

Validity and Reliability of 360 Degree Healthcare Leadership Model

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ABSTRACT

Purpose: Leadership assessments in the literature based on only self-assessment but this is not enough anymore. It could be evaluated by all stakeholders. The objective of this study was to investigate the goodness of fit of 360 degree healthcare leadership scale developed by National Health System Leadership Academy in Turkish population and carry out reliability and validity of the 360 degree healthcare leadership model.

Methods: This is a questionnaire validation study. Leadership skills, self-assessment of 171 healthcare managers working in 10 public hospitals; It was carried out with the evaluations made by subordinates, superiors and counterparts. Apart from the self-assessment of 171 health managers; They were also evaluated by their peers, direct reports, and managers a total of 750 people participated in the research (171 self-evaluation, 579 peers, direct reports, and managers evaluations). Validity, internal consistency and CFA was conducted in this study via SPSS and SPSS AMOS software.

Results: Item-total correlation was above 0.30. The Cronbach's α values were between 0.72 and 0.86 in sub dimensions. Construct validity scores are as follows: CMIN/DF: 2.32; CFI: 0.89; GFI: 0.77; NFI: 0.83; IFI: 0.90.

Conclusion: Turkish version of 360 degree healthcare leadership model which included 9 dimensions was approved its applicability in Turkish healthcare organizations and it could be a valuable measurement tool for effective leadership.

Keywords: Healthcare Leadership. 360 Degree Evaluation. Reliability. Validity.

ÖZET

Amaç: Literatürdeki liderlik çalışmaları yalnızca öz değerlendirmeye dayalıdır ancak bu artık yeterli değildir. Liderlik becerilerinin tüm paydaşlar tarafından değerlendirilmesi gerekir. Bu çalışmanın amacı, İngiltere Ulusal Sağlık Sistemi Liderlik Akademisi tarafından geliştirilen 360 derece sağlık liderliği ölçeğinin uyarlamasını yapmak ve 360 derece sağlık liderliği modelinin güvenilirlik ve geçerliliğini ortaya koymaktır.

Yöntem: Bu bir geçerlilik güvenilirlik çalışmasıdır. 10 kamu hastanesinde görev yapan 171 sağlık yöneticisinin liderlik becerileri, öz değerlendirme; astların, üstlerin ve mevkidaşların yapmış oldukları değerlendirmelerle gerçekleştirilmiştir. 171 sağlık yöneticisi öz değerlendirmeleri haricinde; astları, üstleri ve mevkidaşları tarafından da değerlendirilmiştir ve toplamda 750 kişi araştırmaya katılmıştır (171 öz değerlendirme, 579 ast, üst ve mevkidaş değerlendirme). Bu çalışmada geçerlik, iç tutarlılık ve DFA (Doğrulayıcı Faktör Analizi), SPSS ve SPSS AMOS yazılımları kullanılarak yapılmıştır.

Bulgular: Madde-toplam korelasyonu 0,30'ün üzerindedir. Alt boyutlarda Cronbach α değerleri 0,72 ile 0,86 arasında bulunmuştur. Yapı geçerliliği puanları şu şekildedir: CMIN/DF: 2,32; CFI: 0,89; GFI: 0,77; NFI: 0,83; IFI: 0,90.

Sonuç: 9 boyutu içeren 360 derece sağlık liderliği modelinin Türkçe versiyonunun Türk sağlık kuruluşlarında uygulanabilirliği onaylanmıştır ve etkili liderlik için değerli bir ölçüm aracı olması beklenmektedir.

Anahtar Kelimeler: Sağlık Hizmetlerinde Liderlik. 360 Derece Değerlendirme. Güvenilirlik. Geçerlilik.

Leadership is one of the most important components of the organizational process and plays a key role in improving the performance of health systems and units (1). Accordingly, leadership development is widely recognized around the world as a critical activity for improving healthcare outcomes (2). Leadership must implement policies, practices and systems that affect the behavior, attitudes and performance of its members in the organization in order to increase its competitiveness and learning capacity and to develop the organization in a sustainable way over time (3).

Today, health systems are considered as complex systems and are often described as unpredictable. Therefore, it requires effective leaders who can drive team, organization and system dynamics (4, 5). Health systems are structures that are undergoing major changes. Structures that are under pressure to increase quality and access while also having to meet cost efficiency targets (6). This situation is valid in all health systems, but low- and middle-income countries are more affected by this situation. Resource scarcity and crises in countries make it even more important to develop leadership in healthcare workers (7). In particular, the current COVID-19 pandemic has demonstrated how important leadership is for healthcare businesses (8).

Technological, political and economic developments have advanced leadership approaches towards more collaborative and sharing leadership. Differentiating human expectations also played an important role in this change (9). In a report published by the World Health Organization, it was stated that the health worker shortage is 2.7 million and this shortage is expected to be around 12.9 million by 2035 (10). Despite the limited resources and the shortage of health professionals, the pressure to improve the quality of health services, the ever-increasing demand for health, the need for efficiency and productivity are increasing day by day. Meeting expectations within the modern healthcare system requires effective leadership of healthcare professionals (11). As the need for leadership for a strong health system increases, health policy and systems researchers are working on how to support leadership development (7).

360-degree assessments are becoming increasingly popular in organizations as a component of performance appraisal. 360-degree assessments reflect not only individuals' perspectives on their own leadership skills, but also the perspectives of their colleagues, managers, and direct reports. One assumption behind 360-degree assessments

is that individual perceptions are likely to differ from those of colleagues, and these inconsistencies provide valuable feedback to the leader (12). Therefore, traditional approaches to leadership training and leadership practices in health care are no longer sufficient to address the problems leaders face in the contemporary health environment (13).

The basic premise behind 360-degree feedback is that it receives feedback from managers, direct reports, and peers on leader effectiveness. The 360-degree feedback process, which has recently been used frequently in leadership development, provides benefits in understanding other stakeholders. It can be said that organizations are now more inclined to use 360-degree feedback or multi-rater tools to identify differences in leadership perception (14). In essence, 360-degree feedback tools are considered useful because of the assumption that different groups of evaluators each offer unique and meaningful perspectives on the performance of a goal (15).

Material and Methods

Study Design and Ethical Considerations

The aim of this research is to adapt the "360 Degree Healthcare Leadership Model" developed by the NHS Leadership Academy to the Turkish Health System and to test its validity and reliability. This study designed as quantitative cross-sectional study. The research was carried out between December 2020 and March 2021. Ethics committee approval was received from Istanbul University Social and Human Sciences Research Ethics Committee for the research.

Participants and Study Size

The population of the research consists of health professionals who are in charge of management in 10 public hospitals. Hospitals were determined by statistical draw method. The names of the hospitals were written in a bag and the hospitals were determined as a result of a draw. In the study, convenience sampling method was used. 750 health managers participated in the research. As a result of the matching, it was determined that the 360-degree evaluation of 171 health managers completed. Response rate was 92%.

Study Protocol

Managers started by completing a self-assessment form. Afterwards, the peers evaluated each other. The managers, who were evaluated by their managers, were also evaluated by their direct reports, and finally the 360-degree evaluation was completed. In 360-degree evaluation, the evaluations of self-assessment, line manager, peers and direct reports have the same weight. They all 25% effect on total score. The most important inclusion criterion for the research was determined to be in a managerial position.

Assessment Tool

The Healthcare Leadership Model Assessment Tool, which was developed by NHS Leadership Academy and The Open University Business School, was used as a data collection tool in the research.

The scale consists of 9 dimensions and 27 questions. Along with the scale, the demographic information of the self-assessed managers were also collected. Language and content validity of the scale form was made, and then construct validity and reliability analyzes were carried out. Dimensions of the scale are: Inspiring shared purpose, Leading with care, Evaluating information, Connecting our service, Sharing the vision, Engaging the team, Holding to account, Developing capability, Influencing for results.

Statistical Analysis

In the research, the data were evaluated using statistical package programs such as SPSS 20, SPSS AMOS Graphics 26 and Microsoft Excel. Frequency analysis, confirmatory factor analysis, Kaiser-Meyer-Olkin Sample Adequacy and Bartlett Test, SEM goodness of fit indexes was used in data analysis. Cronbach's Alpha coefficient and item-total correlation were used for the reliability analysis and the Lawshe technique was used to test the content validity index.

Results

Demographic Characteristics

The research was carried out with managers working in 10 public hospitals in Istanbul. The median age of those who support the research is 40. Of the 171 healthcare manager 60% was women and of the managers 45%

have postgraduate education degree. The rate of participants with a bachelor's degree is approximately 42% (n=72). When the duties of the managers participating in the research were examined, approximately 65% of them were unit managers, approximately 20% were managing director and assistant managers, and the remaining 15% were head physician and unit coordinators. While 83.6% (n=143) of the participants stated that they were satisfied with their work, 3.5% (n=6) stated that they were not satisfied and 12.9% (n=22) stated that they were undecided on this issue.

Translation and Cross-Cultural Adaptation of 360 Degree Healthcare Leadership Questionnaire

The scale used in the research is in English. Firstly researchers translated the original version into Turkish. Later, translations from English to Turkish and from Turkish to English were made by academics who are experts in the field of health management and management organization. Finally, linguists joined the team and the questions were finalized. Scale statements were applied to 10 health professionals and a questionnaire form was created with their feedback. There was no change in the translation of items based on feedbacks.

Content Validity

The Lawshe technique was used to test the content validity of the scale form. While Lynn (1986) emphasizes that the content validity index (CVI) value should be at least 83%, Büyüköztürk (2012) states that it should be between 90%-100%. In this context, 6 academicians who are experts in the field of health management and 2 health administrators were asked for their opinions on the scale expressions as "Necessary-Useful/Insufficient-Unnecessary". Content validity index was calculated with the formula " $CVI=[N/(n/2)]-1$ " (16). According to the data, it was concluded that the CVI was 0.93 and it was decided that all items in the scale should remain

Construct Validity

In the scale, 360 degree evaluation results were obtained by using the averages of the answers, all of which were considered equally important in self-evaluation, evaluation of direct reports, evaluation of line managers and evaluation of peers.

The suitability of the tested structure for factor analysis even only confirmatory factor analysis was applied was evaluated with the Kaiser-Meyer-Olkin Sample Adequacy and Bartlett Test. According to the test result, values above 0.90 indicate perfect fit. In the research carried out, it was concluded that this value was 0.95. The result of the Bartlett test was also less than 0.05, indicating that it is suitable for factor analysis. Since the scale's dimensions were previously determined by the NHS Leadership Academy, only confirmatory factor analysis was applied (17). All factor loads were above 0.70.

When the values in the model are examined within the scope of confirmatory factor analysis, CMIN/DF value is 2.07; the CFI value is 0.95; the GFI value is 0.86; NFI value is 0.90; IFI 0.94; It was observed that the RMR value was 0.00 and the RMSEA value was 0.08 (Table 1). Based on these results, it was concluded that the data obtained within the scope of the research were compatible with the tested model.

Table 1: 360 Degree Healthcare Leadership Model Goodness of fit indexes						
CMIN/DF	CFI	GFI	NFI	IFI	RMR	RMSEA
($\leq 3-5$)	($\geq 0,95$)	($\geq 0,90$)	($\geq 0,90$)	($\geq 0,90$)	($\leq 0,05$)	($\leq 0,08$)
2,07	0,95	0,86	0,90	0,94	0,00	0,08

In the first analysis, the values of goodness of fit were Chi-square/SD (CMIN/DF): 2.32; The CFI value is 0.89; The GFI value is 0.77; The NFI value is 0.83; IFI 0.90; It was observed that the RMR value was 0.01 and the RMSEA value was 0.08. In this context, modifications were made to the model and outliers were excluded. Then, the factor loads of S7 and S24, which were below 0.70, were removed from the model. As a result of the evaluations, the questions S1, S12, S13 and S25 were also removed from the scale due to the decrease in model fit (acting differently from the general distribution) and the scale took its final form.

Standardized factor loads, standard error values, t values and significance (p) values for factor analysis are given in Table 2. According to the results of the analysis, it was concluded that the t values were significant ($p < 0.05$).

Table 2: Confirmatory factor analysis results of 360 degree leadership scale					
Sub Dimensions	Items	Standardized Regression Weights	Standart Error	t	p
Inspiring shared purpose	S2	0.860	0.069	13.685	***
	S3	0.874	*	*	*
Leading with care	S4	0.855	0.097	11.404	***
	S5	0.814	0.072	12.934	***
	S6	0.873	*	*	*
Evaluating information	S8	0.826	0.063	13.579	***
	S9	0.873	*	*	*
Connecting our service	S10	0.805	0.075	12.154	***
	S11	0.817	*	*	*
Sharing the vision	S13	0.760	0.089	11.357	***
	S14	0.747	0.095	11.098	***
	S15	0.809	*	*	*
Engaging the team	S16	0.831	0.085	11.931	***
	S18	0.766	*	*	*
Holding to account	S19	0.747	*	*	*
	S20	0.815	0.138	11.149	***
Developing capability	S22	0.875	0.078	13.369	***
	S23	0.810	*	*	*
Influencing for results	S25	0.855	0.11	12.676	***
	S26	0.832	0.125	12.233	***
	S27	0.824			

*** $p < 0.001$, * Standard error, t and p values are not calculated in expressions whose regression coefficient is equal to 1.

As a result of the analyzes made, the 360 degree health-care leadership scale model, which has a 9 dimensions

structure, provided construct validity and the final version of the model is presented in Figure 1.

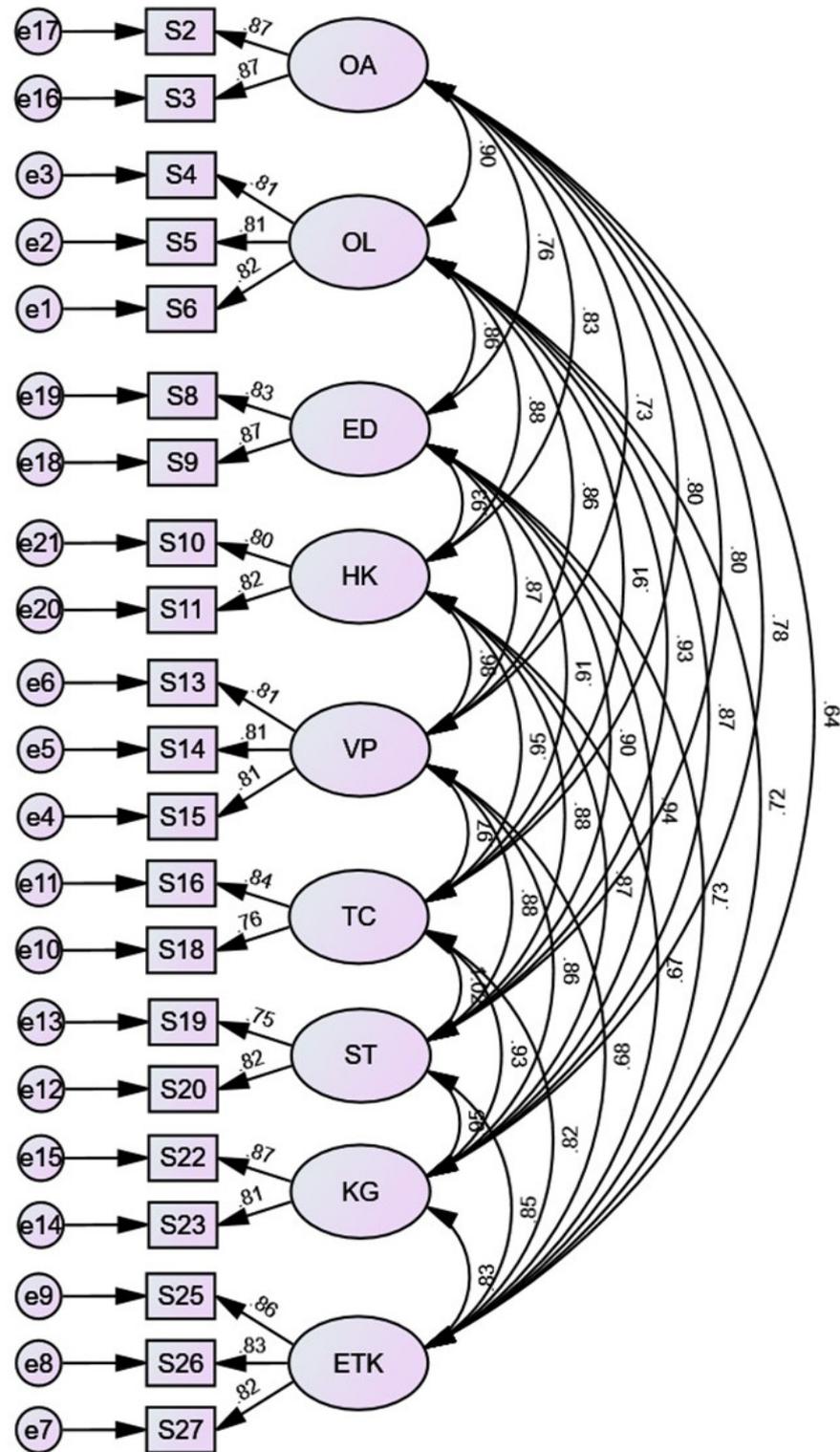


Figure 1: Final Version of Model

Appendix A. Final Turkish Version of the scale						
1	Ekibim, yaptıkları işin, hasta hizmeti ve diğer sağlık hizmet kullanıcıları üzerindeki etkilerini açık bir şekilde anlayabilir	1	2	3	4	5
2	Ekibim, sağlık hizmetini geliştirmek konusunda engellerle başa çıkmak için desteklediğini düşünür	1	2	3	4	5
3	Ekibim işinde kendilerine değer verildiğini hisseder	1	2	3	4	5
4	Çalıştığım ekip, karşılıklı olarak birbirlerine önem ve destek verir	1	2	3	4	5
5	Çalıştığım ekip, üzüntü veren duygularla baş ederken birbirlerini desteklerler	1	2	3	4	5
6	Ekip içindeki kararlar araştırmalara ve kanıta dayalı olarak alınır	1	2	3	4	5
7	Bu ekipte mevcut çalışma şeklini geliştirmek için yaratıcı yeni uygulamalar kullanılırız	1	2	3	4	5
8	Hizmetimizi alanlardan düzenli olarak geri bildirimleri toplar ve harekete geçiririz	1	2	3	4	5
9	Ekibim, yaptığı işlerin takımın ötesinde bir katkı sağladığını düşünmeye teşvik edilir	1	2	3	4	5
10	Ekibim, sağlık hizmetinin tüm bileşenlerini etkili bir şekilde birbirine bağlar	1	2	3	4	5
11	Ekibim gelecek için açıkça tanımlanan vizyona hizmet ettiğini düşünür	1	2	3	4	5
12	Ekibim geleceğe ilişkin belirlenmiş bir vizyona ulaşmak için nasıl çalışacağı konusunda iyimserdir	1	2	3	4	5
13	Ekibim anlaşmazlığa neden olan karmaşık değişim süreçlerinde, iyi liderlikle güvence ve ilham alır	1	2	3	4	5
14	Ekibim, yaptığı işlere katkılarının değerli olduğunu hisseder	1	2	3	4	5
15	Takımın amaçları ve kişisel hedefler arasında denge kurma hususunda ekibim desteklenir	1	2	3	4	5
16	Ekibim, işinde kendilerinden ne beklediğini bilir	1	2	3	4	5
17	Ekibim, performanslarını yükseltmeye yardımcı olması için yapıcı geri bildirimler alır	1	2	3	4	5
18	Bu ekibin yüksek beklentileri vardır. Sıradanlık fark edilir ve sıradanlıkla mücadele edilir	1	2	3	4	5
19	Ekibime işini öğrenmesi ve işinde gelişmesi için fırsatlar verilir	1	2	3	4	5
20	Ekibim güçlü ve zayıf yanlarının neler olduğunu bilir	1	2	3	4	5
21	Ekibim, örgütsel amaçlara ulaşmak için hem ekip içinde, hem de ekip dışında ilişkiler kurmaya teşvik edilir	1	2	3	4	5
22	Ekibimizde, işimizi yaparken semboller ve hikayeler gibi farklı iletişim yöntemleri kullanırız	1	2	3	4	5
23	Resmi ve resmi olmayan iki yönlü iletişim kanalları bu ekibin normlarından	1	2	3	4	5

Cronbach's Alpha coefficient and item-total correlation were used for the reliability analysis of the 360 degree leadership scale. According to the results obtained, the Cronbach's Alpha coefficient of the 360 degree leadership scale was determined as 0.96. This value indicates that

the reliability of the scale is extremely high. As a result of the reliability analysis for the sub-dimensions, Cronbach's Alpha coefficients are presented in Table 3. Accordingly, it is seen that all factor loads are above 0.70.

Table 3: Reliability and Inter Item Correlations

Items	Inter Item Correlations	Sub-Dimensions	Cronbach's Alpha	Mean Score
S2	.722	Inspiring shared purpose	0.86	4.54
S3	.730			
S4	.759			
S5	.690	Leading with care	0.84	4.44
S6	.751			
S8	.767			
S9	.784	Evaluating information	0.84	4.22
S10	.752			
S11	.739			
S13	.725	Connecting our service	0.80	4.35
S14	.704			
S15	.778			
S16	.814	Sharing the vision	0.85	4.37
S18	.735			
S19	.731			
S20	.767	Engaging the team	0.76	4.51
S22	.772			
S23	.743			
S25	.692	Holding to account	0.72	4.51
S26	.685			
S27	.690			
		Developing capability	0.80	4.43
		Influencing for results	0.86	4.13

When the item-total correlations in which the consistency of the items with the scale are examined, it is concluded that the correlation values of each of the statements with the scale are above 0.30 (Table 3).. On the other hand inter item correlations ranged from 0.68 to 0.81, which exceed the lower limit of 0.30 proposed by Cortina (1993), using SPSS version 20. Thus, scale shows a significant level of consistency, or internal reliability (18).

On the other hand mean scores of the assessment was as follows: Mean score of the self-assessment was 4.31 ± 0.55 , peers' assessment score was 4.37 ± 0.58 , direct reports' assessment score was 4.38 ± 0.49 , and managers' assessment score was 4.53 ± 0.48 . Mean scores of the factors were given in the Table 3.

Discussion

A validity and reliability study must have internal consistency and construct validity (19). In this study language validity, content validity, internal consistency and construct validity were tested.

360 degree healthcare leadership Turkish version showed an adequate level of understanding according to the study sample. The values for validity, and reliability proved to be acceptable. According to the literature, It is stated that 0.30 and above are accepted for item-total correlation (20). In this study all items are above 0.30 (0.68-0.81). Additionally, the Cronbach's α coefficients are between 0.72-0.86. As a result of the reliability analysis, researchers concluded that removing any item would not make a positive contribution and the internal consistency coefficient values in all sub-dimensions were above 0.70. As the conditions are met no item excluded from the scale in this stage. It shows a significant level of internal consistency. The results are compatible with the literature.

The factor loadings found in the Turkish version of the 360 degree healthcare leadership scale were higher than 0.74 (0.74-0.87) according to the confirmatory factor analysis, which is considered adequate in the literature (21).

When the validity and reliability studies carried out in the field of healthcare leadership in the national and international literature are examined, it is seen that the findings we obtained for construct validity in our research (CMIN/DF: 2.32; CFI: 0.89; GFI: 0.77; NFI: 0.83; IFI: 0.90) are similar to the results of the published study (1, 22, 23). When the findings from the literature on leadership and our findings

are evaluated together, it is concluded that the results obtained meet the sufficient requirements.

Conclusions

In the present study, the leadership skills of 171 healthcare managers were evaluated by all stakeholders, including self-reports, peers, managers, and direct reports. Some healthcare professionals have been evaluated by more than one peer and/or direct report. In this case, while the number of evaluations was expected to be $171 \times 4 = 684$, a total of 750 people participated in the research because of some managers evaluated more than one direct report or peer. In this case, the mean score of the responses evaluated to obtain a more accurate score.

As a result of the research, it has been determined that the 360 degree healthcare leadership Turkish version is an adequate and reliable measurement tool. In future studies, the skills of leaders working in the field of health can be evaluated in a 360-degree manner, not only based on self-assessment or the assessment of their manager. With this scale, leadership skills can be determined more accurately and leaders can find an opportunity to improve their shortcomings. In the model, the opinions of patients receiving health care services were not consulted. Including the service recipients in the model in future studies may help to get more effective results.

Limitations

First, Test-retest method was not used in this study. Second, peers and direct reports were chosen from those who know the manager best. For this reason, it is possible to score their team mate high. Lastly, COVID-19 was a big problem while data collection process. Without such a process, more data could have been collected from hospitals.

Declarations

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Conflict of Interest

None declared.

Ethical Approval

Approval of ethics committee gathered from the ethics committee of a Istanbul University with 31.05.2018, 59480 date and number. The study carried out in accordance with Declaration of Helsinki.

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