

ECONOMICS*Sociology*

Sarihasan, I., Dajnoki, K., Oláh, J., & Al-Dalahmeh, M. (2022). The importance of the leadership functions of a high-reliability health care organization in managing the COVID-19 pandemic in Turkey. *Economics and Sociology*, 15(1), 78-93. doi:10.14254/2071-789X.2022/15-1/5

THE IMPORTANCE OF THE LEADERSHIP FUNCTIONS OF A HIGH-RELIABILITY HEALTH CARE ORGANIZATION IN MANAGING THE COVID-19 PANDEMIC IN TURKEY

Imran Sarihasan

*University of Debrecen, Institute of
Economics Debrecen, Hungary*

E-mail:

imran.sarihasan@econ.unideb.hu

ORCID 0000-0002-1608-4144

Krisztina Dajnoki

*University of Debrecen, Faculty of
Economics and Business, Institute of
Management and Organization
Sciences, Debrecen, Hungary*

E-mail:

dajnoki.krisztina@econ.unideb.hu

ORCID 0000-0002-3340-5069

Judit Oláh*

*University of Debrecen
Debrecen, Hungary
Institute of Applied Informatics and
Logistics*

E-mail: olab.judit@econ.unideb.hu

ORCID 0000-0003-2247-1711

**Corresponding author*

Main Al-Dalahmeh

*University of Debrecen, Faculty of
Economics and Business, Institute
of Management and Organization
Sciences, Debrecen, Hungary*

E-mail:

maen.dalahmeh@econ.unideb.hu

ORCID 000-0002-7761-1470

ABSTRACT. This study aims to demonstrate how senior leadership applies to high-reliability organizations' functions when managing the Coronavirus pandemic in healthcare organizations and extend the current research by focusing on identifying which functions are more important for the leadership when managing crises in healthcare organizations. To achieve the aim of the study, a qualitative research approach was applied with well-known statistical analyses. Descriptive statistics were applied to determine the characteristics of variables. A correlation matrix shows the relationship between variables, while explanatory factor analyses were employed to determine the reliability of the variables. Ordinary least square regression analysis was used to emphasize the relationship between the role of leadership and different functions in high reliability healthcare organizations in Turkey. It has been found that the role of leadership has a positive and significant relationship with organizational safety, organizational trust, collective mindfulness, flexibility, and communication functions. In addition, the importance of leadership in healthcare organizations will improve many functions in an effective and professional manner, which is reflected in the reduction of the spread of Coronavirus which has been found among workers and in different environments.

Received: February, 2021

1st Revision: January, 2022

Accepted: March, 2022

DOI: 10.14254/2071-
789X.2022/15-1/5

JEL Classification: M10, I10, I12 **Keywords:** management, epidemic, COVID-19, occupational health

Introduction

In the current rapidly globalizing world, organizations utilize a variety of tactics to gain a competitive advantage. In unstable and complicated markets, attaining strategic competitiveness is difficult. These difficulties are exacerbated when organizations do not have a comprehensive knowledge of the factors that influence their performance. This will reflect in the organization's image and its reliability for clients (Altindag et al. 2014).

The role of leadership in an organization is essential in terms of establishing goals, generating a vision and a mission, and designing policies, tactics and strategies to accomplish organizational goals in an effective and efficient manner, as well as to direct and coordinate organizational efforts and projects (Xu & Wang, 2008).

Over the years, organizational reliability has reached a mature stage, since a high-reliability organization (HRO) is considered the one which has measurable near-perfect performance for quality and safety (Riley, 2009).

In healthcare, reliability refers to the use of reliable rate-based criteria. However, high-reliability organizations have demonstrated that the context in which care is provided, known as organizational culture, has a significant impact on patient safety (Pronovost et al., 2006).

This paper defines the principles of reliability in organizations and identifies how managers can assume leadership in helping to move health care towards high-reliability organizations (HROs). Thus, this article aims to answer the research question: Which functions are more important for the leadership in order to manage crises in healthcare organizations?

The purpose of this research is to demonstrate how senior leadership is applied to the other functions to manage the COVID-19 pandemic in healthcare organizations.

This has been a topic of pivotal importance in the past two years due to the spread of COVID-19 all over the world, in the work environment. We began our investigation of the leadership in high-reliability healthcare organizations by analyzing what is known about how highly reliable organizations function.

Additionally, we analyzed the considerations we should bear in mind when constructing the leadership in high-reliability healthcare organizations during the pandemic period.

1. Literature review

Organisational reliability has become an essential scientific concept among researchers. Despite there being no universally accepted definition of the term, it has been accepted as being a crucial aspect of everyday life. Furthermore, its meaning has been changing over time as a result of social systems and networks, as well as people's activities, elements, and roles in organizations. In this regard, organizational reliability is defined as the relational strength of an individual's identification with their engagement in a given organization (Lam, 1998& Bieńkowska, et al., 2020). Furthermore, high reliability is a mix of organizational support and resources supplied to strengthen employees' strong conviction in and acceptance of

organizational objectives, as well as a genuine desire to stay with the organization and contribute effectively to its goals

(Mazdeh & Hesamamiri, 2014; Mura et al., 2017; Meyer, 2018; Labrague & De los Santos, 2020;). All of these aspects play a role in boosting the organization's success and ensuring that essential organizational features - including interaction, communication, motivation, goal setting, control, and performance - are met (Hammer, 1979 ; Meyer & Meyer, 2020; Bilan et al., 2020; Sarihasan, et al., 2021). As a result, businesses look for ways to improve their capacity to react to and handle unforeseen conditions during a crisis. Employees at high-reliability organizations (HRO) not only feel free to express any concerns, but also realize the responsibility that comes with doing so, since the organization's basic principles rely on information sharing throughout departments (Chassin & Loeb, 2013a; (Chassin & Loeb, 2013a; Abdillah et al., 2018; Wei et al., 2021) which is a top priority factor to accomplish success in business. To ensure information sharing in order to increase organisational performance, specific managerial efforts are required, particularly improvement of training programs and other forms of knowledge sharing (Mustapa et al., 2019; Samoliuk et al., 2021). The outcome of the organization's emphasis on safety and dependability is that it fosters an atmosphere in which individuals can openly discuss the organization's shortcomings. In certain hazard-ridden contexts, increasing employees' awareness of the notion of "mindfulness" might help them prevent failures, boost knowledge in operations, and reinforce their commitment to resilience, and their willingness to defer to specialists in specific situations. (Khorsandi & Aven, 2014b; Bencsik et al., 2019). According to Day et al. (2018a), key managerial factors of HROs include leadership, assistance - including the provision of necessary resources -, organizational structure, and technological infrastructure.

In this section, we will concentrate on the importance of leadership in High Reliability Health-Care Organizations (HRHO) and its importance during the Coronavirus (COVID-19) crisis in organizations.

1.1. Leadership in high-reliability health-care organizations

There are multiple definitions of leadership. However, what is referred to as leadership may be characterized as a function of understanding oneself, having a clear vision which is effectively conveyed, and fostering trust among one's team members (Kumar, 2013; Kraus et al., 2018; Maran et al., 2019; Smith, 2020, Durst et al., 2021). In the healthcare provision of HROs, leadership can be defined as taking part in organizing tasks in clinical responsibilities that develop models to create stable environments that generalize well in various circumstances for workers in unpredictable situations which occur in health-systems (Adelman & Gandhi, 2021). On the other hand, leaders develop the concept of "collective mindfulness" in order to assist healthcare personnel in adapting to even the smallest signals of adjustments in the work atmosphere during crises that might possibly result in failure (Cochrane et al., 2017; Nemțeanu & Dabija, 2020; Khan et al., 2021). Along with this, leaders undertake further substantial missions:

1. To make a commitment to the ultimate objective of causing no damage to the organization.
2. To ensure that all of the principles and practices associated with a safety culture are implemented across the organization.
3. During unforeseen events, it is essential to ensure the widespread adoption and implementation of the most effective process improvement technologies and processes, with a particular focus on hospitals and health systems (Chassin & Loeb, 2013b).

The above-mentioned points demonstrate that the establishment of reliable systems for the assessment of quality and safety metrics is connected to the implementation of performance incentives and good leadership in HRHOs. With good leadership, it is feasible to maintain high performance in challenging and dynamic circumstances (Gavurová & Šoltés, 2016). Moreover, this will improve healthcare workers' (HCW) safety and the quality of their work, and it will make them adopt some vitally important high-reliability practices as a team within the organization (Day et al., 2018b). Demonstrating an effective system by leadership is a necessary pre-requisite since the other functions' success within HRHOs depend on this (Baker, Day, & Salas, 2006, Šoltés & Gavurová, 2014). In this way, even in great crises, leaders and workers will seek a way to improve the system so that they can succeed in it, and this will advance the potential organizational benefit by creating common interests through leaders who are actively involved in managing these connections and skilfully guiding the process of classifying and identifying and managing risk factors (Frankel, Leonard, & Denham, 2006b). Thus, HRHO aims to achieve six characteristics of high-quality leadership: (1) effective, (2) safe, (3) efficient, (4) equitable, (5) reliable, and (6) patient-centred (Sfantou et al., 2017). Dehnavieh & Kalavani, (2020) explain those components as leadership affects the performance of HCWs by maintaining communication, encouraging them, and by giving resources to safeguard workers' physical and mental health. Indeed, good communication is a critical component of effective leadership during a public health crisis, since it reflects deliberate, competent, instructive, and scientifically proved methods (Máté, et al., 2017; Nicola et al., 2020) (See table 1).

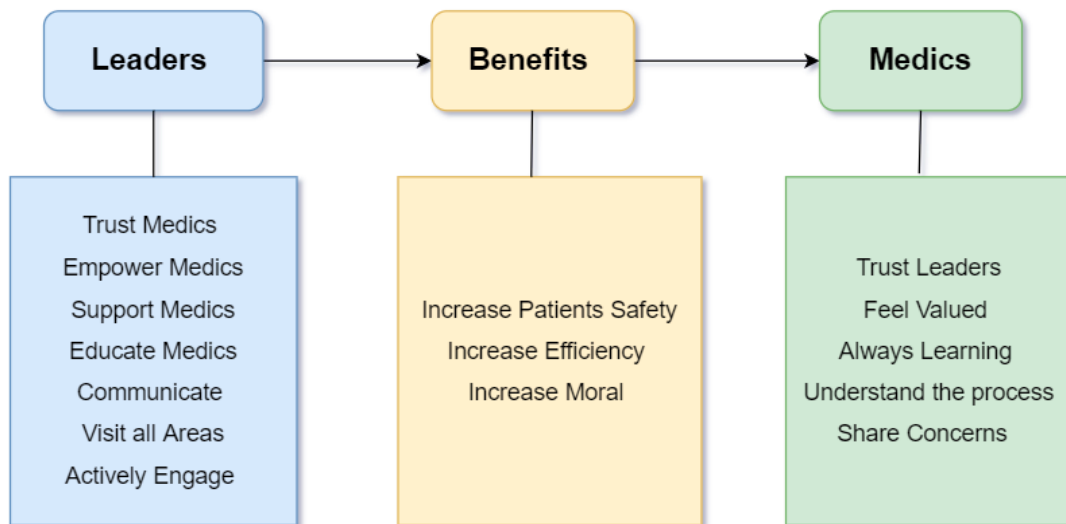


Figure 1. Leadership in High-Reliability Health-Care Organizations

Source: Authors' own elaboration, 2021

Based on the above discussion, this study aims to test the following hypothesis.

Hypothesis 1: Leadership in HRHOs tends to have a positive relationship with trust, safety, collective mindfulness, and sharing of information functions.

1.2. Leadership in high reliability healthcare organizations in COVID-19

Constructing and relying on the existing administrative role of organizations during a catastrophe has been a vital and difficult task for leaders throughout the Coronavirus (COVID-19) epidemic (Tecu et al., 2020; Mossa-Basha et al., 2021). Because of this, the epidemic has

created worldwide upheaval in all aspects of life; it has suffocated healthcare systems and continues to put the international economy at risk of a global recession, and continues to challenge established leadership models. To overcome the challenges created by COVID-19, HRHO leaders need to recognize the significance of support for emotional distress and psychological safety, as well as the ability to convey safety concerns and problem-solving solutions, thereby allowing resilience to improve from individual to organizational levels (Rangachari & Woods, 2020; Zandi et al., 2020). Simultaneously, leadership is required to develop and integrate new processes, practices, equipment, and safety instruments across the organisation, and it is a crucial resource for success, as well as a miracle pill for overcoming and managing COVID-19 situations effectively (Lyng, Ree, Wibe, & Wiig, 2021). With respect to this, Paules, Marston, & Fauci (2020) pointed out that during the pandemic taking into consideration other professional networks increased community support in order to respond effectively to the pandemic, because these professional factors play a crucial role in employees' trust in and expectations of organizations which also fulfil needs (Iserson, 2020). Moreover, communication is one of the key elements for hospital leaders. Abdi, Lega, Ebeid, & Ravaghi (2021) noted that during the COVID-19 crisis, healthy communication from leaders to workers also helped build trust. In addition to this, Tay et al., (2020) found that an informed team always stays connected to an organization and feels more secure in unsafe environments. However, it is worth mentioning that not just during the pandemic, but also in their daily lives, health-care workers work in stressful environments. Thus, an effective leadership with high communication skills enables staff to face traumatic situations more easily (Feingold et al., 2021).

Additionally, effective leadership during the pandemic will be able to manage competing goals, maintain employee engagement and motivation, and avoid burnout in a volatile, unpredictable, complicated, and confusing post-emergency environment (Geerts et al., 2021). Without this, employees' morale will be poor, and they will face additional difficulties because of their inability to adjust to a new scenario. In this regard, regular communication between leaders and workers is a critical component of crisis management and has a good effect on the organization's performance, fostering comparative safety at work and improving the personal circumstances of its staff (Stefan & Nazarov, 2020). COVID-19 demonstrates this by requiring a team with a strong leadership reaction in the face of uncertainty. Effective cooperation during a pandemic requires precise, frequent, timely, and problem-solving communications that are supported by shared objectives, shared knowledge, and mutual respect, generally referred to as relational coordination (Nemțeanu, Dabija & Stanca, 2021; Nembhard, Burns, & Shortell, 2020; Muangmee et al., 2021). According to Wu, et al. (2020), HRHOs should give the most up-to-date information available about COVID-19, anticipate questions, restore a sense of control, and empower workers by providing them with information about what they can do to help

2. Methodological approach

Data for this study was collected using an online questionnaire created with Google forms between 1 September 2021 and 28 October 2021. Surveys were distributed via messages to participants from social media platforms. 280 HCWs took part in the survey. A qualitative research approach was applied to the study by using SPSS 23 with Likert-Scale type survey methods.

As a first step of the methodology is represented as a minimum and maximum number, mean and standard deviation (SD) (Uyanık & Güler, 2013). Second, ordinary least squares regression (OLS) analyses have been conducted to indicate the relationship between dependent and independent variables (Tanaka et al., 1989).

Third, the Pearson-Correlation matrix has been used to demonstrate the relationship between variables. Finally, explanatory factor analysis was used to classify the latent variables of other variables.

In order to test the hypothesis, the following equation was created:

$$YI_i = \beta_0 + \beta_1 X1_i + \beta_2 X2_i + \beta_3 X3_i + \beta_4 X4_i + \beta_5 X5_i + \varepsilon_i$$

This equation model consists of one dependent (DV) and five independent variables (IV) where:

- Y₁= The role of leadership (LDR) during COVID-19 in HRHOs
- X₁= The organizational safety function (OSF) during COVID-19
- X₂= The collective mindfulness function (CMF) during COVID-19
- X₃= The Organizational Trust (OTF) during COVID-19
- X₄= The Organizational Flexibility Function (FLXF) during the COVID-19
- X₅= The shared-knowledge function (SKF) during COVID-19

The role of leadership function in the study signifies the senior leader's role in the HRO.

The organizational safety function represents the HRO's ample resources to offer a safe atmosphere for HCWs during the pandemic.

The collective mindfulness function characterises HCWs in the HRO when they take the pandemic seriously.

- The flexibility function demonstrates the flexible working conditions required to make HCWs feel more comfortable in the stressful environment during the pandemic.
- The communication function indicates the communication level between senior leaders and workers during COVID-19 in a HRO.
- The organizational trust function shows that the HRO cares about HCWs in the organization.
- The shared knowledge pattern function delivers information to an organization and its workers regarding COVID-19.

3. Conducting research and results

The data analysis began with the results of the descriptive statistics related to the SD, Mean Minimum and Maximum numbers (Table 1).

Table 1. Descriptive statistics of variables

Variables	Number	Min.	Max.	Mean	SD
Leadership (LDR)	279	1	5	2.01	0.869
Organizational Safety (OS)	280	1	5	2.11	0.877
Collective Mindfulness (CM)	280	1	4	1.97	0.496
Communication (CMN)	280	1	5	2.03	0.691
Flexibility (FLX)	280	1	4	2.06	0.696
Shared Knowledge Pattern (SKP)	277	1	4	2.15	0.720

Source: Authors' elaboration (2021)

According to the results, the importance of the leadership function's pattern value during COVID-19 is between $2.01 \pm 0.869 = \{2.31\}$. This outcome demonstrates that there is an agreement between participants that the leadership function plays an important role during the pandemic in health-care organizations. In terms of the organizational safety function, the pattern value is between $2.11 \pm 0.877 = \{2.40\}$. This result shows that participants in the survey also

agree - based on the scale used - that organizational safety is taken into account during COVID-19 in HRHOs. On the other hand, the function of the collective mindfulness pattern value is between $1.97 \pm 0.496 = \{3.97\}$, indicating that participants neither agree nor disagree on whether HRHO employees have collective mindfulness in organizations during the pandemic. In the case of the flexibility function pattern, the value is between $2.06 \pm 0.696 = \{2, 38\}$. Based on the scale used, participants agree that organizations have been flexible about work during COVID-19. In the HRHO pattern, the communications function has a value between $2.03 \pm 0.691 = \{2.721\}$. Based on the results of the pattern value, the participants in the study agree that organizational trust was perfectly applied during the pandemic. In terms of the organizational trust pattern value ($1.99 \pm 0.698 = \{2.85\}$) and the shared knowledge pattern function's pattern value ($2.15 \pm 0.720 = \{2.98\}$) participants agreed on both the organizational trust and shared knowledge pattern functions used during the pandemic in HRHOs.

Cronbach's Alpha is used to determine the reliability of the variables employed in the questionnaire as well as the degree of homogeneity in the measurement. Table 2 summarizes the Cronbach's Alpha test findings for each variable.\

Table 2. Reliability test

No.	Scales	Cronbach's Alpha	Loadings
Independent and Dependent Variables (7 Items)		0.73	
Functions			
Y1	Role of Senior Leadership		0.671
X1	Organizational Safety		0.617
X2	Collective-Mindfulness		0.502
X3	Flexibility		0.669
X4	Communication		0.605
X5	Organizational trust		0.687
X6	Shared knowledge pattern		0.523

Source: Authors' elaboration (2021)

The Cronbach's Alpha of the study equals 0.73. It can be clearly seen from the value of the scale, or the questionnaire used to measure the variables, that it is reliable and steady. According to Tavakol & Dennick (2011), for questionnaires that have a scale from 0 to 5, a Cronbach Alpha value of 0.70 can be acceptable; lower values have also been accepted.

Explanatory factor analyses were used to identify the strongly intercorrelated groups of variables. One Independent variables group is established based on the results. As seen in the table, loading values ranged from 0 to 100. (0.523-0.671). Factor loadings are essentially coefficients that demonstrate how strong the relationship between the variable and the factor is, and they range from 0 to 1.

Tale 3. Correlation matrix

	LDR	OS	CM	FLX	CMN	OT	SKP
LDR	1000						
OS	0.504***	1000					
CM	0.331***	0.312***	1000				
FLX	0.131***	0.239***	0.534***	1000			
CMN	0.410***	0.482***	0.480***	0.332***	1000		
OT	0.204***	0.270***	0.357***	0.293***	0.354***	1000	
SKP	0.281***	0.183***	0.280***	0.111**	0.207***	0.187***	1000

Source: Authors' elaboration (2021)

Notes: Significance *** at 1 percent.

Table 3 shows the result of the correlation matrix between variables. It can be seen from the outcomes that organizational safety functions significantly and positively ($p < 0.01$) correlate with the role of the leadership. This means organizational safety is increasing, since good leadership is increasing too. The collective mindfulness function also has a positive and significant relationship with the role of leadership and organizational safety. This outcome shows that collective mindfulness is increasing based on the role of leadership, as well as organizational safety. In the case of the flexibility function, it has a positive and significant relationship with the role of leadership, organizational safety, and collective mindfulness, and has a level of $p < 0.01$. The result demonstrates that even flexibility functions increase based on leadership, organizational safety, and collective mindfulness. With respect to the communication function, it has a positive and significant relationship at the $p < 0.01$ level with leadership, organizational safety, collective-mindfulness, and flexibility. Furthermore, at the $p < 0.01$ level, organizational trust and shared knowledge patterns have a positive and significant correlation with other functions.

These results also shows that all functions are related to each other during a pandemic, and if one increases in a positive way, it will have an effect on the other functions in a positive way in the management of the pandemic in health-care organizations.

3.1. Application of multiple linear regression analysis

Initially, before starting to multiple linear regression analyses, heteroscedasticity and normality residual test should be run. The test is employed by using SPSS 23. Outcome of the testing had been shown that, data of the study follows normal distribution and there is no heteroscedasticity in the regression analyses. Appendix 1 shows the result of histogram of the Regression Standardized Residual and Normal P-Plot of Regression Standardized. Based on the outcomes of the empirical testing, the constant of the model is not significant. In terms of functions, the Organizational Safety Function (OSF), the Collective Mindfulness Function (CMF), the Flexibility Function (FLXF), the Communication Function (CMNF) and the Organizational Trust Function (OTF) have positive and significant relationships with the role of leadership at $p < 0.01$ significance levels. To check for multicollinearity, the Variance Inflating Factor (VIF) test is used. The highest values of the models' VIF ranges are taken into account, and all ranges are less than 3.0. As a result, this research does not address the issue of multicollinearity.

Model 2 of the emperical testing contain the variables which is significant in the model 1. Based on the outcome of the Model 2, equation 1 is changed as following:

$$\text{From, } YI_i = \beta_0 + \beta_1 X1_i + \beta_2 X2_i + \beta_3 X3_i + \beta_4 X4_i + \beta_5 X5_i + \mathcal{E}_i$$

To $YI_i = \beta_0 + \beta_1 X1_i + \beta_2 X2_i + \beta_3 X3_i + \beta_4 X4_i + \mathcal{E}_i$ due to shared-knowledge pattern function do not have positive or negative relationship with the dependent variable of the core model.

According to these outcomes, hypothesis H1, i.e. that leadership in HRHOs tends to have a positive relationship with trust, safety, collective mindfulness and sharing information functions, is partially accepted due to the fact that shared knowledge pattern functions during COVID-19 do not have any relationship with the role of leadership.

Table 4. OLS regression results for equation 1

Dependent Variable: Role of Leadership		
Independent Variables LD	Model 1	Model 2
Constant	0.093	
	0.397	
OSF	0.338***	0.337***
	5.831	5.913
CMF	0.358***	0.352***
	3.916	3.910
OTF	0.229***	0.232***
	2.889	2.980
CMNF	-0.218***	-0.214***
	-2.434	-2.422
FLXF	0.211***	0.216***
	2.737	2.859
SKPF	0.018	
	0.271	
Observation	276	
Adj.R ²	0.59	0.60
F-Test	24.416***	29.534***
VIF (max)	1.684	1.645

Source: Authors' elaboration (2021)

Notes: The standard errors' heteroscedasticity robust (HC) t-statistics are as follows: *** – significance at 1%, ** – significance at 5%, * – significance at 10%; the Variance Inflating Factor (VIF) test is used to check for multicollinearity.

4. Discussion

An initial objective of the paper was to identify senior leadership that applies to the other functions of managing the COVID-19 pandemic in healthcare organizations. As mentioned in the literature review, it is commonly considered that leaders play a critical role in improving the safety of operations. Little is known about how they can assist in high-reliability planning. Traditionally, empirical research has concentrated on effective leadership practices under certain operating situations. So far, no integrative conceptual framework for leadership has been developed, neither an integrative extreme nor a stable one. Another goal of this research is to provide a holistic conceptual framework for leadership that takes into account the entire range of high-reliability organizations, together with unpredictable (extreme) and predictable (stable) operating conditions, considering the aforementioned definition of a high reliability organization, and the primary characteristics of HROs proposed by previous research (Martínez-Córcoles, 2018).

Three components are required to properly implement and sustain effective communication and teamwork, senior leadership participation which is visible and persistent, the integration of tools and habits in the clinical work that individuals undertake every day, and clinical physician leadership. Senior leaders must send a coherent message that these pursuits are vital, and adequate resources will be made accessible to assist them. Respected doctors as champions are crucial in the medical community, as doctors are de facto leaders. This necessitates doctors who are able to openly pledge their support among their peers and emphasize the significance of such initiatives. Also required is a willingness to deal openly with resistance from their co-workers in collaborative conduct. When there is a lack of unambiguous physician support, and it is left to nurses and others to cope with physician reluctance, the

consequences will be less than desirable, according to the experts (Frankel, Leonard, & Denham, 2006a; Tecău et al., 2020).

The pursuit of formal degree programs in healthcare services and translational research, as well as other relevant subjects, is greatly supported and encouraged for professionals committed to advanced careers solely focused on SQ enhancement (Aboumatar et al., 2017). Effective teams consist of team leaders who care about delivering information to organizations to perform interdependent tasks to achieve a common goal. This approach is important for establishing an HRHO during the COVID-19 pandemic. In this regard, this study implies that HRHOs in Turkey should give importance to the role of the leadership and use an effective knowledge share approach to increase the high reliability between senior leaders and employees in teams. On the other hand, as part of building an HRHO, it is critical to instil in everyone in the organization a never-ending spirit of research into how to improve the quality, safety, and efficiency of care. Thus, this study suggests that team leadership, mutual performance motivations, communication ability, and a mutual trust team orientation are significant components every HRHO should give importance to, particularly during unexpected situations such as the COVID-19 pandemic, in order to handle the situation appropriately for HCWs. Moreover, identified variously as a culture of safety, a culture of information, assurance, or a culture of reliability, the construct of culture is identified very frequently and is often discussed in detail in the HRHO literature due to its significance. This study implies that these aforementioned elements certainly became more important during COVID-19. To achieve a safe environment where employees trust their organization and believe, as a team, that they can overcome this pandemic, all HCOs should give sufficient attention to them.

Conclusion and limitations

The main objective of this study was to examine the leadership function in HRHOs and its effects on HCWs during the COVID-19 pandemic, in order to shed light on novel perspectives on the importance of leadership in managing crises in health-care organizations. An online survey approach was used to meet the study's goal, and one key hypothesis was generated to help guide the investigation by a linear regression model. The linear model included one dependent variable and six independent variables. The advantage of the core research model was to allow us to clearly identify which functions were more important for leaders to apply when responding to the pandemic.

According to the findings of the empirical testing of the study, organizational safety, collective awareness, adaptability, communication, and organizational trust are all associated with the function of leadership in a good and meaningful way. The contribution of the study is that during COVID-19, leadership plays a critical role in improving these functions in order to better manage crises in HRHOs. As a result, the efficacy of those functions may contribute to a reduction in the spread of COVID-19 by enhancing collective attention among employees. Furthermore, this increase in perceived risk has been shown to boost the psychological well-being of healthcare personnel.

There are various limitations to this research. Firstly, it was restricted to the COVID-19 outbreak and used a web-based survey technique to prevent possible infections. Therefore, the sampling of the study was voluntary and performed online. Secondly, this research merely illustrates a single moment in time. As the pandemic grows, so will the adjustments in strategy and procedures. Therefore, the probability of encountering bias must be noted. In addition, the poll was carried out in Turkey. The empirical research is based on the findings obtained in this country, and the responses cannot be generalized since they were not drawn from a representative sample with nationwide coverage. It is also intended to include international and

comparative analyses between nations throughout the epidemic as part of the research effort. Future research might also use the ability of social media data to gather information about workers' routines and behaviours that are relevant to the development of HRHOs. With time, new approaches will be needed to analyse the long-term effect efficiently. Finally, this research makes a significant contribution to the present literature on the importance of leadership in organizations to strengthen the empirical testing of the effect of COVID-19. In addition, this study has beneficial impacts on HCWs and professionals in the health sector during the pandemic.

Funding

This paper is supported by EFOP-3.6.3-VEKOP-16-2017-00007—“Young researchers fortalent”—supporting careers in research activities in higher education program.

Acknowledgement

The authours would like to thank all the healthcare workers who filled in the survey of the study.

Conflict of interest statement

Author(s) reported no conflict of interest.

References

- Abdi, Z., Lega, F., Ebeid, N., & Ravaghi, H. (2021). Role of hospital leadership in combating the COVID-19 pandemic. *Health Services Management Research*. 09514848211035620
- Abdillah, M.R., Lin, C.-T., Anita, R., Suroto, B., & Hadiyati. (2018). Knowledge sharing behavior among banking officers in Indonesia. *Journal of International Studies*, 11(2), 136-153. doi:10.14254/2071-8330.2018/11-2/10
- Aboumatar, H. J., Weaver, S. J., Rees, D., Rosen, M. A., Sawyer, M. D., & Pronovost, P. J. (2017). Towards high-reliability organising in healthcare: a strategy for building organisational capacity. <https://doi.org/10.1136/bmjqs-2016-006240>
- Adelman, J. S., & Gandhi, T. K. (2021). Covid-19 and patient safety: Time to tap into our investment in high reliability. *Journal of Patient Safety*, 17(4), 331–333. <https://doi.org/10.1097/PTS.0000000000000843>
- Altindag, E., Zehir, C., & Acar, A. Z. (2014). Strategic Orientations and Their Effects on Firm Performance in Turkish Family Owned Firms. *Eurasian Business Review*, 1(1), 18–36. <https://doi.org/10.14208/BF03353796>
- Baker, D. P., Day, R., & Salas, E. (2006, August 1). Teamwork as an essential component of high-reliability organizations. *Health Services Research*. John Wiley & Sons, Ltd. <https://doi.org/10.1111/j.1475-6773.2006.00566.x>
- Bencsik, A., Juhasz, T., Mura, L., & Csanadi, A. (2019). Impact of Informal Knowledge Sharing for Organizational Operation. *Entrepreneurial Business and Economics Review*, 7(3), 25-42. <https://doi.org/10.15678/EBER.2019.070302>
- Bieńkowska, A., Tworek, K., & Zabłocka-Kluczka, A. (2020). Organizational Reliability. Organizational Reliability. Routledge. <https://doi.org/10.4324/9781003047995>

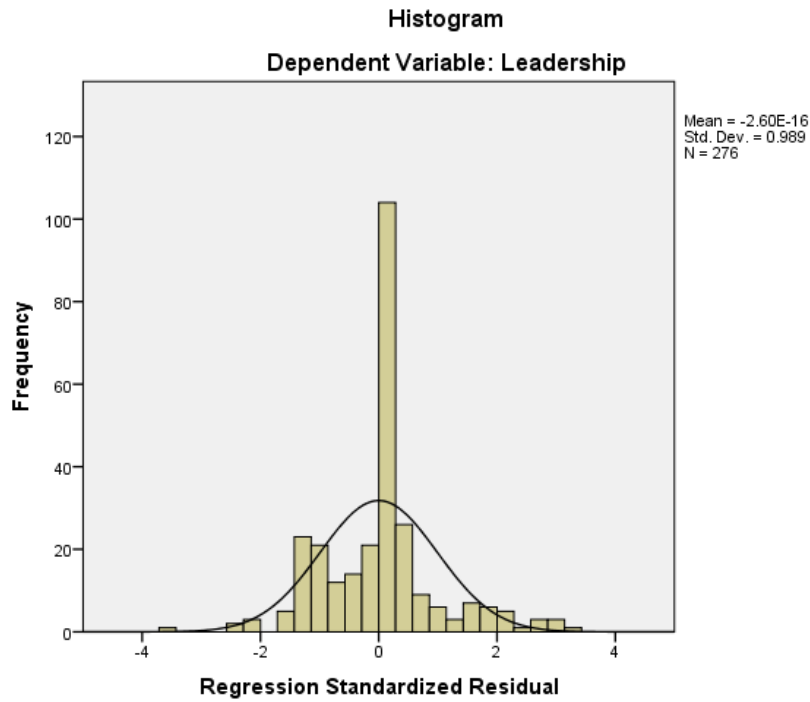
- Bilan, Y., Mishchuk, H., Samoliuk, N., & Mishchuk, V. (2020). Gender discrimination and its links with compensations and benefits practices in enterprises. *Entrepreneurial Business and Economics Review*, 8(3), 189-204. <https://doi.org/10.15678/EBER.2020.080311>
- Chassin, M. R., & Loeb, J. M. (2013a). High-reliability health care: Getting there from here. *Milbank Quarterly*, 91(3), 459–490. <https://doi.org/10.1111/1468-0009.12023>
- Cochrane, B. S., Hagins, M., Picciano, G., King, J. A., Marshall, D. A., Nelson, B., & Deao, C. (2017). High reliability in healthcare: Creating the culture and mindset for patient safety. *Healthcare Management Forum*. <https://doi.org/10.1177/0840470416689314>
- Day, R. M., Demski, R. J., Pronovost, P. J., Sutcliffe, K. M., Kasda, E. M., Maragakis, L. L., Winner, L. (2018a). Operating management system for high reliability: Leadership, accountability, learning and innovation in healthcare. *Journal of Patient Safety and Risk Management*, 23(4), 155–166. <https://doi.org/10.1177/2516043518790720>
- Dehnavieh, R., & Kalavani, K. (2020). Management-supportive measures for managers of healthcare organizations during the COVID-19 epidemic. *Infection Control & Hospital Epidemiology*, 41(7), 878–878. <https://doi.org/10.1017/ICE.2020.108>
- Durst, S., Chowdhury, F., Davila, A., Kraus, S., & Cheng, C. F. (2021). Employees' psychological characteristics and sustainable leadership in firms with high and low entrepreneurial orientation. *Journal of Small Business Strategy*, 31(3), 59-71.
- Feingold, J. H., Peccoralo, L., Chan, C. C., Kaplan, C. A., Kaye-Kauderer, H., Charney, D., Ripp, J. (2021). Psychological Impact of the COVID-19 Pandemic on Frontline Health Care Workers During the Pandemic Surge in New York City. *Chronic Stress*, 5(0). <https://doi.org/10.1177/2470547020977891>
- Frankel, A. S., Leonard, M. W., & Denham, C. R. (2006a). Fair and Just Culture, Team Behavior, and Leadership Engagement: The Tools to Achieve High Reliability. *Health Services Research*, 41(4p2), 1690–1709. <https://doi.org/10.1111/J.1475-6773.2006.00572.X>
- Gavurova, B. & Soltes, M. (2016). System of day surgery in Slovakia: Analysis of pediatric day surgery discrepancies in the regions and their importance in strategy of its development. *E+M Ekonomie a Management*, 19, 74-92. 10.15240/tul/001/2016-1-006
- Geerts, J. M., Kinnair, D., Taheri, P., Abraham, A., Ahn, J., Atun, R., ... Bilodeau, M. (2021). Guidance for Health Care Leaders During the Recovery Stage of the COVID-19 Pandemic: A Consensus Statement. *JAMA Network Open*, 4(7), 2120295–2120295. <https://doi.org/10.1001/JAMANETWORKOPEN.2021.20295>
- Hammer, T. H. (1979). *The Social Psychology of Organizations*. By Daniel Katz and Robert L. Kahn. Wiley, 1978. 2d ed. 838 pp. *Social Forces*, 57(4), 1413–1415. <https://doi.org/10.1093/sf/57.4.1413>
- Iseron, K. V. (2020). Healthcare Ethics During a Pandemic. *Western Journal of Emergency Medicine*, 21(3), 477. <https://doi.org/10.5811/WESTJEM.2020.4.47549>
- Khan, M. A., Yasir, M. & Khan, M. A. (2021). Factors Affecting Customer Loyalty in the Services Sector. *Journal of Tourism and Services*, 22(12), 184-197. <https://doi.org/10.29036/jots.v12i22.257>
- Khorsandi, J., & Aven, T. (2014). A risk perspective supporting organizational efforts for achieving high reliability. *Journal of Risk Research*, 17(7), 871–884. <https://doi.org/10.1080/13669877.2013.822912>
- Kraus, S., Niemand, T., Besler, M., Stieg, P., & Martinez-Ciment, C. (2018). The influence of leadership styles on the internationalisation of 'born-global' firms and traditionally global-expanding firms. *European Journal of International Management*, 12(5-6), 554-575.
- Kumar, R. D. C. (2013, January 1). Leadership in healthcare. *Anaesthesia and Intensive Care Medicine*, 14(1), 39-41. Elsevier. <https://doi.org/10.1016/j.mpaic.2012.11.006>

- Labrague, L. J., & De los Santos, J. A. A. (2020). COVID-19 anxiety among front-line nurses: Predictive role of organisational support, personal resilience and social support. *Journal of Nursing Management*, 28(7), 1653–1661. <https://doi.org/10.1111/jonm.13121>
- Lam, S. S. K. (1998). Test-retest reliability of the organizational commitment questionnaire. *Journal of Social Psychology*, 138(6), 787–788. <https://doi.org/10.1080/00224549809603264>
- Lyng, H. B., Ree, E., Wibe, T., & Wiig, S. (2021). Healthcare leaders' use of innovative solutions to ensure resilience in healthcare during the Covid-19 pandemic: a qualitative study in Norwegian nursing homes and home care services. *BMC Health Services Research*, 21(1). <https://doi.org/10.1186/s12913-021-06923-1>
- Martínez-Córcoles, M. (2018). High reliability leadership: A conceptual framework. *Journal of Contingencies and Crisis Management*, 26(2), 237–246. <https://doi.org/10.1111/1468-5973.12187>
- Maran, T., Furtner, M., Kraus, S., Liegl, S., & Jones, P. (2019). Entrepreneurial leadership: An experimental approach investigating the influence of eye contact on motivation. *Journal of Small Business Strategy*, 29(3), 16-32.
- Máté, D., Sarihasan, I., & Dajnoki, K. (2017). The relations between labour market institutions and employment of migrants. *Amfiteatru Economic*, 19(46), 806–820.
- Mazdeh, M. M., & Hesamamiri, R. (2014). Knowledge management reliability and its impact on organizational performance: An empirical study. *Program*, 48(2), 102–126. <https://doi.org/10.1108/PROG-01-2013-0001>
- Meyer, D. F. & Meyer, N. (2020). The relationships between entrepreneurial factors and economic growth and development: The case of selected European countries. *Polish Journal of Management Studies*, 21(2), 268-284. <https://doi.org/10.17512/pjms.2020.21.2.19>
- Meyer N. (2018). South African female entrepreneurs' intention to remain in business. (Doctoral thesis). Potchefstroom, South Africa: North-West University.
- Mossa-Basha, M., Schnall, M., Meltzer, C. C., Oleaga, L., Filippi, C. G., Mahoney, M., Tan, B. S. (2021). Special report of the RSNA COVID-19 task force: Crisis leadership of major health system radiology departments during COVID-19. *Radiology*, 299(1), 187–192. <https://doi.org/10.1148/RADIOL.2020203518>
- Muangmee, C., Kot, S., Meekaewkunchorn, N., Kassakorn, N., Khalid, B. (2021). Factors determining the behavioral intention of using food delivery apps during covid-19 pandemics. *Journal of Theoretical and Applied Electronic Commerce Research*, 16 (5).
- Mura, L., Ključnikov, A., Tvaronavičiene, M., Androniceanu, A. 2017. Development Trends in Human Resource Management in Small and Medium Enterprises in the Visegrad Group. *Acta Polytechnica Hungarica*, 14 (7), 105 – 122.
- Mustapa, W.N.W., Al Mamun, A., & Ibrahim, M.D. (2019). Evaluating the effectiveness of development initiatives on enterprise income, growth and assets in Peninsular Malaysia. *Economics and Sociology*, 12(1), 39-60. doi:10.14254/2071-789X.2019/12-1/2
- Nembhard, I., Burns, L., & Shortell, S. (2020). Responding to Covid-19: Lessons from Management Research. *Management Research*, 1–7. <https://doi.org/10.1056/CAT.20.0111>
- Nemțeanu, M.S. and Dabija, D.C., 2020. The Influence of Heavy Work Investment on Job Satisfaction and Turnover Intention in Romania. *Amfiteatru Economic*, 22(Special Issue No. 14), 993-1013. <https://doi.org/10.24818/EA/2020/S14/993>
- Nemțeanu, M.S., Dabija, D.C. and Stanca, L., 2021. The Influence of Teleworking on Performance and Employees' Counterproductive Behaviour. *Amfiteatru Economic*, 23(58), 601-619 <https://doi.org/10.24818/EA/2021/58/601>

- Nicola, M., Sohrabi, C., Mathew, G., Kerwan, A., Al-Jabir, A., Griffin, M., Agha, R. (2020). Health policy and leadership models during the COVID-19 pandemic: A review. *International Journal of Surgery*, 81, 122–129. <https://doi.org/10.1016/J.IJSU.2020.07.026>
- Paules, C. I., Marston, H. D., & Fauci, A. S. (2020). Coronavirus Infections-More Than Just the Common Cold. *JAMA - Journal of the American Medical Association*, 323(8), 707–708. <https://doi.org/10.1001/JAMA.2020.0757>
- Pronovost, P. J., Berenholtz, S. M., Goeschel, C. A., Needham, D. M., Sexton, J. B., Thompson, D. A., Hunt, E. (2006). Creating high reliability in health care organizations. Health Services Research. John Wiley & Sons, Ltd. <https://doi.org/10.1111/j.1475-6773.2006.00567.x>
- Rangachari, P., & Woods, J. L. (2020). Preserving Organizational Resilience, Patient Safety, and Staff Retention during COVID-19 Requires a Holistic Consideration of the Psychological Safety of Healthcare Workers. *International Journal of Environmental Research and Public Health*, 17(12), 4267. <https://doi.org/10.3390/IJERPH17124267>
- Riley, W. (2009). High reliability and implications for nursing leaders. *Journal of Nursing Management*, 17(2), 238–246. <https://doi.org/10.1111/j.1365-2834.2009.00971.x>
- Samoliuk, N., Bilan, Y., & Mishchuk, H. (2021). Vocational training costs and economic benefits: exploring the interactions. *Journal of Business Economics and Management*. 22(6), 1476-1491. <https://doi.org/10.3846/jbem.2021.15571>
- Sarihasan, I., Oláh, J., Al-Dalahmeh, M., Yousuf, A., & Dajnoki, K. (2021). Determining the importance of high-reliability healthcare organizations during the Covid-19 pandemic: Evidence from healthcare workers in Turkey. *Problems and Perspectives in Management*, 19(3), 345–355. [https://doi.org/10.21511/PPM.19\(3\).2021.28](https://doi.org/10.21511/PPM.19(3).2021.28)
- Sfantou, D. F., Laliotis, A., Patelarou, A. E., Sifaki-Pistolla, D., Matalliotakis, M., & Patelarou, E. (2017, October 14). Importance of leadership style towards quality of care measures in healthcare settings: A systematic review. *Healthcare (Switzerland)*. Multidisciplinary Digital Publishing Institute. <https://doi.org/10.3390/healthcare5040073>
- Smith, M. (2020). Effective Leadership in Online Small Businesses: an Exploratory Case Study. *International Journal of Entrepreneurial Knowledge*, 8(2), 27-41. <https://doi.org/10.37335/ijek.v8i2.117>
- Stefan, T., & Nazarov, A. D. (2020). Challenges and Competencies of Leadership in Covid-19 Pandemic. *Advances in Social Science, Education and Humanities Research*, 486. <https://doi.org/10.2991/assehr.k.201105.092>
- Šoltés, V., & Gavurová, B. (2014). The possibilities of day surgery system development within the health policy in Slovakia. *Health Economics Review*, 4, 35. <https://doi.org/10.1186/s13561-014-0035-1>
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53–55. <https://doi.org/10.5116/IJME.4DFB.8DFD>
- Tay, K. H., Ooi, C. C., Mahmood, M. I. Bin, Aw, L. P., Chan, L. P., Ng, D. C. E., & Tan, B. S. (2020). Reconfiguring the radiology leadership team for crisis management during the COVID-19 pandemic in a large tertiary hospital in Singapore. *European Radiology*, 31(1), 468–474. <https://doi.org/10.1007/S00330-020-07116-W>
- Tecău, A.S., Constantin, C.P., Lixândriou, R.C., Chițu, I.B. and Brătucu, G., 2020. Impact of the COVID-19 Crisis on Heavy Work Investment in Romania. *Amfiteatru Economic*, 22(Special Issue No. 14), 1049-1067 <https://doi.org/10.24818/EA/2020/S14/1049>
- Wei, S., He, Y., Zhou, W., Popp, J., Oláh, J., Dabija, D.-C., Vasiliu, C. (2021). Death Reflection and Employee Work Behavior in the COVID-19 New Normal Time: The Role of Duty

- Orientation and Work Orientation. *Sustainability*, 13(20), 11174. <https://doi.org/10.3390/SU132011174>
- Wu, A. W., Connors, C., & Everly, G. S., Jr (2020). COVID-19: Peer Support and Crisis Communication Strategies to Promote Institutional Resilience. *Annals of internal medicine*, 172(12), 822–823. <https://doi.org/10.7326/M20-1236>
- Xu, G. Y., & Wang, Z. S. (2008). The impact of transformational leadership style on organizational performance: The intermediary effects of leader-member exchange. In 2008 International Conference on Management Science and Engineering 15th Annual Conference Proceedings, ICMSE ,1090–1097. <https://doi.org/10.1109/ICMSE.2008.466904>
- Zandi, G., Shahzad, I., Farrukh, M., Kot, S. (2020). Supporting role of society and firms to COVID-19 management among medical practitioners. *International Journal of Environmental Research and Public Health*, 17 (21), 7961, 1-16. <https://doi.org/10.3390/ijerph17217961>

Appendix 1. Regression standardized residuals



Normal P-P Plot of Regression Standardized Residual

