

RESEARCH ARTICLE

A cross-sectional study of COVID-19 pandemic-related organizational aspects in health care

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Abstract

Aim: This study explores how healthcare professionals included in the COVID-19 contingency plan experienced organizational changes, and explores factors associated with the experiences. Additionally, the study aimed to identify learning points for future similar scenarios.

Design: A cross-sectional study.

Methods: A questionnaire survey of healthcare professionals at three Danish hospitals, June 2020.

Results: A total of 1,448 healthcare professionals completed the questionnaire. Hereof, 813 (57%) were relocated to new settings/new jobs. The majority experienced that their relocation was totally (49%) or partially (31%) imposed, and 51% reported that the overall experience of the new job function was satisfactory. Type of profession and whether relocation to the new job function was imposed were the main variables associated with the overall experience of being part of the contingency plan. Suggestions for future scenarios included training adjusted to individual competencies, more targeted information, voluntariness with consideration of individual needs and clarification of expectations.

KEYWORDS

contingency, corona, healthcare professionals, management, organization resilience, survey

1 | INTRODUCTION

The coronavirus was first identified in China in December 2019 and classified as a pandemic with worldwide consequences in March 2020 (Priyadarshini et al., 2020). Italy experienced serious outbreaks mid-February with heavy demand for healthcare facilities (Armocida et al., 2020). Based on experiences from China and Italy, the Danish healthcare system needed to prepare for a substantial number of COVID-19 patients in need of hospital admission with 5%–15% requiring mechanical ventilation in intensive care facilities (Danish Health Authority A, 2020; Phua et al., 2020).

The healthcare system required fast, comprehensive organizational change and decisions that required immediate implementation including the establishment of testing facilities and specific COVID-19 departments, substantial upscaling of intensive care unit (ICU) capacity and postponement of all non-acute activities to ensure adequate staffing of the COVID-19 facilities (Danish Health Authority A, 2020). In addition, COVID-19 and ICU training of healthcare professionals from all specialties were planned and conducted locally at public hospitals designated to receive COVID-19 infected patients from March 2020.

The hospitals established testing facilities and specific COVID-19 departments, upscaled their ICU capacity, postponed all non-acute surgeries and non-acute outpatient activities and trained healthcare professionals from different specialties in COVID-19 and ICU care (Danish Health Authority A, 2020). By the end of March 2020, the number of hospitalized COVID-19 patients during the first wave peaked in Denmark, and from mid-April, the country began a controlled reopening (Danish Health Authority B, 2020). Similarly, from mid-April, the hospitals downscaled their ICU capacities to almost normal levels, and non-acute surgery and outpatient functions were partially resumed.

2 | BACKGROUND

At the beginning of the pandemic, some of the main challenges for health care were lack of evidence for treatment of COVID-19 (Welte et al., 2021), a potential need for rationing critical care resources (McGuire et al., 2020), risk of COVID-19 infection and death for healthcare professionals (Cohen & Rodgers, 2020; Gholami et al., 2021) and mental impact on healthcare professionals (Gorini et al., 2020).

Healthcare professionals working with COVID-19 patients were thus faced with new settings, work routines, new colleagues, new managers and a new disease that was completely unfamiliar. To cope with these changes, healthcare professionals needed to be able to adjust to meet new demands (Chou et al., 2010; Kim, 2018). Health care can be considered as a complex adaptive system where a complete understanding of all individual parts does not guarantee a perfect understanding of the whole system's behaviour (Braithwaite et al., 2013; Wears et al., 2015). Health care is an open system whereby adaptation to changing surroundings is vital (Braithwaite et al., 2013). To meet these new demands,

healthcare professionals are important resources contributing with experience and knowledge in creating new solutions and adjusting to altered surroundings (Ellis & Herbert, 2011). The adaptation of healthcare professionals is essential in achieving organizational resilience. Resilience means "how people adjust their performance to the conditions" (Hollnagel, 2018). Resilience enables organizations to overcome uncertainty and threats and enables them to adapt to unpredictable conditions (Lengnick-Hall and Beck, 2005; O'Hara et al., 2019). "An organisation's performance is resilient if it can function as required under expected and unexpected conditions" (Hollnagel, 2018). As healthcare professionals are important for a hospital's ability to adapt to new conditions and crises, it is important to gain an understanding of their work experiences during the COVID-19 pandemic. Thus, the aim of the study was to explore healthcare professionals' experiences of organizational changes during the unknown initial period of the pandemic to identify areas for organizational improvement for future similar scenarios.

2.1 | Research questions

The research questions used to guide the study were as follows: How did healthcare professionals included in the COVID-19 contingency plan experience organizational changes? Which factors were associated with the experiences? What are the learning points for similar future scenarios?

3 | METHODS

3.1 | Design

A multi-centre cross-sectional survey.

3.2 | Setting and participants

Inclusion criterion was all healthcare professionals who actively participated in the COVID-19 contingency plan at three Danish regional public hospitals. This included a wide range of professions (please see details in footnote 2, Table 1), and the settings and functions for these healthcare professionals included COVID-19 test facilities, COVID-19 wards and ICUs. There were no exclusion criteria. The sample size was fixed as all eligible healthcare professionals were invited to participate.

The three hospitals had different COVID-19 training set-ups (details are available in Table S1).

3.3 | Questionnaire

A literature search was unsuccessful in identifying an existing, validated questionnaire suitable for this study. Therefore, a

TABLE 1 Participant characteristics

	Total		Hospital A		Hospital B		Hospital C		p-value ^a
Gender. Women; n (%)	1,267	(88)	497	(88)	359	(86)	411	(91)	.15
Age; median (IQR)	44	(35–53)	44	(35–53)	42	(35–53)	44	(35–54)	.94
Profession; n (%)									
Nurses	945	(66)	379	(67)	241	(58)	325	(71)	<.001
Physicians	222	(15)	89	(16)	60	(14)	73	(16)	
Other ^b	271	(19)	98	(17)	116	(28)	57	(13)	
Work experience (years); median (IQR)	15	(7–25)	15	(6–25)	15	(8–24)	15	(7–26)	.96
Medical speciality									
Emergency/medical wards	396	(28)	179	(33)	98	(25)	119	(26)	<.001
Intensive care	254	(18)	109	(20)	86	(22)	59	(13)	
Surgery, anaesthesia, recovery	330	(24)	137	(25)	66	(17)	125	(28)	
Other ^c	414	(30)	125	(23)	142	(36)	147	(33)	

^aThe chi-square test for categorical data and the Kruskal–Wallis test for continuous data (not normally distributed).

^bSecretaries, assistant nurses, physiotherapists, occupational therapists, audio assistants, psychologists, social workers, radiographers, dentists, laboratory technicians, medical students, receptionists, dietitians, chiropractors, IT workers, customer service assistants, researchers, consultants, hospital porters, kitchen staff.

^cFrom all specialties within the hospitals.

questionnaire was developed based on questionnaire methodology and organizational literature (Kim, 2018; Bowling, 2009; Corley et al., 2010; Kang et al., 2018; Ellis and Herbert, 2011) and on input from a focus group interview with four nurses who had actively participated in the COVID-19 contingency plan at one of the hospitals. Additional input to the questionnaire was received from three nurses, one physician and one manager to identify the most important issues for the healthcare professionals. The authors developed the questionnaire during a process whereby the content was continuously discussed with the target groups. The first draft of the questionnaire was pilot tested using three physicians and seven nurses from different settings and hospitals. The test participants were asked to complete the questionnaire and comment on the content, relevance, coverage and comprehension to secure face and content validity (Streiner et al., 2014). The final version of the questionnaire (available in Supporting information) consisted of 59 questions, divided into seven themes: participant characteristics (age, profession, workplace, years of professional experience and whether they volunteered or were appointed to the COVID-19 setting), experience about the re-organization, new job functions, working conditions, training, impact and information/collaboration. After each theme, participants could add free-text comments and suggestions for improvements for future similar scenarios. Response options included yes/no, five-point Likert scale options of the level of satisfaction or agreement, numerical rating scales (NRS) from 1 to 10 and question-specific response options. The questionnaire was set up electronically in SurveyXact (by Ramboll) with an option for participants to complete only questions of relevance for them. SurveyXact fulfils data management requirements with secure storage of data and

logging of all activities. The survey was distributed electronically via the healthcare professionals' work e-mail address at the beginning of June 2020. A single reminder was sent after two weeks to participants who had not yet responded.

3.4 | Analysis

Data were analysed with descriptive and comparative analyses using the statistical software package Stata version 15.0. The chi-square test and Kruskal–Wallis test were used to compare participant characteristics between the three hospitals. Based on former studies (Corley et al., 2010; Kang et al., 2018; Kim, 2018), pre-survey interviews, and pilot in-puts, the main outcome variables were identified as 1) training, 2) overall experience of being part of the contingency, 3) balance between contingency and personal needs and 4) worry. Simple and multiple logistic regression was used to analyse associations between the main outcome variables and participant characteristics and two central independent variables 1) relocation imposed and 2) similarity to normal job function. Responses from 1 to 10 were dichotomized between low degree (1–6) and high degree (7–10), and Likert scale responses were dichotomized between “To a very high degree/To a high degree” and other responses. Full responses from included variables can be found in Additional file 3. p-values of <.05 were considered statistically significant.

Free-text comments were used to support and expand the quantitative data. The participants could add comments in connection with specific questions. Within each overall theme, the comments were read several times questioning the data: What are the

comments about? Which topics are mentioned? How do the comments elaborate on the quantitative responses to each question in the questionnaire? Table 4 presents sub-themes from the free-text comments within the theme: "Suggestions for future scenarios."

3.5 | Ethics

According to Danish law, the study did not need Research Ethics Committee approval, and this was confirmed by e-mail from the Regional Committee on Health Research Ethics (S-20202000, no. 90). Storage and management of data were registered with the Danish Data Protection Agency (20/18090). The study was performed in accordance with the Declaration of Helsinki. The directors of the three hospitals approved the study and permitted access to staff lists. All eligible participants received an e-mail with a link to the survey and information about the study. Participation in the study was voluntary. Individual responses were identifiable as they were connected to e-mail addresses, but only the project leader had access to the identification key. All information was kept confidential ensuring that no participants, colleagues or managers could identify individual responses. The participants gave informed consent to take part in the study by completing the survey.

4 | RESULTS

4.1 | Participants

A total of 2,589 healthcare professionals in three hospitals were invited to take part in the survey and 1,448 (56%) completed the questionnaire: for hospital A: 571/1053 (54%), for hospital B: 418/742 (56%) and for hospital C: 459/794 (58%). The free-text comments consisted of >74,000 words. The participants were mainly female and nurses, but a wide range of professions, years of experience and specialties were represented. The distribution of professions and medical specialties differed between the three hospitals (Table 1).

4.2 | Relocation

A total of 813 (57%) of the participants were relocated to new settings/new jobs during the COVID-19 contingency. The majority of those who experienced that relocation was totally (49%) or partially (31%) imposed. Many free-text comments concerned problems the forced relocations imposed: personal anxiety, frustrations, lack of enthusiasm and practical problems (childcare, transport, etc.). Numerous participants described that work planning in the new settings was not satisfactory. One wrote: *"In a week I got five different schedules. Several times, I only knew the day before whether I was going to work. One's private life was side-lined."*

The participants rated the similarity of their new setting to their normal job function as: not at all (32%), to a low degree (26%), to

some degree (30%), to a high degree (10%) and to a very high degree (3%). Quite a few described how anxiety-provoking the new work setting was: *"I was just told that I had been chosen (for relocation) and I literally cried for a week about going to the intensive care unit - not because I was afraid of getting infected, but because I was afraid of not being able to suffice professionally."*

4.3 | Training

The majority (71%) of those who had been relocated to new settings and received COVID-19 training assessed the training as relevant to a high or very high degree. However, only 33% found the extent of the training to be sufficient to a high or very high degree. Statistically significant differences were found between the three hospitals for some of the training variables. In general, Hospital B had the most positive and Hospital C had the least positive assessments. Physicians and "Others" assessed their experience of the training more positively than nurses (Table 2).

Participants who experienced their relocation as imposed assessed their experience of the training significantly lower compared to those who did not or those who only partially experienced the relocation as imposed. Participants who experienced the similarity of their new settings to their normal job function as low tended to have a less positive assessment of the training (Table 3).

One of the main criticisms of the training was the lack of differentiation about the participants' experiences and competencies. In addition, many comments concerned the workplaces' lack of knowledge of what they could expect from new staff in a new setting and the gap between what the new staff felt they were capable of and the expectations from the new workplace: *"Felt a bit that 'a nurse was a nurse regardless of her/his competencies."*

In total, 611 (44%) survey participants had been involved in the theoretical and clinical training of colleagues. On a scale from 1 to 10 (1 very unsatisfactory and 10 very satisfactory), their total median score for the overall satisfaction of being part of training others was 7 (interquartile range (IQR) 5–8). Comments highlighted problems with keeping a safe physical distance in the training units due to large number of healthcare professionals in need of clinical training, and trainees who did not want to be there, which influenced the training and the work environment.

4.4 | Experiences with new job functions

The specific hospital, profession and whether relocation had been imposed were associated with both satisfaction of the overall experience of working as part of the COVID-19 contingency plan, the experiences of creating a balance between the needs of the contingency plan and the participants' personal needs (Tables 2 and 3). Many comments touched on the balance between contingency plans and personal needs: *"I am sure everyone did their best to make things work as well as possible. However, as an employee, you are left*

TABLE 2 Assessments of COVID-19 training, being part of the contingency and worries based on hospital and profession

	% ^a	Hospital				Profession					
		Hospital A OR 1.00				Nurses OR 1.00					
		OR	CI ^b	Adj ^c	CI	OR	CI	Adj ^d	CI		
Training. Right after^e											
Overall assessment ^f	49	Hospital B	1.39	0.98;1.97	1.56	1.02;2.40	Physicians	2.24	1.41;3.55	3.49	1.97;6.20
<i>n</i> = 723–750 ^g		Hospital C	0.56	0.39;0.79	0.57	0.37;0.89	Other ^h	1.69	1.17;2.45	2.24	1.42;3.55
Relevance ⁱ	70	Hospital B	1.21	0.81;1.81	1.34	0.83;2.18	Physicians	1.22	0.73;2.04	1.98	1.02;3.88
<i>n</i> = 716–718		Hospital C	0.76	0.52;1.10	0.91	0.58;1.44	Other	1.30	0.85;1.98	1.39	0.83;2.32
Extent sufficient ^j	33	Hospital B	1.07	0.74;1.55	1.44	0.92;2.27	Physicians	3.02	1.88;4.86	4.30	2.38;7.77
<i>n</i> = 692–716		Hospital C	0.61	0.41;0.89	0.88	0.54;1.42	Other	1.64	1.11;2.43	1.88	1.16;3.04
After use of training^k											
Relevance ^l	68	Hospital B	2.38	1.37;4.13	2.10	1.09;4.04	Physicians	1.51	0.84;2.71	2.47	1.07;5.72
<i>n</i> = 480–500		Hospital C	0.69	0.45;1.05	0.83	0.81;1.20	Other	2.28	1.35;3.83	1.93	1.03;3.60
Extent sufficient ^m	34	Hospital B	1.13	0.72;1.79	1.21	0.67;2.19	Physicians	4.03	2.32;7.01	5.95	2.90;12.19
<i>n</i> = 487–507		Hospital C	0.58	0.37;0.90	0.88	0.50;1.55	Other	3.50	2.23;5.51	3.89	2.20;6.89
Overall experience New function ⁿ	51	Hospital B	1.37	0.87;2.15	1.37	0.78;2.40	Physicians	3.56	1.99;6.31	5.98	2.77;12.92
<i>n</i> = 500–520		Hospital C	0.45	0.30;0.68	0.53	0.32;0.90	Other	3.49	2.21;5.50	3.33	1.91;5.82
Balance. Contingency/personal ^o	43	Hospital B	1.33	0.85;2.07	1.32	0.76;2.28	Physicians	3.09	1.78;5.38	4.36	2.14;8.86
<i>n</i> = 492–512		Hospital C	0.61	0.41;0.92	0.76	0.45;1.29	Other	2.37	1.54;3.66	2.05	1.20;3.49
Level of worry											
Before contact COVID-19 Patient ^p	45	Hospital B	0.67	0.49;0.94	0.76	0.51;1.13	Physicians	0.62	0.44;0.90	0.56	0.37;0.86
<i>n</i> = 879–904		Hospital C	1.01	0.74;1.38	1.01	0.70;1.46	Other	0.75	0.50;1.12	0.64	0.39;1.03
After contact COVID-19 patient ^p	30	Hospital B	0.74	0.51;1.06	0.79	0.51;1.22	Physicians	0.89	0.60;1.31	0.71	0.44;1.13
<i>n</i> = 878–903		Hospital C	0.88	0.63;1.23	1.03	0.69;1.54	Other	0.74	0.47;1.17	0.58	0.34;1.02
Worries taken care Of ^q	32	Hospital B	1.33	0.76;1.67	1.28	0.80;2.05	Physicians	1.25	0.79;1.96	1.26	0.73;2.17
<i>n</i> = 676–693		Hospital C	0.79	0.54;1.16	1.07	0.68;1.68	Other	1.24	0.77;2.01	1.17	0.66;2.06

^aAll variable dichotomized. This column presents % of top responses (please see 10, 12, 17 and 19).

^b95% confidence intervals.

^cAdjusted for profession, medical speciality, experience.

^dAdjusted for hospital, medical speciality, experience.

^eAssessed right after termination of training (before use). Only responses from those who had received training (not provided it).

^fScale from 1 to 10, where 1 was very unsatisfactory and 10 very satisfactory. Dichotomized 7/10 (satisfactory) and 1/6 (unsatisfactory).

^gDifferent *n* due to missing data in adjusting variables.

^h"Other" includes secretaries, assistant nurses, physiotherapists, occupational therapists, audio assistants, psychologists, social workers, radiographers, dentists, laboratory technicians, medical students, receptionists, dietitians, chiropractors, IT workers, customer service assistants, researchers, consultants, hospital porters, kitchen staff.

ⁱ"Did you experience the content of the training as relevant?" Five-point Likert scale. Dichotomized "To a very high degree/To a high degree" versus "To some degree/To a low degree/Not at all".

^j"Did you experience the extent of the training as sufficient?" Five-point Likert scale. Dichotomized as 9.

^kOnly responses from those who had to use the training.

^l"Do you assess that the content of the training was relevant?" Five-point Likert scale. Dichotomized as 9.

^m"Do you assess that the training was sufficient in regard to carry out the new tasks?" Dichotomized as 9.

ⁿOverall assessment of new functions. Only responses from those who had to use the training. Dichotomized as "Very satisfactory/satisfactory" versus "Both satisfactory and unsatisfactory/unsatisfactory/very unsatisfactory"

^o"How did you experience the balance between the need of a contingency and you as a person and your needs?" Dichotomized as 14.

^pScale from 1–10, where 1 was no worries and 10 very worried. Dichotomized 7/10 (very worried) and 1/6 (not very worried).

^q"If you were worried. Did you experience that your worries were taken care of?" Dichotomized as 9.

with experiences and feelings that you cannot take away. I have so much missed an understanding [from the organization] of how intrusive it can be in one's personal life that one's work is turned upside down."

A total of 66% of all participants had actively cared for COVID-19 patients, and their level of worry decreased over time (Table 3). The specific hospital or profession was not significantly associated with the level of worry or the experience of whether worries were taken seriously (Tables 2 and 3). If the participants did not experience the relocation as imposed, there was a significantly lower level of worries (Table 3). The worries were mainly due to transmitting the virus to family (89%), being scared of contracting the virus (60%), transmitting the virus to patients (40%) and transmitting the virus to colleagues (36%). One commented: "I was SO scared to go to work. I have never felt that I should go to work at the risk of my own life. This is for soldiers, not nurses."

4.5 | Information from managements

The participants assessed the overall quality of information received from different management levels on a scale from 1 to 10 (1 very unsatisfactory and 10 very satisfactory) presented as median scores and (IQR): Regional Management: 5 (3–7); Hospital management: 5 (3–8); Department management: 8 (5–9); Section management (own department): 8 (5–9); Section management (new department): 6 (4–8). Some comments described the rapidly changing and enormous amount of information from many different sources as some of the main contingency challenges. "It is not good enough that essential and crucial information is something you have to struggle to find."

4.6 | Collaboration

More than 80% of the participants, who had worked in the COVID-19 settings, reported that collaboration with their new colleagues had been good or very good. Additionally, 42% of all participants found that collaboration to some, a high or a very high degree had improved within the department. Likewise, 45% found that the collaboration to some, a high or a very high degree had improved between departments during the contingency period: "The collaboration has improved since I now know staff from the intensive care unit and other departments better. Good side-benefit."

4.7 | Suggestions for the future

In the free-text comments, the survey participants had several specific recommendations for similar future scenarios (Table 4). The main suggestions to improve management of future crisis events were the importance of asking for volunteers and providing more differentiated training and relocation based on competencies. Furthermore, one of the main points in the free-text comments was the need to take care of the healthcare professionals: "Fantastic that

you can get a huge capacity up in a few weeks. But if you don't look after the foundation (read: staff) then it can all collapse."

5 | DISCUSSION

More than half of the healthcare professionals working with COVID-19 patients experienced that their new job function was not at all or to a low degree similar to their normal job functions. The majority of participants experienced that the relocation was imposed. The assessments of the training were mainly associated with specific hospitals, professions, and whether the relocation to new job functions was imposed. Nurses assessed their experience of the training lower than the other professions. Furthermore, professions and imposed relocation were associated with the overall experience of the contingency. The imposed relocation was associated with a higher level of worry. Suggestions to improve management of future crises were identified.

As the new job functions were not similar to their normal job functions for a large number of the participants, the training programmes provided by the hospitals were essential. The participants advised a more individual approach, theoretically and clinically, based on their competencies rather than the number of and/or professions to provide more effective and satisfactory training for future similar crises. These findings are consistent with existing literature describing fundamental knowledge of a task is critical if staff are to successfully adjust to unprecedented conditions and perform unaccustomed tasks (Vogus et al., 2014). Ideally, staff has to be able to identify small changes from what is normal and respond to unexpected events when caring for patients (Vogus et al., 2014). The results from the current study suggest that these abilities may have been compromised to some degree. The comment "Felt a bit a nurse was considered a nurse regardless of competencies" elucidates that although all Danish nurses are Registered Nurses and as such legally qualified to care for COVID-19 patients, this is not sufficient. For example, for staff having worked 20 years at an elective orthopaedic outpatient clinic, qualifications to care for acute seriously ill COVID-19 patients may be sparse. Therefore, considering competencies as suggested may not only decrease nurses' distress (Azoulay et al., 2021; Heesackers et al., 2021) but may also improve patient safety (Aiken et al., 2014).

The majority of the participants experienced that their relocation or planned relocation to a COVID-19 setting was fully or partially imposed. This was significantly associated with their assessment of training, the experience of being part of the contingency and their level of worry. When professionals are imposed on other job functions, they initially resist a change of identity and mourn the loss of previous work. Furthermore, they may try to avoid the new work (Chen & Reay, 2020). A substantial number of the participants had experienced worries working with critically ill patients and working in a new setting. According to Weick, worries can be reduced or limited by clear organizational structures and the ability to make sense of what is happening (Weick, 1993). Therefore, targeted honest

TABLE 3 Assessments of training, being part of the contingency and worries based on imposition of contingency and similarities of new job functions

	% ^c	Relocation imposed ^a				Similar work assignments ^b					
		Yes OR 1.00				To a high/very high degree OR 1.00					
		OR	CI ^d	Adj ^e	CI	OR	CI	Adj ^e	CI		
<i>Training</i>											
Right after ^f											
Overall assessment ^g	49	Partly	2.41	1.72;3.38	2.27	1.51;3.39	Other ^h	0.69	0.44;1.09	0.87	0.50;1.53
<i>n</i> = 726-739 ⁱ		No	3.65	2.43;5.49	3.58	2.20;5.83					
Relevant ^j	70	Partly	1.42	0.99;2.05	1.47	0.95;2.26	Other	0.74	0.43;1.27	0.85	0.44;1.65
<i>n</i> = 695-709		No	3.04	1.84;5.04	4.11	2.16;7.84					
Extent sufficient ^k	33	Partly	2.03	1.41;2.94	2.23	1.42;3.49	Other	0.55	0.35;0.89	0.66	0.38;1.89
<i>n</i> = 692-706		No	3.45	2.28;5.23	3.77	2.28;6.22					
After use of training ^l											
Relevant ^m	67	Partly	1.48	0.96;2.30	1.08	0.64;1.82	Other	0.97	0.54;1.74	1.19	0.57;2.50
<i>n</i> = 476-482		No	2.09	1.19;3.67	1.88	0.94;3.78					
Extent sufficient ⁿ	34	Partly	1.80	1.16;2.78	1.41	0.82;2.43	Other	0.39	0.22;0.67	0.46	0.23;0.93
<i>n</i> = 483-489		No	3.51	2.12;5.83	3.04	1.63;5.69					
Overall experience. New function ^o	51	Partly	3.25	2.14;4.95	3.01	1.80;5.02	Other	0.46	0.27;0.79	0.78	0.41;1.54
<i>n</i> = 497-502		No	3.96	2.39;6.57	5.31	2.78;10.14					
Balance. Contingency/personal ^p	43	Partly	2.81	1.84;4.28	2.87	1.72;4.78	Other	0.47	0.28;0.81	0.67	0.35;1.28
<i>n</i> = 488-496		No	4.14	2.52;6.80	4.15	2.28;7.56					
<i>Worry</i>											
Before contact COVID-19 patient ^q	47	Partly	0.81	0.54;1.21	0.80	0.50;1.27	Other	0.78	0.47;1.30	0.73	0.39;1.40
<i>n</i> = 502-508		No	0.33	0.20;0.54	0.37	0.21;0.67					
After contact COVID-19 patient ^r	31	Partly	0.85	0.55;1.30	0.76	0.46;1.26	Other	1.16	0.66;2.04	1.44	0.68;3.07
<i>n</i> = 501-507		No	0.28	0.15;0.52	0.34	0.17;0.69					
Worries taken care of ^s	29	Partly	2.58	1.55;4.27	2.48	1.35;4.56	Other	0.41	0.23;0.74	1.06	0.48;2.34
<i>n</i> = 393-399		No	3.12	1.75;5.56	3.52	1.76;7.05					

Note: versus "To some degree/To a low degree/Not at all".

^a"Was the relocation (or planned relocation) to other job functions imposed?" Responses: Yes, partly, no.

^b"To which degree were your new job functions similar to your normal job functions?"

^cAll variable dichotomized. This column presents % of top responses (please see 7, 9, 14 and 16).

^d95% confidence intervals.

^eAdjusted for hospital, profession, medical specialty, experience.

^fAssessed right after termination of training (before use). Only responses from those who had received training (not provided it).

^gScale from 1-10, where 1 was very unsatisfactory and 10 very satisfactory. Dichotomized 7/10 (satisfactory) and 1/6 (unsatisfactory).

^h"Other" = To some degree/To a low degree/Not at all.

ⁱDifferent *n* due to missing data in adjusting variables.

^j"Did you experience the content of the training as relevant?" Five-point Likert scale. Dichotomized "To a very high degree/To a high degree".

^k"Did you experience the extent of the training as sufficient?" Five-point Likert scale. Dichotomized as 10.

^lOnly responses from those who had to use the training.

^m"Do you assess that the content of the training was relevant?" Five-point Likert scale. Dichotomized as 10.

ⁿ"Do you assess that the training was sufficient in regard to carry out the new tasks?" Dichotomized as 10.

^oOverall assessment of new functions. Only responses from those who had to use the training. Dichotomized as "Very satisfactory/satisfactory" versus "Both satisfactory and unsatisfactory/unsatisfactory/very unsatisfactory".

^p"How did you experience the balance between the need of a contingency and you as a person and your needs?" Dichotomized as 15.

^qScale from 1-10, where 1 was no worries and 10 very worried. Dichotomized 7/10 (very worried) and 1/6 (not very worried).

^s"If you were worried. Did you experience that your worries were taken care of?" Dichotomized as 10.

TABLE 4 Suggestions for future scenarios

Suggestions	Citations
Selection for relocation should be voluntary	<p>"Volunteering and dialogue around transfers would be preferable"</p> <p>"It has been transgressive, stressful and anxiety-provoking for me to be forced into new work that I in no way wanted or felt comfortable with."</p> <p>"In the acute phase, everyone are willing to contribute as they best can. In the second phase, it needs to be only those who want it. Learning and development cannot take place when someone is forced into something."</p>
Coordination of initiatives and inclusion of union representatives	<p>"Several individuals carried out a task: hygienic guidelines (nurse), the treatment of COVID patients (doctor), establishment of the COVID-19 rooms (clinical specialist), clinical training (ward coordinator +ward nurse), the union representative, technicians and establishment of data transfer installation of monitoring equipment, etc. In retrospect, these people should have established several meetings with a clear clarification of the individual's responsibility so that duplication of work to some extent could be avoided. There should be a contingency for the next time a pandemic or disaster occurs. Preferably a central place where all equipment is located and can be requested as needed."</p> <p>".. the union representative should be involved right from the beginning"</p>
Take competencies into account at relocation and training	<p>"Lack of level division of training."</p> <p>"The already existing competencies were not taken into account."</p> <p>"You should differentiate between whether you have intensive care experience or not, and plan the training based on this."</p> <p>"I had no problems with the new job compared to my regular job, it was very similar. But I could see it was very difficult for the nurses from the outpatient clinics. Maybe it will be better to relocate the outpatient nurses to ordinary wards and then relocate the ward nurses to the COVID-19 section."</p>
Fairness both in selection (for COVID-19 work) and in work conditions	<p>"Not being prepared was not what frustrated me most. That was all the practicalities, what we did not get answers to and the way they just took for granted that they could intervene in our everyday lives. Some were asked about their wishes, others were not."</p> <p>"In a week I got 5 different schedules. Several times, I only knew the day before whether I was going to work. One's private life was side-lined."</p>
Clear information regarding what is expected of new staff and which type of tasks they are expected to be able to handle	<p>"They tried to train us for the new field of work. But it is also important that the receiving department has information about what we then really are capable of professionally."</p> <p>"The expectations that was written (from our own department) about what we were supposed to do and what the staff in the new department expected did not match."</p>
Make sure you know whom you are working with	<p>"We did not know each other, not names or competencies. And when we had equipment on, we couldn't see each other's name-tags. Unsafe!"</p>
Honest and precise information	<p>"The confidence in that there is being taken care of healthcare professionals has been severely broken due to changes in guidelines for the use of protective equipment according to what was available. There must be honesty about the shortage and then you have to go from there."</p> <p>"It is not good enough that essential and crucial information is something you have to strain to find."</p> <p>"State what is changed in a guideline instead of all having to read it all again."</p>
Develop small instruction videos	<p>"Just like the hygiene video about how to wear and undress protective equipment, small videos could be made about other things. Then you can update yourself on the knowledge you think is needed. For example, observations in relation to the various diseases"</p>
More uniform posters from hospital level	<p>"... posters etc. so it is provided centrally and not via mails, which the individual department then must print, laminate and put up."</p>
Contact person	<p>"That you know whom to contact if you have questions and not are passed around between four different leaders"</p>
Don't forget the non-relocated staff	<p>"There should have been a bit more focus on the people who remained in their own department and held the fort. The focus was mostly on those who were in the front row; there was no one to pick up those who remained."</p>
Improved assessment of how many people and which competencies are needed in the contingency plan at a time.	<p>"There must be a plan next time so we don't have to reinvent the wheel. My impression is that a lot of resources have been wasted moving around, setting up temporary departments and educating staff and that must be streamlined for the next time so we don't have to start all over."</p> <p>"Be more precise in assessing how many people need to be in the contingency at a time. Which competencies are needed and which are relevant to put into play"</p>

information and communication is crucial to ensure that the new workflow and tasks make sense and motivate the relevant healthcare professionals (Greenberg et al., 2020; Gulrandhe et al., 2021; Kreuter & Wray, 2003). Our findings indicate that immediate superiors appeared to have the best ability to master this skill, as they were given the highest information ratings.

The professions had different experiences being part of the contingency, with nurses, which were mostly females, being the least satisfied. This may reflect a higher prevalence rate of anxiety and depression in females during the COVID-19 outbreak (Pappa et al., 2020). In addition, it may be related to nurses spending the most time in the ward having direct clinical contact with these

infected and high-risk COVID-19 patients (Liu et al., 2020). When organizational structures break down and sense-making becomes complicated, interpersonal relations are essential for success in managing adverse events (Chen & Reay, 2020; Moran et al., 2016). It is important for an organization that the employees can act resiliently as it enables the adaptation to unpredictable conditions (Hollnagel, 2018; Lengnick-Hall and Beck, 2005; O'Hara et al., 2019). Therefore, an approach that supports healthcare professionals' ability to act resiliently is preferable when planning for a pandemic. This can be done by using all available resources to handle the new situation, support improvisation, communicate and give information to the staff so that they can make sense of what is going on and offer them knowledge and maybe new solutions in the situation. Furthermore, it is important to ensure communication among the staff so that new learning is verbalized instantly (Weick, 1993; Weick and Sutcliffe, 2015). Trust between employee and employer affects how staff handles their job. Research shows that trust has positive effects on staff wellbeing and on work effectiveness (Laschinger et al., 2000; Mayer & Gavin, 2005). Likewise, Corley et al. stated that effective communication channels were crucial and recommended a dedicated infection control representative as responsible for information and support (Corley et al., 2010). In the current study, the participants reported mixed satisfaction with the information they received which may have affected their overall experience of being part of the contingency. Increased trust between employee and employer can additionally lead to a strengthened organizational commitment (Nyhan, 2000). This is especially important when staff is asked to contribute in a crisis. In a study examining the organizational atmosphere during COVID-19, Bashkin et al. found that awareness of healthcare professionals' concerns and perceptions is essential to improve the healthcare systems' ability to confront health crises (Bashkin et al., 2021). Likewise, in an analysis of COVID-19 performance, Yáñez-Araque et al. found that achievement of a good level of performance consists of the combination of leadership, commitment and a good work environment (Yanez-Araque et al., 2021).

This study showed that working in the COVID-19 contingency had an impact on the participants both professionally and personally. This is in line with a qualitative review of healthcare workers' burdens during COVID-19, where four themes were identified: inadequate preparedness, emotional challenges, insufficient equipment and information, and work burnout (Koontalay et al., 2021).

When working in a complex adaptive system such as the healthcare system, most healthcare professionals have an understanding of their normal work functions, but not necessarily an understanding of requirements in relation to a whole system (Braithwaite et al., 2015; Wears et al., 2015). Participants in the current study reported positively the experience of working with colleagues from other departments and that it improved collaboration across wards. This is supported by previous studies describing how interdisciplinary cooperation between medical specialities and departments gives a better understanding of each other's profession and decreases '*working in silos*' experience (Braithwaite et al., 2013, 2015; Wears et al., 2015).

The main suggestion to improve management of future crises was the importance of asking for and advertising for volunteers. It may not always be possible to get enough volunteers, but an individual approach with targeted information and clear descriptions of expectations and consequences may encourage more volunteers. If relocation needs to be imposed, some of the other suggestions such as taking competencies into account, openness about the process and fairness in selection and work conditions, clear expectations and honest information may decrease the negative impact of an imposed relocation (Aiken et al., 2014). The differences between the hospitals suggest that consideration of individual needs and wishes, even in the light of a pandemic, may be possible to a certain degree and depends on the priorities of the management. When organizational change is imposed, trust in the organization and a feeling of belonging can limit negative experiences (Oreg & Sverdlik, 2011). The number of free-text comments showed that being part of the contingency had a huge professional and personal impact on the participants. Further qualitative interviews may elucidate additional details on how the pandemic contingency impacted healthcare professionals. Likewise, extensive analyses of differences between the three hospitals' organizational approaches would be beneficial.

5.1 | Strengths and limitations

The strengths of this study include a large number of inter-professional participants, the inclusion of three different hospitals and the combination of the Likert scale and free-text response options giving nuance to the results. The study also has several limitations. The survey instrument was developed specifically for the study and was not reliability tested. The underlying construct of the questionnaire has not been tested, and the survey result should therefore, as presented in the current study, be used as single-item responses. However, a number of pilot study participants from the survey target group identified and assessed the included areas as the most relevant, and pilot participants approved the wording of the questions testing the face validity. The inclusion of feedback from only nurses and physicians in the development process of the questionnaire is a limitation. In addition, the response rate of less than 60% leads to a risk of non-responder bias. "Hospital" was the only demographic information registered for non-responders, preventing specific non-responder analyses. Using dichotomized data simplifies the results, and multiple analyses induce the risk of a Bonferroni-effect. The cross-sectional design cannot prove causality. In addition, the results are from a single country in which the impact of COVID-19 on the healthcare system during the first wave could be described as limited. This may decrease the generalizability of the results. However, as shown in the Discussion section, the experiences of the participants from the current study match experiences from other countries and continents, suggesting that the results from the current study are not country-specific.

6 | CONCLUSION

The majority of participants found that the relocation to a new job setting was imposed and had low similarity with their normal job functions. Hospital location, type of medical profession and imposition of relocation were the main variables associated with assessments of training and experiences of the contingency. Suggestions to improve management of future crises included training should be adjusted to individual competencies, to deliver targeted information, prioritizing a voluntary option if there is a need for relocation, and clarification of expectations.

7 | RECOMMENDATIONS

To improve organizations in the future similar scenarios, the study provides the following recommendations:

- If possible, avoid imposing healthcare providers to be part of a contingency
- Individual competencies need to be considered, also during fast, comprehensive organizational changes
- Ensure sufficient and individually tailored training
- Clarification of expectations and unambiguous, clear and honest information from management is needed

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTION

HIJ, BRT, LKB, BG, JP, ME and KS all took part in the conception and design of the work. HIJ had the main responsibility for data collection and analyses, and BRT, LKB, BVG, JP, ME and KS contributed. HIJ drafted the manuscript and all authors contributed and approved the final version.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

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