12)		0,62 (0,38 – 1,00)	
Education level			0,001*		<0,001*
Illiterate to High school or technical course complete	9,2	Ref		Ref	
Complete or incomplete higher education	13,2	1,30 (0,80 – 2,10)		1,32 (0,84 – 2,05)	
Complete postgraduate studies	20,9	2,10 (1,36 – 3,25)		2,19 (1,46 – 3,28)	
Level 2: Work Organization					
Profession			<0,001		<0,001
Medical Doctors	20,4	Ref		Ref	

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Nurses	32,5	1,74 (0,91 – 3,34)		1,61 (0,82 - 3,15)	
Residents	32,5	1,52 (0,89 – 2,59)		1,98 (1,16 – 3,38)	
Nursing technicians and assistants	13,2	0,71 (0,40 – 1,22)		0,92 (0,49 – 1,72)	
Support	7,3	0,34 (0,17 – 0,66)		0,58 (0,27 – 1,23)	
Administrative staff	3,6	0,11 (0,03 – 0,35)		0,24 (0,08 – 0,71)	
Other healthcare professionals	16,0	0,74 (0,41 – 1,33)		0,98 (0,55 – 1,73)	
Shift			<0,001		<0,001
Day shift	13,0	Ref		Ref	
Night shift	17,4	1,35 (0,96 – 1,97)		1,25 (0,87 – 1,79)	
Same number of shifts	37,8	2,61 (1,63 – 4,20)		2,53 (1,61 – 3,97)	
Level 3: Workforce					
Social support			<0,001		<0,001
Low	29,5	Ref		Ref	
High	7,5	0,21 (0,15 – 0,30)		0,50 (0,35 – 0,71)	
Demand-control model			<0,001		<0,001
Passive	3,5	Ref		Ref	
Active	24,6	8,20 (3,93 – 17,1)		3,70 (1,71 – 8,00)	
Low demand	4,9	0,98 (0,40 – 2,48)		1,14 (0,45 – 2,80)	
High demand	26,9	9,50 (4,50 – 20,1)		4,30 (2,02 – 9,15)	
Rest area (n=915)			<0,001		0,017
No	20,2	Ref		Ref	
Yes	9,53	0,47 (0,33 - 0,66)		0,66 (0,47 – 0,93)	
Lack of PPE (n=1,156)			<0,001		<0,001
No	9,32	Ref		Ref	
Yes	26,6	2,85 (2,13 - 3,81)		1,93 (1,41 – 2,66)	

*P-value for linear trend. PR – Prevalence Ratio. CI – Confidence Interval. PPE - Personal Protective Equipment. The outcome "Feeling pressured" considered the following questions: - How often, during the Covid-19 pandemic, did you feel pressured by colleagues or superiors to act in a way that contradicted what you considered correct regarding clinical practices? - How often, during the Covid-19 pandemic, did you feel pressured by colleagues or superiors to act in violation of contractual norms? - How often, during the Covid-19 pandemic, did you feel pressured by patients or family members to act in violation of what you considered correct? The reference group was considered to be those who answered "no" to all three questions, and the positive outcome was considered to be those who answered "yes" to at least one of them.

4. Discussion

This study identified a high prevalence of moral dilemmas among healthcare professionals during the study period, reflecting adverse working conditions in healthcare services that may have been exacerbated during the Covid-19 pandemic. Younger workers, those with higher levels of education, and those who worked both day and night shifts experienced higher levels of both witnessing- and pressure-related moral dilemmas. The availability of social support and an adequate place for rest were associated with reduced coping with moral dilemmas, whereas lack of PPE, active job, and high-strain job were associated with increased coping. Residents, nurses, nursing assistants, and technicians, as well as those who reported concerns about PPE quality, were at greater risk of witnessing situations that conflicted with their values, while the risk of feeling pressured was higher among residents compared with medical doctors.

The prevalence of moral dilemmas found in this study was slightly lower than that reported in international research, which has documented rates exceeding 50% among healthcare professionals [2–5]. This variation may be explained by contextual and methodological differences, such as the

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severity of the pandemic in the study setting, the timing of data collection, the instrument used to assess moral dilemmas, and the sociodemographic characteristics of the sample, particularly participants' age, sex, and profession. While the present study was conducted among workers at a university hospital in Southern Brazil during the second wave of the pandemic, other studies have involved multiple hospitals in Norway, the United States, Australia, and the Czech Republic, and were carried out at different stages of the health crisis [2–5].

In agreement with this study, research conducted in Intensive Care Units in Canada, hospitals in Norway, and the United States, both in pre and post-pandemic contexts, identified that younger professionals, such as medical residents, reported greater exposure to morally challenging situations [2,11]. During the pandemic, many professionals assumed responsibilities disproportionate to their autonomy, frequently executing care plans developed by superiors without effective participation in decisions [12]. Less practical experience, submission to hierarchy in the hospital environment, and difficulty in confronting institutional norms compromise autonomy and increase psychological suffering [12,13]. Furthermore, the routine of resident physicians, characterized by long hours, sleep deprivation, and low predictability about their daily work, exacerbates emotional and moral vulnerability [13].

Consistent with the findings of this study, previous research indicates that professionals with higher levels of education, such as graduate nurses, are more prone to experiencing moral dilemmas than those with technical training, due to their greater involvement in clinical decision-making and increased accountability for their actions [11,14]. In addition, higher levels of moral distress among nurses, residents, and nursing technicians compared with senior physicians have been attributed both by their responsibility for direct patient care and to their lower decisional autonomy [2,12,14,15]. Other studies have shown that administrative professionals, or those who did not work on the front line, experienced significantly lower levels of moral stress, with a prevalence of 7%, compared to more than 60% among healthcare professionals [14].

The higher occurrence of moral dilemmas among workers who alternate between day and night shifts may be related to their exposure to differing team dynamics, leadership styles, and clinical management approaches, which increases the likelihood of witnessing behaviors that diverge from their ethical and professional values [16]. Shift work also entails navigating different informal protocols, variations in interdisciplinary communication, and fluctuations in medical or managerial supervision, which can generate insecurity and moral conflict [17,18]. Previous studies indicate that leadership discontinuity and cultural differences between shifts contribute to ethically uncomfortable situations, particularly in contexts of work overload and resource scarcity [3,12,16,19].

The higher frequency of moral dilemmas among workers in active jobs highlights the role of high demands in this outcome. In high-pressure situations, such as those experienced during the pandemic, large numbers of patients, high clinical severity and the urgency of decision-making impose extreme cognitive, emotional, and organizational demands, thereby intensifying the confrontation with moral dilemmas. Studies show that work overload is a major source of moral stress among nurses, particularly in contexts involving double shifts or long working hours, which compromise their ability to act in accordance with their professional judgment [2,20]. Furthermore, several studies have identified excessive work demands as one of the main factors associated with increased moral distress during the pandemic, whereas conditions that enable adherence to good clinical practices function as protective factors [9,16,17,21,22].

Furthermore, the higher occurrence of moral dilemmas among workers in high-strain jobs highlights the relevance of low control over work, in high-demand contexts, in the occurrence of moral dilemmas. Limited decisional autonomy increases the likelihood of ethical conflicts, as workers may be required to adopt behaviors that contradict their values or their technical training, leading to the perception that they are unable to provide optimal care [12]. During the Covid-19 pandemic, many healthcare professionals experienced reduced social support due to changes in work routines and social distancing measures [23]. Although no studies were identified that directly examined the association between social support and moral dilemmas, the observed negative association is

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consistent with the literature identifying social support as a protective factor against anxiety, depression, and sleep disorders [9,24].

The association between lack of PPE and moral dilemmas is consistent with findings from studies conducted in the United States, Kenya, and Canada, which showed that the scarcity or rationing of PPE, widely reported across countries during the pandemic, was a critical factor in moral distress, particularly in the absence of adequate training for allocating scarce resources [4]. The lack of PPE places healthcare professionals in conflict between their duty of care and self-preservation, reinforcing the ethical and emotional vulnerability experienced within hospital settings during the pandemic. A North American study found that 32% of professionals perceived that the use of PPE limited patient care, thereby constituting a moral dilemma. However, it also observed that nurses and intensive care unit professionals experienced less emotional impact from PPE use, possibly due to greater familiarity with high biosafety environments [5].

The study included all hospital workers and was not restricted, as in other studies, to a specific professional group. The sample comprised a large number of workers and achieved a good response rate. Data collection was conducted over a short period, capturing a specific moment of the pandemic. The questionnaire was self-administered, ensuring participants' privacy when reporting moral dilemmas. However, no standardized instruments were available to assess moral dilemmas among healthcare workers; therefore, the questionnaire was developed by the authors, which may limit the comparability of the findings with those of other studies. The types of moral dilemmas evaluated may be more characteristic of those experienced by frontline workers. Despite efforts to preserve the participants' privacy while completing the questionnaire, information bias cannot be ruled out, particularly given that the questionnaire was not anonymous, this bias may have led to an underestimation of the prevalence of moral dilemmas prevalence.

Moral dilemmas tend to intensify in the context of health crises; however, they are also relevant in the routine of healthcare services. Therefore, further studies are needed to deepen the understanding of the factors associated with moral dilemmas and their impacts on workers' health. Future research should prioritize the development and validation of standardized instruments for measuring moral dilemmas, with more detailed items and grounded in broad constructs, in order to enable comparisons across studies. A consistent body of research using standardized instruments, will help generate more robust evidence to inform the development of institutional strategies aimed at reducing moral dilemmas in the workplace.

5. Conclusions

Healthcare institutions should adopt organizational strategies aimed at reducing the moral dilemmas experienced by their workers. More democratic and participatory leadership models can strengthen professional autonomy and enhance engagement in care-related decision-making. Adequate staffing levels are crucial for balancing care demands and reducing workload. In addition, fostering social support among workers and providing welcoming environments with spaces for rest and recovery are essential measures to promote a healthier and more resilient work environment, particularly in contexts of high psychological pressure. Reducing the moral dilemmas faced by healthcare workers is fundamental to promoting their psychological well-being and the long-term sustainability of care and should be an integral part of adaptation efforts to address future health crises, such as outbreaks, epidemics, and other crises related to climate change.

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Data Availability Statement: The raw data supporting the conclusions of this article are not publicly available at this time due to ongoing analyses and ethical restrictions related to participant confidentiality. However, the data may be made available from the corresponding author upon reasonable request.

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Abbreviations

The following abbreviations are used in this manuscript:

PPE	Personal protective equipment
SUS	Unified Health System
CCEB/ABEP	Brazilian Economic Classification Criteria (CCEB/ABEP)

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