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Development of health workers' attitude scale towards quality studies: validity and reliability study

Seyhan Çerçi[1*] and Ülkü Baykal[2]

Abstract

Background It is known that quality studies increase satisfaction, positively affect productivity and support corporate development. This methodological study aims to develop a scale that measures the attitudes of healthcare professionals toward quality studies.

Methods A methodological study using instrument-development and instrument verification phases. The research universe was composed of health workers working in 5 hospitals in Istanbul ($N=6308$), and the sample was composed of health workers who agreed to participate in the research ($n=1013$). The researchers followed the scale development stages: item pooling, expert opinion, preliminary application, validity, and reliability.

Results KMO and Bartlett's test values of scale showed that the dataset was convenient for factor analyses (KMO = 0.976, Chi-Square = 20624.814, df = 861). In exploratory factor analysis, the 42 items comprising scale were distributed in three subscales. The confirmatory factor analysis revealed that the scale was in sufficient model fit. Cronbach's alpha of the total scale was 0.976.

Conclusion The "Attitude of Health Workers towards Quality Studies" scale was determined to be valid and reliable. This scale could serve as a comprehensive tool for evaluating quality initiatives in healthcare. It could possess the capacity to bring together different institutions (public, private, university) in a way that fosters mutual growth. The assessment of healthcare quality initiatives could pave the way for inclusive improvements to be planned. Through all the planned enhancements, both patient and employee satisfaction can be enhanced.

Keywords Quality in health, Reliability, Scale, Total quality management, Validity

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Background

The health sector is a complex and dynamic field that aims to improve the health of societies [1]. The quality of services in this field has a direct impact on patient satisfaction and the productivity of healthcare professionals and is among the key factors determining the effectiveness and efficiency of the overall health system [2]. Efforts to improve quality in healthcare services not only improve patient care but also support organisational success by increasing the motivation of healthcare professionals [3]. In this context, understanding the attitudes of healthcare professionals towards quality is critical for both improving service quality and ensuring employee satisfaction.

Quality in health is not only limited to the effectiveness and safety of medical interventions. It also includes many factors such as transparency of management processes, employee participation, effectiveness of training processes and organisational culture [4]. Each of these elements has an important role in ensuring sustainable quality in healthcare services. Attitudes of healthcare professionals towards quality stand out as an important factor in the successful implementation of these elements. A positive attitude of health professionals towards quality increases the effectiveness of quality studies and creates a great source of motivation for continuous improvement of services [5, 6].

However, the attitudes of healthcare professionals towards quality may differ in each organisation and the lack of a valid and reliable instrument measuring these attitudes may limit the effectiveness of improvement processes in this field [3, 7]. In this context, it is of great importance to develop an objective measurement tool that can assess the attitudes of healthcare professionals towards quality activities [8]. Such a scale not only assesses the individual attitudes of healthcare workers, but also allows for monitoring and guiding the effectiveness of quality improvement strategies at the organisational level [9].

The aim of this study is to develop a valid and reliable scale to measure the attitudes of healthcare professionals towards quality activities. This scale will allow us to better understand the general attitudes of healthcare professionals towards quality, the possible interactions of these attitudes and their level of participation in quality activities. In addition, this scale will contribute to the strengthening of quality management practices in health institutions and continuous improvement in health services.

Most of the studies conducted to improve quality in the health sector focus on basic indicators such as patient satisfaction, safety of health services, employee productivity and workplace satisfaction [10, 11]. However, one of the most important factors affecting these factors is the attitudes of healthcare professionals towards quality studies. Healthcare professionals, as individuals who directly provide patient care and are involved in organisational processes, not only implement quality, but also make suggestions to improve this quality and participate in improvement processes. Therefore, assessing healthcare professionals' attitudes towards quality is a critical tool for identifying the strengths of organisations and identifying areas for improvement [12].

In this context, the number of scales measuring the attitudes of healthcare professionals towards quality studies in the literature is limited and the existing scales are generally limited to a specific institution or system [13]. However, the development of a valid scale that adopts a general approach, covers all healthcare professionals and can be used in different healthcare organisations will allow quality studies to be evaluated from a broader perspective. In addition, the existence of such a scale will contribute to taking more concrete steps towards increasing the effectiveness of quality improvement strategies of healthcare organisations.

Evaluating the literature at the national and international levels, it has been concluded that standards in quality studies will be effective in terms of creating a common language, patients and employees will be satisfied with quality studies, service delivery will be better by increasing the number of health workers working in clinics, satisfaction will increase by improving physical areas, medication errors can be prevented with proper communication, both patient safety will increase, and the patient will receive better quality service if the number of patients falling to nurses decreases, injuries will decrease by improving the working environment, quality of life will also increase by increasing the perception of quality [14]. In addition, it is stated that quality practices increase the performance and efficiency of healthcare professionals and support the organization's development [15].

As this study is a methodological research, it aims to establish a solid basis for the validity and reliability of the scale to be developed. The scale development process adopted an approach supported by creating an item pool after qualitative interviews, expert opinions, pretest applications and statistical analyses. This multi-stage approach is consistent with the proposed scale development procedures for ensuring content validity, construct validity and reliability [16, 17]. Therefore, this process includes all necessary steps to guarantee the accuracy, reliability and validity of the content of the scale. Thus, it was aimed to develop a tool that can accurately and reliably measure the attitudes of healthcare professionals towards quality studies.

As a result, the development of a valid and reliable scale that measures the attitudes of healthcare professionals towards quality activities will make significant

contributions to strengthening quality management in the healthcare sector and continuous improvement of healthcare services. This scale will help us to understand the attitudes of healthcare professionals towards quality in more depth and can be used as a tool to increase the effectiveness of quality improvement processes in healthcare organisations.

Methods

Design and type of research

This study was conducted as a scale development (instrument development) study, which is a type of research and development design aimed at developing a valid and reliable measurement tool to assess healthcare professionals' attitudes towards quality studies. The study followed the recommended methodological framework for scale development, including item generation, expert review, pretesting, and psychometric evaluation [16, 17].

Study participants

The research was carried out in five hospitals, including two public hospitals, one university hospital, and two private hospitals located in Istanbul. 2864 health workers in the university hospital, 2627 in public hospitals, 817 in private hospitals, and a total of 6308 health workers made up the research universe. In the scale development studies, it is stated that 10 participants are sufficient/ideal for each item included in the scale to determine the sample size [16]. Since the item pool of the draft scale is 64 items, it was aimed to reach 640 health workers by following the quota sampling method proportional to the total number of health workers in the universe (the number of health workers, physicians, nurses, and other health workers according to their profession) (Table 1). 1013 health workers (228 physicians, 579 nurses/midwives, 74 other health professional members, and 132 health technicians) who agreed to participate in the research created a sample of the research. However, the number of physicians reached (n = 228) remained below the targeted quota (n = 262). This was due to the limited availability and voluntary participation status of physicians during the data collection process. 16% of the universe has been reached.

Data collection tools

An Introductory Information Form containing demographic characteristics and a "Draft Scale of Health Workers' Attitudes towards Quality Studies" were used as data collection tools. Research data were collected face-to-face from health workers working in five hospitals in Istanbul between May-June 2022. The data collection tool was distributed by hand to 1300 people by the researcher and collected back from 1128 people. 115 of the collected forms werw not included in the study because they contain incomlete informations. As a result, the data of 1013 health workers were evaluated. The final English version of the developed scale is provided in Supplementary File 1.

Data analysis

SPSS 22.0 and LISREL 8.7 Statistical Package Programs were used to analyze the data obtained from the research. The demographic characteristics of 1013 participants were examined descriptively. Item total score correlation, Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), Mean-Variance, and test-retest methods were used on the data. For reliability analysis, Cronbach's Alpha and Combined Reliability analyses were used. The study achieved cross-validity by performing $n = 610(60\%)$ EFA and $n = 403(40\%)$ CFA on randomly selected samples from the data set. The normality test was tested using the single-variable Shapiro-Wilk and the multivariate Henze-Zirkler methods. In addition, Spearman's (rho) correlation analyses were applied to determine the relationship between the variables, and the results were evaluated at 95% and 99% confidence intervals, and $p < .05$, $p < .01$ significance levels.

Ethical dimensions of research

Ethical approval for this study was obtained from the Non-Interventional Clinical Research Ethics Committee of Prof. Dr. Cemil Taşcıoğlu City Hospital (Helsinki Committee/IRB) (Approval Date: Fabruary 11, 2021; Reference No: 2021-66). Institutional permission was granted by the Istanbul Provincial Health Directorate (Approval Date: March 25, 2021; Reference No: E-15916306-604.01.01-2522). The study was conducted in accordance

Table 1 Quota sampling table of the research

Number of Health Workers	Universe	Layer Weight	Targeted Sample	Sample Reached
Physician (Prof. Dr., Ass. Prof. Dr., Spec. Dr, Practitioner Dr., Dentist, etc.)	2582	2582/6308 = 0.41	0.41*640 = **262**	228
Nurse/Midwife	2911	2911/6308 = 0.46	0.46*640 = **294**	579
Health Licensee (at least four years of school graduate such as Psychologist, Dietitian, Pharmacist, Physiotherapist, Audiologist, etc.)	326	326/6308 = 0.05	0.05*640 = **32**	74
Health Technician (2-year Vocational College graduate such as ATT, Anesthesia, Radiology, Audiometry, Medical Secretary, etc.)	489	489/6308 = 0.08	0.08*640 = **52**	132
Total	**6308**		**640**	**1013**

with the ethical principles of the Declaration of Helsinki. Prior to data collection, all participants were provided with detailed information about the purpose of the study and written informed consent was obtained from each participant.

Results

It was determined that most of the health workers participating in the study were women (71.2%), between the ages of 27–36 (38.2%), single (55.7%), and had a bachelor's degree (47.0%). It was found that most of the health workers are employed in the public sector (52.9%), nurses/midwives (57.2%), worked in specialized services (operating room, emergency, hemodialysis, intensive care, etc.) (38.2%), and received a quality education. In addition, it was found that most participants served for five years or less in the profession and the institution.

Item pool and scope validity

In-depth individual interviews were conducted with 45 healthcare professionals to develop a draft scale aimed at measuring healthcare workers' attitudes towards quality initiatives. Content analysis of the data obtained from these interviews identified three main themes: corporate approach, managerial approach, and employee approach. Based on these themes, an 84-item item pool was created to assess healthcare workers' attitudes towards quality improvement efforts. For example, items such as 'Quality initiatives improve occupational health and safety' from the corporate approach theme, 'I make improvements based on self-assessment results' from the managerial approach theme, and 'I value feedback from my colleagues' from the employee approach theme were developed. Following a comprehensive review by the research team, 23 items containing similar expressions or deemed ambiguous in meaning were removed from the scale, resulting in a draft scale of 61 items.

This draft was then submitted to 18 experts for evaluation in terms of relevance and clarity. Each item was rated using a four-point scale, and the Content Validity Index (CVI) was calculated using the Davis Technique. The overall CVI was found to be 0.97, indicating a high level of agreement among experts. Since no item had a CVI score below the acceptable threshold of 0.80, no items were removed at this stage. In light of expert feedback and suggestions, revisions were made to certain items, and three additional items were included, bringing the total number of items to 64.

Subsequently, a pilot study was conducted with 30 healthcare professionals who shared similar characteristics with the target sample. Participants were asked to identify any unclear or ambiguous items. Based on their feedback, minor wording adjustments were made to improve item clarity and comprehensibility.

Item total score correlation

To assess the performance and quality of each item, item-total score correlations, item means, and variances were analyzed. Additionally, Cronbach's alpha coefficients were examined for each item when deleted. Based on these analyses, two items with low item-total correlations were removed from the scale. For the remaining 62 items, the item-total correlation coefficients ranged from $r = .302$ to $r = .778$, indicating acceptable to high internal consistency.

Structure validity

Exploratory Factor Analysis (EFA) was employed to assess the construct validity of the scale, as it is one of the most commonly used methods for identifying underlying factor structures. Prior to conducting the analysis, the suitability of the dataset was evaluated using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity. The KMO value was found to be 0.976, indicating excellent sampling adequacy. Bartlett's test produced a statistically significant result ($\chi^2 = 20624.814$; $df = 861$; $p < .001$), confirming that the correlations among items were sufficient for factor analysis.

EFA was initially conducted on all 64 items included in the draft version of the scale. During the first round of analysis, 22 items were eliminated from the scale due to insufficient factor loadings (i.e., below the generally accepted threshold of 0.40) or problematic cross-loadings across multiple factors. These items either failed to load meaningfully on any factor, showed low item-total correlations, or loaded ambiguously across more than one factor—thus potentially undermining the conceptual clarity and factorial purity of the scale. Their removal enhanced both the internal consistency and the construct validity of the instrument.

As shown in Table 2, a second EFA was then performed on the remaining 42 items. The analysis revealed a clear three-factor structure, with factor loadings ranging between 0.45 and 0.86. The total explained variance was 62.10%, indicating that the scale accounted for a substantial proportion of the construct related to healthcare workers' attitudes toward quality initiatives. Additionally, the eigenvalues for each retained factor exceeded 1.0, further supporting the appropriateness of the three-factor solution according to Kaiser's criterion.

Following a detailed review of the item content within each factor, the three dimensions were labeled as follows:

- **Factor 1**: *Corporate Approach (CA).*
- **Factor 2**: *Managerial Approach (MA).*
- **Factor 3**: *Employee Approach (EA).*

These dimensions collectively represent the multi-layered structure of perceptions regarding quality practices within healthcare organizations.

Table 2 Exploratory factor analysis, eigenvalue, and explanation rate results

Scale Sub-Dimension	Material	Factor Loads	Eigenvalue	Explanation Rate (%)	Cumulative Explanation Rate (%)
Factor 1 (18 Items) Corporate Approach	Item 1	0.64	21.389	50.93	50.93
	Item 4	0.81			
	Item 5	0.66			
	Item 7	0.68			
	Item 8	0.74			
	Item 9	0.71			
	Item 10	0.71			
	Item 11	0.84			
	Item 12	0.80			
	Item 13	0.79			
	Item 14	0.70			
	Item 15	0.70			
	Item 16	0.68			
	Item 18	0.73			
	Item 19	0.78			
	Item 20	0.70			
	Item 21	0.58			
	Item 22	0.61			
Factor 2 (18 Items) Executive Approach	Item 27	0.54	2.420	5.76	56.69
	Item 28	0.67			
	Item 29	0.79			
	Item 32	0.64			
	Item 33	0.66			
	Item 34	0.69			
	Item 35	0.79			
	Item 36	0.78			
	Item 37	0.74			
	Item 38	0.78			
	Item 39	0.79			
	Item 40	0.74			
	Item 41	0.82			
	Item 42	0.66			
	Item 43	0.68			
	Item 44	0.73			
	Item 45	0.59			
	Item 46	0.74			
Factor 3 (6 Items) Employee Approach	Item 50	0.45	2.270	5.41	**62.10**
	Item 53	0.86			
	Item 54	0.85			
	Item 55	0.84			
	Item 56	0.62			
	Item 57	0.71			

To validate the factor structure obtained from the Exploratory Factor Analysis, a Confirmatory Factor Analysis (CFA) was conducted using the Robust Maximum Likelihood estimation method. The standardized factor loadings ranged from 0.50 to 0.90, and all factor loadings were statistically significant at $p < .01$, indicating that each item contributed meaningfully to its respective latent construct.

Model fit indices were examined to evaluate the overall adequacy of the three-factor structure. The CFA results indicated the following values:

- **Chi-square/df (CMIN/df)**: 1.82 (acceptable).
- **CFI (Comparative Fit Index)**: 0.99 (excellent).
- **NNFI (TLI)**: 0.99 (excellent).
- **NFI (Normed Fit Index)**: 0.99 (excellent).
- **RMSEA (Root Mean Square Error of Approximation)**: 0.045 (good fit).

- **SRMR (Standardized Root Mean Square Residual)**: 0.098 (marginal).
- **GFI (Goodness of Fit Index)**: 0.67 (below acceptable threshold).

While most fit indices such as CFI, NNFI, NFI, and RMSEA indicated a good to excellent model fit, the **GFI (0.67)** and **SRMR (0.098)** values fell short of conventional cut-off criteria (typically GFI > 0.90 and SRMR < 0.08). These lower values may be attributed to several factors. First, the model includes 42 observed variables, which may inherently challenge absolute fit indices such as GFI, especially in moderate sample sizes, as GFI is sensitive to model complexity and sample size. Second, SRMR may reflect slightly elevated residuals between observed and predicted covariances, potentially due to minor cross-loadings or correlated measurement errors not specified in the model.

Despite these localized weaknesses, the presence of strong relative fit indices (CFI, NNFI, NFI all ≥ 0.99), along with acceptable RMSEA and a reasonable χ^2/df ratio, supports the overall adequacy and structural validity of the model. Therefore, while certain fit indices suggest areas for refinement, these do not undermine the general validity or interpretability of the scale. The model is considered sufficiently robust for the intended purpose of measuring healthcare professionals' attitudes toward quality studies. The final CFA model is illustrated in the path diagram shown in Fig. 1.

Correlation and reliability analyses

As presented in Table 3, the intercorrelations among the scale's sub-dimensions were examined. A very strong positive correlation was found between the *Corporate Approach (CA)* and *Managerial Approach (MA)* sub-dimensions ($r = .812$, $p < .01$), suggesting that these two constructs are closely related ($0.80 < r < 1.00$). Additionally, a strong positive correlation was observed between the *Corporate Approach (CA)* and *Employee Approach (EA)* ($r = .615$, $p < .01$), as well as between the *Managerial Approach (MA)* and *Employee Approach (EA)* ($r = .638$, $p < .01$). These findings indicate internal consistency and conceptual coherence across the sub-dimensions of the scale.

To assess convergent validity, Average Variance Extracted (AVE) and Composite Reliability (CR) values were calculated for each sub-dimension. The AVE values for CA (0.669), MA (0.670), and EA (0.584) all exceeded the commonly accepted threshold of 0.50, indicating sufficient convergent validity. Similarly, the CR values for CA (0.973), MA (0.973), and EA (0.890) exceeded the recommended level of 0.70, suggesting high internal consistency.

In addition, Cronbach's alpha coefficients were computed to evaluate internal reliability. The alpha values for the sub-dimensions were 0.962 (CA), 0.963 (MA), and 0.823 (EA), and the total scale yielded a Cronbach's alpha of 0.976. These results demonstrate a very high level of internal reliability, indicating that the items consistently measure the intended constructs.

To evaluate the temporal stability of the scale, a test–retest reliability analysis was performed. The scale was administered twice to a group of 51 healthcare professionals with a three-week interval. Although the sample size for the test–retest procedure was relatively modest ($n = 51$), the results were highly promising. No statistically significant difference was observed between the mean scores across the two time points ($p > .05$), and the correlation coefficients between administrations ranged from 0.995 to 0.999, indicating excellent test–retest reliability.

Nonetheless, it is acknowledged that conducting the test–retest analysis with a larger and more representative sample in future studies would further strengthen the evidence for temporal reliability. Despite the sample size limitation, the exceptionally high correlation values observed support the robust temporal consistency of the scale.

In terms of content interpretation, each sub-dimension captures a specific aspect of attitudes toward quality studies:

- **CA (Corporate Approach)**: Attitudes toward the institutional/organizational structure,
- **MA (Managerial Approach)**: Attitudes toward the managerial/administrative structure,
- **EA (Employee Approach)**: Attitudes toward employee-related elements.

The total scale score reflects the overall attitude of healthcare professionals toward quality-related initiatives. A mean score approaching 5 on the 5-point Likert scale indicates a highly positive attitude, whereas a score approaching 1 reflects a negative attitude toward quality practices.

Discussion

This research aimed to develop a tool to measure healthcare workers' attitudes toward quality studies. In preparing the scale developed with this goal, an expert opinion was obtained by creating a 61-item draft scale using interviews with health professionals. According to expert opinions, the necessary arrangements were made by adding three more items. Respectively, EFA, CFA, correlation, test-retest, and reliability analyses were applied to 1013 health workers working in 5 hospitals in the research universe. As a result, a 3-factor structure with

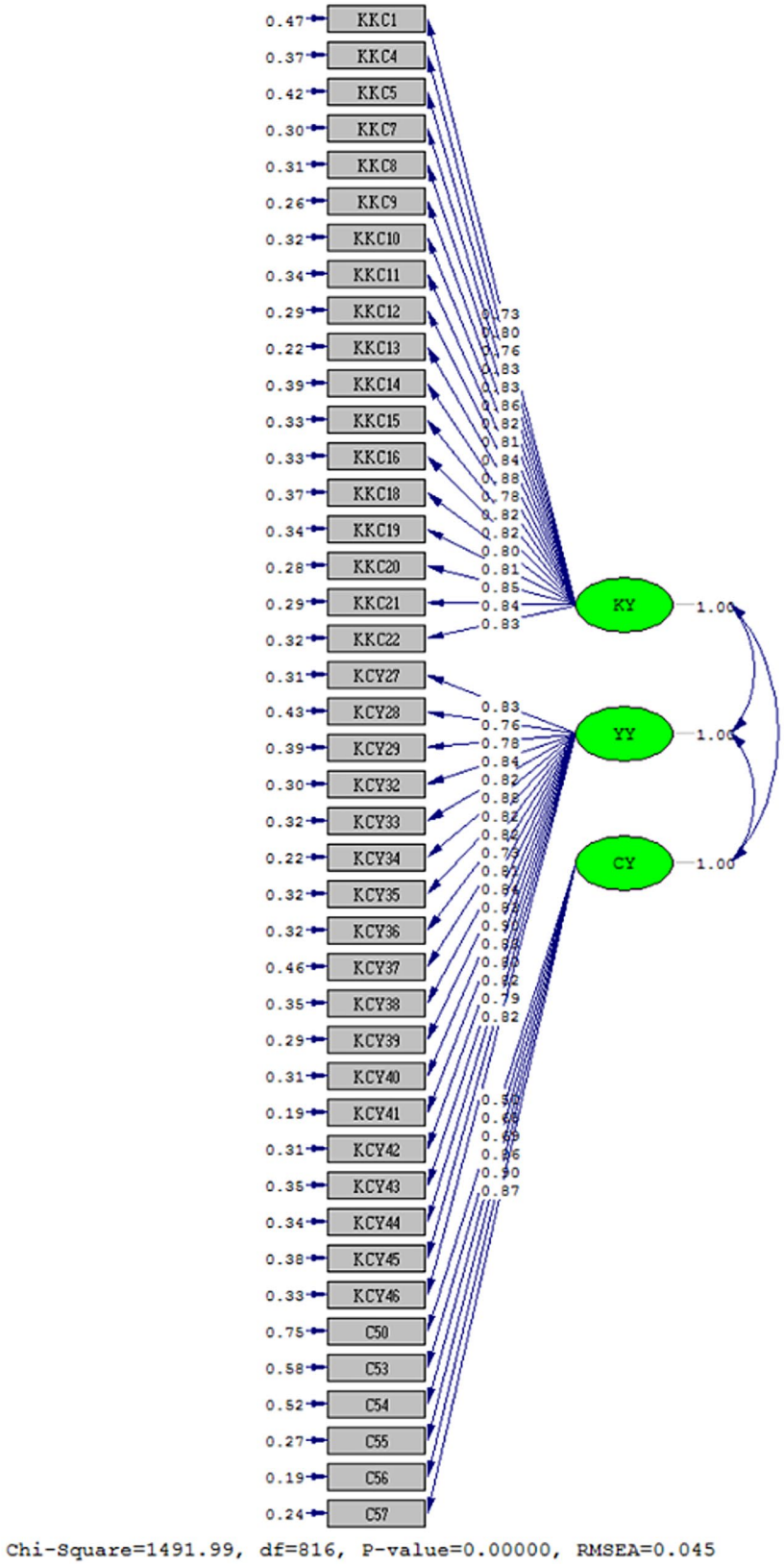

Fig. 1 "CFA" model path diagram related to the scale correlation and reliability analyses

Table 3 Findings of the correlation analysis, the average variance extracted (AVE), combined reliability analysis (CR), and the internal consistency coefficient (Cronbach's Alpha)

Sub-Dimensions	1	2	3	4	AVE	CR	Cronbach's α
1. Corporate Approach	1	0.812**	0.615**	0.945**	0.669	0.973	0.962
2. Manager Approach		1	0.638**	0.932**	0.670	0.973	0.963
3. Employee Approach			1	0.713**	0.584	0.890	0.823
4. Total Scale				1			0.976

**$p < .01$, *$p < .05$

42 items was obtained, in which 62.10% of the total variance was explained.

The "expert opinion" for scope validity is one of the most effective and frequently applied methods [18–20]. The item pool (61 items) created in this research was sent to 18 experts to evaluate the validity of the scope and the appropriateness and comprehensibility of the items were evaluated. Within the scope of the Davis Technique, the experts requested to give points to the items between appropriate (4) and inappropriate (1) [21]. The Scope Validity Rate was calculated as 0.97, and no item was removed because no items were less than 0.80. According to expert opinions, three more items were added, and the scale was tested with 30 health workers with the same characteristics as the sample group with 64 items. According to the comments received, the necessary arrangement was made. According to these results, the draft scale forms the structure to be measured and reflects the validity of the scope.

For structure validity

Whether the research data set is suitable for factor analysis is evaluated by Barlett's test with the KMO coefficient. The KMO coefficient value should be above 0.60; between 0.60 and 0.69 is considered weak, 0.70–0.79 moderate, 0.80–0.89 good, and 0.90-1.00 excellent. In addition, Bartlett's analysis, which determines whether the variables are related, should be meaningful [22, 23]. In the analyses of the draft scale, the KMO value was 0.976, and the Bartlett sphericity test was $x^{2=}$20624.814; sd = 861 and $p < .001$. According to these values, the sample is of perfect size, and there are relationships between the variables, making the variables suitable for factor analysis.

EFA is a statistical tool used for many purposes. It is used in modern social sciences and scales to explore the psychometric properties of a person. It examines all bidirectional relationships and tries to find hidden factors between individual variables [24]. The PROMAX oblique rotation method was used since the factors are related. Then, factor analysis was performed two times on the items. As a result of the first-factor analysis, 22 items with a factor weight below 0.40 were removed from the scale. According to the "EFA," the "Attitude of Health Workers towards Quality Studies" scale with 42 items and a three-dimensional structure was obtained. It is stated that the factor load should be above 0.40 in the EFA [16, 25]. The total variance rate described in the literature should be 40–60% [26]. In this study, the factor loads of the scale, which is in a three-dimensional structure, were between 0.45 and 0.86, the rate of the total variance explanation was obtained by 62.10%, and it was determined that the three factors determined in the analysis together explain a significant part of the total variance in the items and the perception of attitude towards quality studies. In addition, in factor analysis, it is considered significant if the initial eigenvalues are above 1 [27]. It was determined that the eigenvalues obtained from each factor were above 1. In line with these results, the scale provides structure validity.

In scale development studies, CFA is used to test the factor structure, determine the relations of the items, factor loadings, and the compatibility of the scale and subdimensions [28]. In this study, the "Robust Maximum Likelihood" estimation method was used as the estimation method in CFA, the regression coefficients were calculated, and it was determined that the standardized coefficient values of the scale were between (0.50–0.90) and all items were significant ($p <$,01). It was determined that the model provided convergent validity adequately because the CA sub-dimension was AVE (0.669) ≥ 0.50, the MA sub-dimension AVE (0.670) ≥ 0.50, and the EA sub-dimension AVE (0.584) ≥ 0.50.

Although most fit indices (CFI, TLI, NFI, RMSEA) indicate good or excellent model fit, the GFI (0.67) and SRMR (0.098) values remain below the generally accepted threshold values. According to Hu and Bentler (1999), CFI ≥ 0.95, RMSEA ≤ 0.06, and SRMR ≤ 0.08 are recommended for good fit in DFA. They also emphasise that these threshold values may be affected by factors such as model complexity, sample size, and number of variables [29]. This study model contains 42 items. In such complex models, absolute fit indices such as GFI are known to be highly sensitive to sample size and the number of parameters in the model [30]. A low GFI therefore does not necessarily mean that the model is poor, but is rather considered a reflection of the model's complexity. Similarly, the SRMR value indicates the magnitude of the average residuals between observed and predicted covariances; the slightly high SRMR value in this study

may have arisen due to measurement errors or small cross-loadings. The model was validated in line with these results, and the scale fitted well.

The reliability analysis

Considers Cronbach's α value for the scale's internal consistency. Evaluating that the structure to be measured is measured consistently is called internal consistency, and high internal consistency among the scale items means that the scale is reliable [31, 32]. Cronbach's alpha value is the most common method used to evaluate the consistency of the scales [33, 34]. The Cronbach's α values of the 3-dimensional, 42-item scale were found to be (0.962), (0.963), (0.823), respectively, in the sub-dimensions of CA, MA, and EA, and were found to be highly reliable because they were ≥ 0.80. The Cronbach's α value of the full scale was obtained as 0.976; in this case, it was determined that the consistency of the answers given to the scale was high. In line with these results, it can be said that the total scale and its sub-dimensions are highly reliable.

The retest test, one of the reliability analyses, is performed to evaluate the invariance of the scale concerning time. The literature recommends collecting data from a sample of at least 30 people for retesting. It is also stated that the retest application should be applied twice for fifteen days and one month. The average scores obtained in each of the two measurements should not be a statistically significant difference [26, 31]. In this study, test-retest analysis was applied to test the invariance of the scale according to time and to determine reliability. Test-retest was performed with 51 people with similar characteristics as the sample. According to these values, there was no statistically significant difference between the mean values of the sum of the scale of the CA, MA, and EA sub-dimensions ($p > .05$). According to these results, the scale is invariant concerning time.

Limitations

In this study, the scale development steps were carefully followed. The scale obtained from the study was validated on Turkish healthcare workers. Cultural differences and quality studies of countries should be taken into account if it is adapted to a different language.

Implications

This scale can be used to measure the attitude of healthcare professionals towards quality work. This scale could serve as a comprehensive tool for evaluating quality initiatives in healthcare. It could possess the capacity to bring together different institutions (public, private, university) in a way that fosters mutual growth. The assessment of healthcare quality initiatives could pave the way for inclusive improvements to be planned. Through all the planned enhancements, both patient and employee satisfaction can be enhanced.

Conclusion

In light of the findings obtained in the study, this scale, which will be used to measure the attitudes of healthcare professionals toward quality studies, is a valid-reliable measurement with appropriate characteristics. However, with the scale developed, it was determined that it is a measurement tool that can be used to determine the attitudes of healthcare professionals working in different hospitals, such as state, private, and university hospitals, regarding quality studies. In addition, the sub-dimensions of the scale and the detailed description of the structure for the corporate structure, manager, and employee attitudes also showed that the developed scale could be used to provide more detailed data. Health professionals in all health sectors, such as public, private, and university, can evaluate their attitudes with this scale and compare them with other institutions. Therefore, improvements can be made in quality practices. In addition, it is recommended to conduct studies to define the relationship between the application results of the scale and the quality indicators.

Abbreviations

EFA	Exploratory Factor Analysis
CFA	Confirmatory Factor Analysis
CVI	Content Validity Index
CA	Corporate Approach
MA	Managerial Approach
EA	Employee Approach

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12913-025-13750-1.

Supplementary Material 1

Supplementary Material 2

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Author contributions

[SÇ, ÜB] conceived and designed the study. [SÇ] collected the data. [SÇ, ÜB] performed the statistical analysis. [SÇ, ÜB] drafted the manuscript. All authors read and approved the final manuscript.

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Data availability

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Ethical approval for this study was obtained from the Non-Interventional Clinical Research Ethics Committee of Prof. Dr. Cemil Taşcıoğlu City Hospital

(Helsinki Committee/IRB) (Approval Date: Fabruary 11, 2021; Reference No: 2021-66). Institutional permission was granted by the Istanbul Provincial Health Directorate (Approval Date: March 25, 2021; Reference No: E-15916306-604.01.01-2522). The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Prior to data collection, all participants were provided with detailed information about the purpose of the study and written informed consent was obtained from each participant.

Consent for publication
Not Applicable.

Competing interests
The authors declare no competing interests.

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