

# NEW CONCEPT IN CLINICAL CARE: PROPOSAL OF A MORAL INTELLIGENCE SCALE

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**Abstract:** Effective communication, especially of those health professionals in management positions, contributes to the entire process of treating patients and can transform the quality of service into the processes of diagnosis, treatment and care. Managers with moral intelligence are able to distinguish right from wrong and can facilitate the relationship between health professionals and patients. The purpose of this study is to develop a scale to measure moral intelligence. The measurement tool created by the Lawshe method was applied to 789 health professionals. Following the calculations of the Content Validity Ratio and the Content Validity Index, the scale included 77 items. After applying it, with the subsequent exploratory and confirmatory factor analysis, the scale received its final form with 47 items. The  $C\alpha$  value of the scale is 0.966. The scale has seven dimensions, and they have been defined as “equality”, “empathy”, “moral intelligence”, “justice”, “tolerance”, “self-control” and “kindness”. The  $C\alpha$  values for these dimensions are determined respectively as 0.922, 0.910, 0.874, 0.859, 0.799, 0.840 and 0.772; demonstrating that the scale allows to study the moral intelligence of nurses and doctors. The scale developed had high Cronbach alpha values for each component and element, indicating that the scale provides a survey with high validity to measure the moral intelligence of doctors and nurses. Factor analysis shows a statistically valid distribution of items and components. Taking into account the moral intelligence parameters in the provision of health services will contribute to accurately diagnose disorders, reduce patient anxiety, ensure a shorter hospital stay, reduce the number of patients transferred to other health centers, to prevent negligence, save time and achieve better workforce planning.

**Keywords:** moral intelligence, health professionals, Lawshe Method

## Nuevo concepto en atención clínica: propuesta de una escala de inteligencia moral

**Resumen:** La comunicación efectiva, especialmente de aquellos profesionales de la salud en puestos directivos, contribuye a todo el proceso de tratamiento de los pacientes y puede transformar la calidad del servicio en los procesos de diagnóstico, tratamiento y atención. Los gerentes con inteligencia moral son capaces de distinguir lo correcto de lo incorrecto y pueden facilitar la relación entre los profesionales de la salud y los pacientes. El propósito de este estudio es desarrollar una escala para medir la inteligencia moral. La herramienta de medición creada por el método Lawshe se aplicó a 789 profesionales de la salud. Siguiendo los cálculos de la Relación de Validez del Contenido y el Índice de Validez del Contenido, la escala incluyó 77 ítems. Después de aplicarlo, con el posterior análisis factorial exploratorio y confirmatorio, la escala recibió su forma final con 47 ítems. El valor  $C\alpha$  de la escala es 0,966. La escala tiene siete dimensiones, y se han definido como “igualdad”, “empatía”, “inteligencia moral”, “justicia”, “tolerancia”, “autocontrol” y “amabilidad”. Los valores de  $C\alpha$  para estas dimensiones se determinan respectivamente como 0.922, 0.910, 0.874, 0.859, 0.799, 0.840 y 0.772; demostrando que la escala permite estudiar la inteligencia moral de enfermeras y médicos. La escala desarrollada tenía altos valores alfa de Cronbach para cada componente y elemento, lo que indica que la escala proporciona una encuesta con alta validez para medir la inteligencia moral de médicos y enfermeras. El análisis factorial muestra una distribución estadísticamente válida de ítems y componentes. Tomar en cuenta los parámetros de inteligencia moral en la provisión de servicios de salud contribuirá a diagnosticar trastornos con precisión, reducir la ansiedad de los pacientes, garantizar una estancia más corta en el hospital, reducir el número de pacientes transferidos a otros centros de salud, prevenir la negligencia, ahorrar tiempo y lograr una mejor planificación de la fuerza laboral.

**Palabras clave:** inteligencia moral, profesionales de la salud, Método Lawshe

## Novo conceito em atenção clínica: proposta de uma escala de inteligência moral

**Resumo:** A comunicação efetiva, especialmente dos profissionais da saúde em cargos diretivos, contribui com todo o processo de tratamento dos pacientes e pode transformar a qualidade do serviço nos processos de diagnóstico, tratamento e atenção. Os gerentes com inteligência moral são capazes de distinguir o certo do errado e podem facilitar a relação entre os profissionais da saúde e os pacientes. O propósito deste estudo é desenvolver uma escala para medir a inteligência moral. A ferramenta de mensuração criada pelo Método Lawshe foi aplicada a 789 profissionais da saúde. Seguindo os cálculos da Relação de Validade de Conteúdo e o Índice de Validade de Conteúdo, a escala incluiu 77 itens. Depois de aplica-la, com a análise fatorial exploratória e confirmatória posterior, a escala recebeu sua forma final com 47 itens. O valor  $C\alpha$  da escala é 0,966. A escala tem sete dimensões que foram definidas como “igualdade”, “empatia”, “inteligência moral”, “justiça”, “tolerância”, “autocontrole” e “amabilidade”. Os valores de  $C\alpha$  para estas dimensões foram, respectivamente, determinados como 0,922, 0,910, 0,874, 0,859, 0,799, 0,840 e 0,772, demonstrando que a escala permite estudar a inteligência moral de enfermeiras e médicos. A escala desenvolvida tinha altos valores de alfa de Cronbach para cada componente e elemento, o que indica que proporciona uma pesquisa com alta validade para medir a inteligência moral de médicos e enfermeiras. A análise fatorial mostra uma distribuição estatisticamente válida de itens e componentes. Ter em conta os parâmetros de inteligência moral na provisão de serviços de saúde contribuirá para diagnosticar transtornos com precisão, reduzir a ansiedade dos pacientes, garantir uma permanência mais curta no hospital, reduzir o número de pacientes transferidos para outros centros de saúde, prevenir a negligência, salvar tempo e lograr um melhor planejamento da força de trabalho.

**Palavras-chave:** inteligência moral, profissionais de saúde, Método Lawshe

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## Introduction

Effective communication in healthcare is increasingly gaining in importance as healthcare services have got complicated over time. Effective communication brings several advantages that modern healthcare organizations need, including trust, diligence, rigor, mutual respect, adherence to treatment, and saving on time and resources(1).

Cooperation and effective communication are two vital concepts that complement each other in the provision of healthcare services. Effective communication of healthcare professionals, especially of those in management positions, contribute to the entire treatment process. Thanks to communication skills, healthcare professionals can make a transformation in service quality in diagnosis, treatment and care processes. Managers that use moral intelligence, i.e. have the capacity to understand right from wrong, can facilitate a desirable relationship between healthcare professionals and patients.

Moral intelligence, a significant component of ethical leadership, is expected from individuals that are in the management position. Complementing creative intelligence, moral intelligence plays a facilitating role in human relationships. Research shows that peace, trust, solidarity, and work performance increase when ethical leaders are aware of their moral intelligence skills in their relationship with colleagues, and on the other hand, that lack of these skills lead to mental and physical disorders arising from anxiety disorder, stress, and ineffective management of stress(2-4).

Employees working in an organization, where the perception of justice is high, and equal and fair treatment is guaranteed have higher job satisfaction and optimum effectiveness at work. Thus, moral intelligence is of particular importance not only in the asymmetrical relationship between health professionals and patients, but also in superior-subordinate relationship among healthcare professionals(4,5).

Moral intelligence is an outcome of research done from past to present with regard to the presence of a mental process required to carry out an ethi-

cal act. Although moral intelligence is a relatively new concept in the literature, previous research shows that its presence was acknowledged by former scholars and philosophers. Moral intelligence suggests that the mind operates a decision-making mechanism before getting engaged in an act, and that several parts of the brain get activated in this process. So, what does the concept of moral intelligence refer to when used by a person who is engaged in an ethical decision-making process?

Michele Borba defines moral intelligence as the capacity to understand right from wrong. Borba further provides seven essential virtues of moral intelligence: empathy, conscience, self-control, respect, kindness, tolerance, and fairness(6).

Lennic and Kiel define moral intelligence as the mental capacity that determines how universal values such as integrity, compassion, forgiveness, and accountability and responsibility apply to personal objectives, acts, and actions(7). Healthcare professionals have face-to-face communication with patients increasing in number every day. In order to improve the quality of healthcare services, healthcare professionals are required to employ strategies that enable them to get optimum benefit from communication. Today, increasing specialization and advancing technologies also contribute to staff quality and qualifications. What healthcare professionals with varied educational level and experience need to do to work in harmony is to have moral intelligence, and to become aware of and use its parameters in professional life(8).

It is of particular importance to have and use the skills defined in the literature, including moral intelligence skills, in order to create an auspicious environment for effective communication and proper behavior. The aim of this study is to develop a Survey for Measuring Moral Intelligence in the Provision of Healthcare Services for professionals that provide healthcare services. The survey aims to determine whether healthcare professionals comply with the parameters of moral intelligence, i.e. empathy, conscience, self-control, respect, kindness, tolerance, and fairness, in the process of understanding right from wrong.

## Patients and methods

1. Type of Research: This study intends to develop an analytical questionnaire in order to identify the viewpoints of healthcare professionals employed in a town center with regard to moral intelligence and its parameters.

2. Population and Sample of Research: This study was conducted during regular work hours with healthcare professionals employed in public, research and private hospitals, and family healthcare centers in Eskişehir. The number of participants included in the sample was calculated in consideration of the total number of physicians and nurses employed in public and private healthcare organizations in Eskişehir. The data used in sampling were as follows:

- Total Number of Physicians in Eskişehir: 1469.
- Total Number of Nurses in Eskişehir: 1989.
- The sample sizes were as follows in multistage sampling:
  - Research Hospital: 509 physicians (133 in sample), 541 nurses (110 in sample).
  - Public Hospital: 525 physicians (137 in sample), 919 nurses (187 in sample).
  - Private Hospital: 255 physicians (67 in sample), 349 nurses (71 in sample).
  - Family Healthcare Center: 180 physicians (47 in sample), 180 nurses (37 in sample).
  - Thus, the total number of healthcare professionals included in the sample was 789.

The research population consisted of physicians and nurses working in Eskişehir Osmangazi University Research Hospital, three public hospitals (Eskişehir Devlet Hastanesi, Yunusemre Devlet Hastanesi and İki Eylül Devlet Hastanesi), family healthcare (primary care) centers, and three private hospitals (Eskişehir Özel Acıbadem Hastanesi, Sakarya Hastanesi, Ümit Hastanesi). The

initial goal was to conduct the study with 80% of the population. Finally, the total number of physicians and nurses included in the sample was 789.

Permission was received from the Board of Ethics for Non-pharmacological Clinical Research in the Faculty of Medicine at Eskişehir Osmangazi University. (July,22,2015 80558721/G-25) Written informed Consent of the participants was taken.

3. Data-Collecting Instruments and Method: A survey of literature showed that there was a limited number of instruments for measuring moral intelligence. The researchers developed the survey after reading previous research about moral intelligence and its parameters. After the survey was developed, a "Socio-demographic Survey Form" and the "Survey for Measuring Moral Intelligence in the Provision of Healthcare Services" were used to collect data.

The below procedure was followed for developing the questionnaire:

The following two resources were used to determine the items that would be kept in the survey form after expert opinion was received: "Development and Evaluation of a New Questionnaire for Rating of Cognitive Failures at Work" and "A Quantitative Approach to Content Validity".

C. H. Lawshe's method, suggested in the literature related to scale development, was used for analysis of the scale.

Experimentality is of no use in scales developed to show measurement results mathematically. Scales that measure attitudes are misleading. That is why content validity ratio (CVR) and content validity index (CVI) are used in scale development. CVR is used to transform qualitative studies into statistical quantitative research, with the help of expert opinion. Any margin of error is minimized by conducting a preliminary study with a view to determining the degree to which a questionnaire item measures a particular content domain (content validity) and the degree to which an item measures a particular construct (construct validity). Content validity ratio was developed by Lawshe (1975)(9).

Lawshe technique consists of six stages:

- Creating a Content Evaluation Panel consisting of subject-matter experts.
- Developing a Content Evaluation Form.
- Getting opinions from a sufficient number of subject-matter experts.
- Obtaining the CVR of the scale, using the formula related to items.
- Obtaining the CVI of the scale, using the formula related to index calculation.
- Creating the final version of the survey form based on CVR and CVI calculations(9,10).

There is a need to get opinion from minimum 5 and maximum 40 subject-matter experts in the process of scale development. For the purpose of this study, the researchers selected 40 subject-matter experts for the evaluation of scale items. They sent out the content evaluation form to experts and asked them to fill out the form. The experts marked one of the following options for each of 96 items in the scale: A; [Required (it must be included in the scale)], B; [Inappropriate/Irrelevant (it must be excluded from the scale)], C; [Revision Needed (It may be included in the scale after being revised)]

The evaluations of subject-matter experts and the procedures followed henceforth are presented below based on formulae and calculations:

- 1) The CVR was calculated using the following formula for each of 96 items in the draft scale:
- 2) According to Lawshe's method, the minimum value for an item to be included in the scale is 0.29 when opinion is received from a panel of 40 experts. As the number of experts was 40 in this study, the items with a CVR of minimum 0.29 were included in the scale.
- 3) The CVI was calculated for a total of 77 items according to the formula developed for CVI calculation.

The CVI is 0.66.

4) Minimum CVR: 0.29, Number of Experts: 40, CVI: 0.66

The result of  $CVI \geq CVR$  formula was  $0.66 > 0.29$  in the present study. Thus, the final version of the scale consisted of 77 items. The scale is designed according to 5-point Likert-type scale with the following range of answer options: 1. Definitely Disagree, 2. Disagree, 3. Partially Agree, 4. Agree, 5. Definitely Agree. Cronbach's alpha ( $\alpha$ ) value, calculated to test internal consistency, was  $\alpha=0.980$  for this 77-item attitude scale.

After the scale was developed, healthcare professionals employed in Eskişehir, Turkey were provided with information about the subject and aim of the research and asked to sign the voluntary consent form. The forms were distributed during work hours (8 am to 5 pm) on workdays. The fully completed survey forms were included in the study. SPSS 21.00 was used for statistical analysis of data. In this study, 789 healthcare professionals replied 77 questions related to moral intelligence parameters.

4. Statistical Methods Used in Data Analyses: In the first place, factor analysis was used to transform interrelated variable constructs into unrelated but conceptually more significant new constructs that were smaller in number. The aim of this process was to determine the factors related to measured constructs or concepts(11). Two approaches generally used for this purpose are Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA)(12-14). EFA is based on covariance or correlation values of data. EFA is a technique used to produce variables (factors) that are smaller in number ( $k < p$ ) and unrelated to each other from amongst a given number ( $p$ ) of correlated variables(15). CFA is a statistical procedure used to test whether factors determined through EFA are consistent with factor constructs defined in the hypothesis(14, 16).

In this study, EFA was used for 77 items that were developed to determine the components of moral intelligence parameters that apply to healthcare provision by physicians and nurses. Furthermore, CFA was conducted to evaluate the suitability of factor constructs obtained in EFA. Based on these analyses, the final version of the scale consisted of

47 items(13,17-20). The final form consists of 47 items with an internal consistency of Cronbach's alpha=0.966.

## Results

### 1. Results of Factor Analysis Conducted for Scale Development

EFA was conducted to determine the number of factors. This allowed us to reduce the number of variables to a smaller set of interrelated variables(21). EFA and CFA play a significant role in determining the appropriate number of factors(22).

### *Results of Exploratory Factor Analysis*

KMO and Bartlett's test results

Table 1. KMO and Bartlett's test results

Kaiser-Meyer-Olkin Test		,969
Bartlett's Test for Sphericity	Chi-square	22751,073
	Degree of freedom	1081
	Significance	,000

According to Table 1, the results of KMO test, conducted to test sampling adequacy, and Bartlett's test for sphericity, conducted to test the relationship between variables, indicate that the data collected for the purpose of this study were suitable for factor analyses. The values presented in the table also suggest that the scale has construct validity(23).

### *Eigenvalues and percentages of variance explained*

Eigenvalues and percentages of variance explained were calculated to identify the suitable number of factors for items in the Survey for Measuring Moral Intelligence in the Provision of Healthcare Services. The distribution of values for 47 items in the scale are presented in Table 2.

In exploratory factor analysis, one of the most significant criteria is identifying the number of eigenvalues that are greater than 1 in the correlation matrix, which is known as the Kaiser criterion(24). Accordingly, the number of components whose eigenvalue is greater than 1 points to the

number of fit factors. Table 2 shows that there are seven components whose eigenvalue is greater than 1 in the correlation matrix. The table further indicates that these seven factors account for 60,830% of the total variance cumulatively. Thus, according to eigenvalues and percentages of variance explained, 47 items in the Survey for Measuring Moral Intelligence in the Provision of Healthcare Services fall under seven factors. In the final place, Varimax rotation was conducted to determine more clearly the factors that include the variables and to make more accurate interpretations, as a result of which variables whose factor loading was below 0,40 were excluded from the analysis. The percentages of variance explained for seven factors are as follows in descending order: 40,858, 6,299, 3,756, 3,002, 2,447, 2,308, and 2,161. The percentages of variance explained for each factor as well as factor loadings are shown in Table 3.

### *Results of confirmatory factor analysis*

CFA was conducted on Lisrel 8.80 in order to test whether the proposed or hypothesized construct was consistent with data collected in the research, or in other words, how well the construct obtained in EFA was represented(14,25,26). In CFA, to test whether a theoretical model is consistent and significant in statistical terms, the first stage is to check t values that indicate the significance of parameter estimates of paths in the model. A t value greater than 1.96 is considered significant at a significance level of 0.05, and a value greater than 2.58 is considered significant at a significance level of 0.01(14,27). Seven components identified with respect to loadings in results of EFA are as follows:

The variables in the first component, with a cumulative average of 40%, focused on concepts such as respect, importance of ethical values, listening to others and sensitivity in communication, self-esteem and anger management, self-awareness, conciliation and caring about other people, which emphasize the equality of two parties in communication. This component was, thus, named as "equality". The second component, with a cumulative average of 6%, was named as "empathy" as it concentrated on variables such as putting oneself in another person's

shoes, understanding other people and sharing their feelings in effective communication that is free from prejudgments and stereotypes. The third component, with a cumulative average of 3%, was “moral intelligence”, where intelligence, intellectual acceptance, mentalization, and self-control and outcomes of human act were the central themes. The fourth component, which also had a cumulative average of 3%, was associated with the concept of “fairness” as the focus was on trust, non-discrimination among human beings, and empathy in healthcare services. The fifth component, with a cumulative average of 2%, corresponds to “tolerance”, bringing together themes related to self-recognition and transformation power, self-esteem, and focusing on others’ mistakes, or supporting their individualization. The sixth component, with a cumulative average of 2%, is associated with the concept of “self-control”, including statements related to mental state, control required to create something in mind, and controlled behavior filtered by conscience. The last component, with a cumulative average of 2%, is named as “kindness” given that the focus was on paying attention to one’s own actions, as well as mental comprehension of actions and respect in personal actions. CFA was conducted to test whether the factor construct of the Survey for Measuring Moral Intelligence in the Provision of Healthcare Services in EFA fits.  $t$  values and CFA results are presented in Figures 1 and 2.

### ***Path diagram showing $t$ values***

The path diagram showing  $t$  values is presented in Figure 1.

### ***Standard solutions obtained in CFA***

Standard solutions obtained as a result of CFA are provided below.

Figure 1 showing the  $t$  values related to the significance of parameter estimates, indicate that the  $t$  value of each of 47 items is greater than 1.96. Thus, all  $t$  values are significant.

Some fit indices are taken into consideration, along with  $t$  values that refer to significance, in order to test how well a factor construct fits to the

data. A wide array of fit indices is used to establish the model fit in consideration of strengths and weaknesses, by evaluating how well how well a theoretical models fits to a real set of data(13,28-30).

### ***Some indices used in evaluating model fit***

The model obtained as a result of the exploratory factor analysis was tested by confirmatory factor analysis. Some indices used to evaluate the model fit are shown in table 4.

Table 4 indicates that, with respect to research data, the RMR, CFI, NFI, and NNFI indices point to a good fit, and the RMQEA value points to an acceptable fit. In the evaluation, the  $\chi^2$ /sd values equal to or smaller than 0.03 indicate a good model fit, and the values up to 0.05 indicate an acceptable model fit. The results show that GFI and AGFI values are not among fit indices(28).

3.2. The lowest and the highest scores, average scores, and standard deviations of healthcare professionals’ response to items in all components of the Survey for Measuring Moral Intelligence in the Provision of Healthcare Services

In the scale, the “equality” component has the highest score with an average score of 4,46, and the “moral intelligence” component has the lowest score with an average score of 4,08. The results suggest that respondents give the highest importance to the component named as equality; however, the other components, i.e. empathy, moral intelligence, fairness, tolerance, self-control, and kindness, are also important for healthcare professionals.

### **Discussion**

Ethics sometimes establishes rules, and develops and recommends new life styles. When telling people what to do and what not to do, it reminds people their responsibilities and liabilities. In this respect, one of the main goals of ethics is to determine the ultimate best for humans and the humanity. Achieving the ultimate best is also one of the fundamental goals of life and life activities. An overview of philosophical approach-

Table 4. Some indices used to evaluate the model fit

<i>Fit Indices</i>	<i>Good Fit</i>	<i>Acceptable Fit</i>	<i>Results</i>
$\chi^2/sd$	$0 \leq \chi^2/sd \leq 2$	$2 \leq \chi^2/sd \leq 3$	3.67
GFI	$0.95 \leq GFI \leq 1.00$	$0.90 \leq GFI \leq 0.95$	0.83
AGFI	$0.90 \leq AGFI \leq 1.00$	$0.85 \leq AGFI \leq 0.90$	0.81
RMQEA	$0 \leq RMSEA \leq 0.05$	$0.05 \leq RMSEA \leq 0.08$	0.058
RMR	$0 \leq RMR \leq 0.05$	$0.05 \leq RMR \leq 0.10$	0.026
CFI	$0.97 \leq CFI \leq 1.00$	$0.95 \leq CFI \leq 0.97$	0.98
NFI	$0.95 \leq NFI \leq 1.00$	$0.90 \leq NFI \leq 0.95$	0.98
NNFI	$0.97 \leq NNFI \leq 1.00$	$0.95 \leq NNFI \leq 0.97$	0.98

es since the antiquity reveals the importance of achieving the ultimate best and the significance of the awareness of values on the way to achieve the ultimate best. Each one of moral intelligence parameters target the promotion of the society in general, and more specifically the provision of healthcare services. Components of moral intelligence, each of which may be regarded as an ethical value, are defined as preliminary values for service providers and buyers – values that are irreplaceable in life. Focusing on the knowledge of human value, components of moral intelligence may play an active role in not only regulating personal relationships but also preventing violations of human rights.

The KMO test result for the research data was 0.969, and the p value in the Barlett's test for

sphericity was <0,1.

In Uludağ's study of 2011, which focused on physician-patient relationship from the perspective of empathy and respect, the KMO test result was 0,881, and the result of Barlett's test for sphericity was  $p=0,01(31)$ . In Teke et al.'s study related to nurses' empathy level, the KMO test result was 0,822, and the result of Barlett's test for sphericity was  $p=0,00(32)$ . In the empathy survey that Özdin used in 2015, the KMO test result was 0,822, and the result of Barlett's test for sphericity was  $p=0,00(33)$ . Looking for the effect of sense of justice on nurses' job satisfaction, Bağcı found out that the KMO test result was 0,822, and the result of Barlett's test for sphericity was  $p<0,01(34)$ . In Gül et al.'s study on ethical leadership and justice, the KMO test result was

Table 5. The average scores, and standard deviations of healthcare professionals' response to items in all components of the Survey for Measuring Moral Intelligence in the Provision of Healthcare Services

<b>Components</b>	<b>Number</b>	<b>Score Range</b>	<b>Lowest</b>	<b>Highest</b>	<b>Average</b>	<b>S t a n d a r d Deviation</b>	<b>Cronbach's Alpha</b>
<b>Equality</b>	789	1-5	1,00	5	4,4682	,53297	0,922
<b>Empathy</b>	789	1-5	2,10	5	4,2757	,54123	0,910
<b>M o r a l Intelligence</b>	789	1-5	1,00	5	4,0841	,61942	0,874
<b>Fairness</b>	789	1-5	1,00	5	4,4210	,55473	0,859
<b>Tolerance</b>	789	1-5	1,00	5	4,1899	,58309	0,799
<b>Self-Control</b>	789	1-5	1,00	5	4,1914	,63286	0,840
<b>Kindness</b>	789	1-5	1,00	5	4,1876	,65473	0,772

0,840 for ethical leadership survey and 0,928 for organizational justice survey, and the Barlett's test result was  $p=0,00$  for both surveys(35). In Nejad et al.'s study of 2015 with regard to moral intelligence, the KMO test result was 0,90(36).

The general expectation is that the KMO test result is greater than 0,60, and  $p$  value is  $p<0,01$ . Our research results are consistent with KMO and Barlett's test results presented in the literature, and thus constituted a suitable set of data.

The study consisted of seven components with an eigenvalue greater than 1 in the correlation matrix. Furthermore, these seven components explained 60,8% of the total variance. Survey for Measuring Moral Intelligence in the Provision of Healthcare Services was comprised of 47 items categorized under seven factors.

In Bağcı et al.'s study, the scale consisted of three components that explained 67,2% of the total variance(34). In Gül et al.'s study, the ethical leadership survey explained 74,1% of the total variance, and the organizational leadership survey explained 79,6% of the total variance(35). Kadioğlu et al., focusing on ethical problems in geriatrics, obtained five factors accounting for 60,9% of the total variance(37). Şantaş et al. reported that the items in their scale explained 82,5% of the total variance(38). Our research findings are in agreement with those of Bağcı et al. and Kadioğlu et al. and, different from those of Hasan et al. and Şantaş et al.

In this study,  $t$  value, which refers to the significance of parameter estimates, was greater than 1.96 and thus significant for each item in the questionnaire. The fit indices used in this study and respective results were as follows: Chi-square/SD: 3,67, GFI: 0,83, AGFI: 0,81, RMQEA: 0,058, RMR: 0,026, CFI: 0,98, NFI: 0,98, and NNFI: 0,98.

In Doğan et al.'s study, fit indices for the scale were Chi-square/SD=2,134, GFI=0.80, AGFI=0.77, CFI=0.98, NFI=0.96, NNFI=0.98, and RMQEA=0.06415 In Yıldız's study on organizational justice with nurses, fit index calculations yielded the following results: Chi-square/SD=2,43, GFI=0,90, CFI=0,89, IFI=0,87, and

RMQEA=0,08(39). In Kruger's study of 2012, GFI was 0,885, AGFI 0,858, CFI 0,905, and RMQA 0,063(40). Tao et al.'s study provided the following results: Chi-square/SD=2.27, RMQEA=0.057, GFI=0.967, AGFI=0.941, CFI=0.983, and NFI=0.970(41). The findings of our research are consistent with related results reported in the literature.

The final version of the Survey for Measuring Moral Intelligence in the Provision of Healthcare Services consisted of 47 items falling under seven components, as a result of exploratory and confirmatory factor analysis. All statements in items were affirmative. The calculations related to items were based on healthcare professionals' response to each item, 1 being the lowest score and 5 being the highest score. In the survey, item 1 "*It is important to behave respectfully towards patients*", and item 4 "*I don't do things to others that I wouldn't like them to do to me*" received the highest value with an average score of 4,5678. Adopting an empathetic attitude towards people was defined as a factor that is the outcome of respectful behavior, eliminating any misunderstanding between doctor and patient, and even facilitating a patients' adherence to therapy. Empathizing with patients, as a way of understanding patients' anxiety, fear and hesitations, encourages patients to build more direct and open communication with healthcare professionals. The content of these two items is associated with empathy and respect. Respect is a *sine qua non* for ensuring "equality". Respect towards others derives from seeing oneself on equal terms with them. Recent studies have provided data on positive effects on treatment of empathy, respect and sincerity in the process of history taking, informing and taking consent(42). The fact that healthcare professionals had the strongest agreement with these two items supports related research results in the literature.

In the present study, the findings show that item 28 "*Fairness means that everyone gets their share*" received the lowest score — 3,8238. Fairness— a part of ethical leadership — is one of the priorities of healthcare professionals; however, this finding probably indicates despair with regard to the expectation of equality in the distribution of shares(43,44).



In the reliability analysis for 47 items, Cronbach Alphas Alpha was calculated as 0.966. In Karimi et al.'s study related to the effect of ethical and moral intelligence on female teachers, the Cronbach's alpha of moral intelligence was 0,87(45). Najafian et al. reported Cronbach's alpha as 0,81(46). Cihangiroğlu focused on the principle of justice, one of the parameters of moral intelligence, among military doctors, and found that the Cronbach's alpha for this parameter was 0,91(47). Razavian et al. also reported good internal consistency with regard to moral intelligence (Cronbach's alpha=0,91)(48). The findings of our research are consistent with related results in the literature, presenting good internal consistency.

In our research findings, while the Equality dimension has an average value of 4.46 and the Cronbach's alpha value of 0.922, "Fairness" dimension has an average value of 4.42 and Cronbach Alpha value of 0.859. The average values and  $\alpha$  values for "empathy", "moral intelligence", "tolerance", "self-control", and "kindness" are respectively 4,27 and 0,910, 4,08 and 0,874, 4,18 and 0,799, 4,19 and 0,840, 4,18 and 0,772.

Mccomas et al. reported in their study related to the perception of justice that the mean of items about equality was 4,59 and 4,46, and the Cronbach's alpha was 0,90(49). In Tüfekçi et al.'s study on fundamental principles and values in hospitals, the majority of respondents defined the main problem as "not being treated equally". The Cronbach's alpha of the components that included items related to expectation of equality was 0,907(50). Our research findings are consistent with related findings in the literature and indicate good internal consistency.

In Heponiemi et al.'s study related to the perception of justice, the Cronbach's alpha was 0,91(51). In Gillet et al., while the mean score of items related to justice was 4,68, the Cronbach's alpha was 0,95(52). Our research findings are consistent with related findings in the literature and indicate good internal consistency.

In Van Es et al.'s study on the perception of empathy, the Cronbach's alpha was 0,87(53). In Loureiro et al., the Cronbach's alpha was 0,68(54). Our research finding, indicating good internal

consistency, is similar to Es et al., but different from Loureiro et al. Although few studies about dimension of kindness do not show similarity to our findings, 49 some studies have shown that findings supporting our findings(55).

In Mottagi et al.'s study with a focus on leadership and moral intelligence, the Cronbach's alpha for moral intelligence component was 0,89(56). Moghadas et al. reported the Cronbach's alpha as 0,94 in their study(57). In Martin et al.'s study on moral intelligence, the Cronbach's alpha was 0,82(58). In Hosseini et al.'s study, the Cronbach's alpha with regard to moral intelligence was 0,897(59). Our research findings are consistent with related findings in the literature and indicate good internal consistency.

Moghadas et al., studying the relationship between tolerance and moral intelligence, found that the Cronbach's alpha for tolerance was 0,82(57). In Tüfekçi et al.'s study on fundamental principles and values in hospitals, it was found out that respondents had greater expectations related to tolerance. The alpha of the component related to tolerance was 0,907(50). Our research findings are consistent with related findings in the literature and indicate good internal consistency.

## Conclusions

The scale developed for healthcare professionals had high Cronbach's alpha values for each component and item. This indicates that the scale provides a survey with high validity to measure physicians' and nurses' moral intelligence. Factor analysis suggests that items and components showed a statistically valid distribution.

Taking moral intelligence parameters into consideration in the provision of healthcare services will certainly contribute to diagnosing disorders accurately, reducing anxiety of patients, ensuring shorter length of stay in hospital, lowering number of patients transferred to other healthcare centers, preventing malpractice, and ensuring time saving and better labor force planning.

Parties are likely to have more uplifting experience when healthcare professionals build more satisfactory communication with patients, their

relatives, and colleagues. This is also likely to increase patient satisfaction and reduce patients' complaints. When moral intelligence parameters are central to the provision of healthcare services, it is easier to provide comprehensible and accurate information to patients, and thus to enhance patients' trust to healthcare professionals and adherence to treatment. With regard to healthcare centers, high-quality healthcare services may increase satisfaction, and improve clinical skills.

This survey is developed for healthcare professionals. Designing similar surveys for other professionals, for example healthcare managers, will certainly contribute to raising their awareness and enabling them to take more active roles in the treatment process.

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Figure 1. Path diagram showing t values

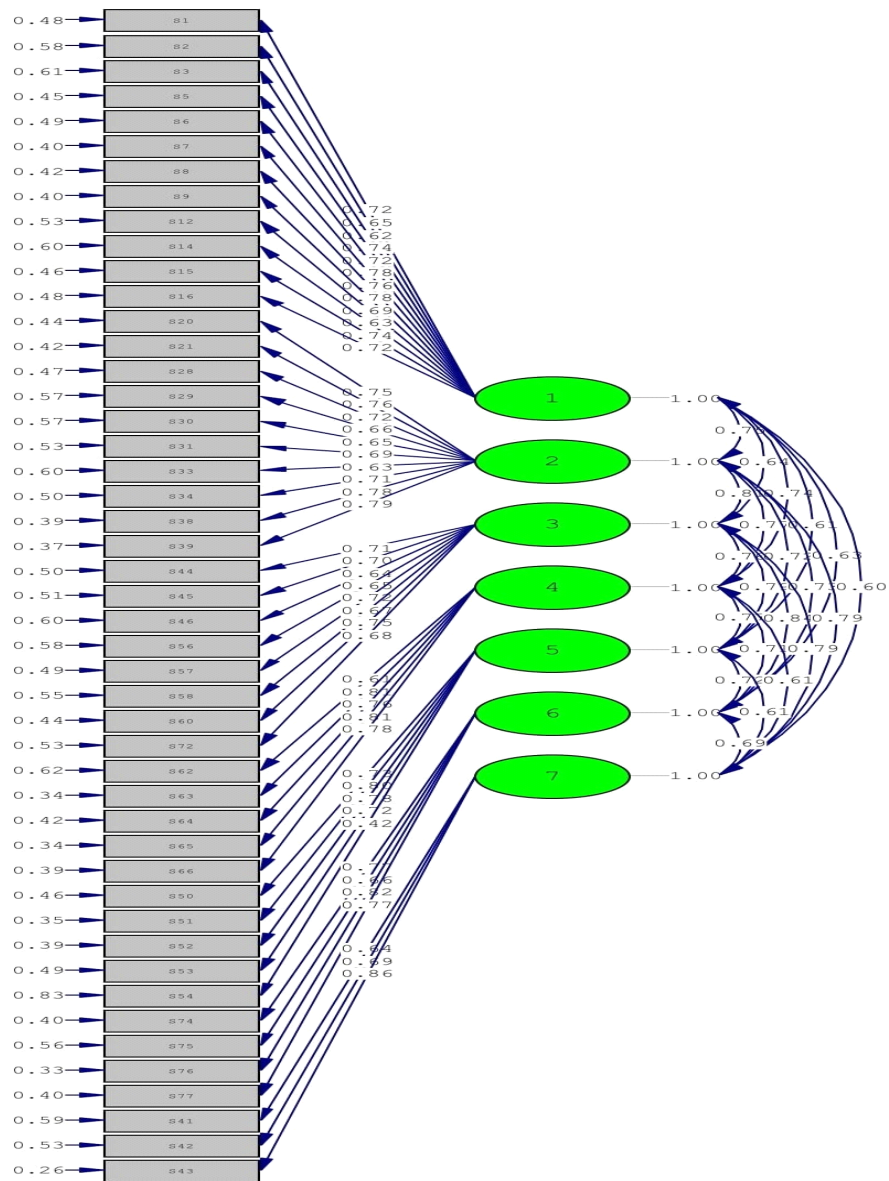


Figure 2. Standard solutions obtained in CFA

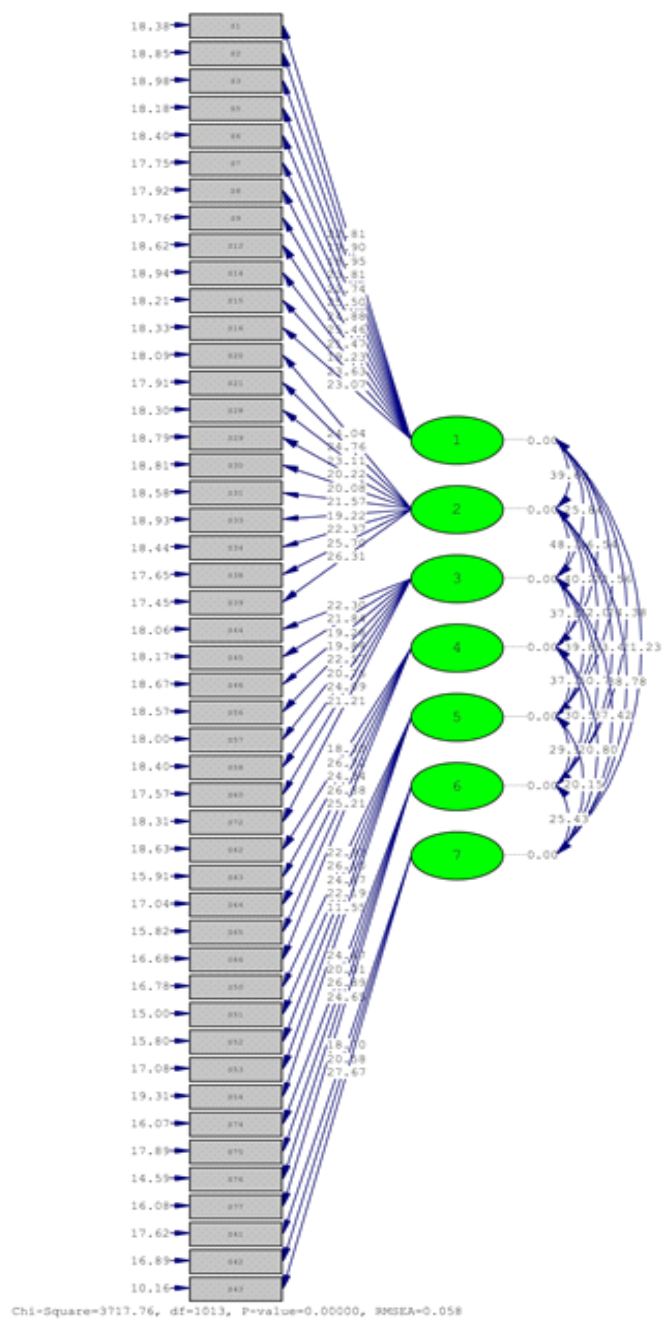


Table 2. Eigenvalues and percentages of variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance
1	19,203	40,858	40,858	19,203	40,858	40,858	7,485	15,926
2	2,960	6,299	47,157	2,960	6,299	47,157	5,480	11,660
3	1,765	3,756	50,913	1,765	3,756	50,913	3,821	8,131
4	1,411	3,002	53,914	1,411	3,002	53,914	3,374	7,179
5	1,150	2,447	56,361	1,150	2,447	56,361	3,038	6,463
6	1,085	2,308	58,669	1,085	2,308	58,669	2,780	5,915
7	1,016	2,161	60,830	1,016	2,161	60,830	2,611	5,555
8	,960	2,042	62,871					
9	,858	1,826	64,697					
10	,850	1,808	66,505					
11	,785	1,670	68,176					
12	,739	1,571	69,747					
13	,682	1,452	71,199					
14	,652	1,388	72,587					
15	,638	1,357	73,944					
16	,620	1,320	75,264					
17	,605	1,287	76,551					
18	,564	1,201	77,751					
19	,555	1,180	78,932					
20	,541	1,151	80,082					
21	,506	1,077	81,160					
22	,500	1,063	82,223					
23	,492	1,047	83,270					
24	,478	1,018	84,287					
25	,471	1,003	85,290					
26	,451	,960	86,250					
27	,442	,940	87,190					
28	,412	,877	88,067					
29	,405	,862	88,929					
30	,399	,849	89,778					
31	,382	,813	90,591					
32	,374	,796	91,387					
33	,350	,744	92,131					
34	,337	,717	92,848					
35	,330	,701	93,549					
36	,312	,664	94,213					
37	,304	,646	94,859					
38	,288	,612	95,471					
39	,282	,600	96,072					
40	,275	,585	96,657					
41	,264	,562	97,218					
42	,258	,549	97,768					
43	,239	,508	98,276					
44	,217	,461	98,737					

45	,210	,447	99,185				
46	,203	,433	99,618				
47	,180	,382	100,000				

	Component						
	Equality	Empathy	M o r a l Intelligence	Fairness	Tolerance	S e l f - Control	Kindness
Q1 It is important to behave respectfully towards patients.	,739						
Q5 I don't do things to others that I wouldn't like them to do to me.	,719						
Q9 Healthcare professionals must have moral values.	,710						
Q7 Listening to another person means showing kindness to her/him.	,700						
Q2 Anger should not prevent one from treating fairly.	,687						
Q6 My conscience is important in communication.	,682						
Q8 Moral values are of great importance for me.	,682						
Q3 Each person deserves respect.	,662						
Q16 Each person has an essential value deriving solely from being a human.	,646						
Q15 Kindness does not only manifest itself in verbal attitudes.	,646						
Q12 Conscience is a self-confrontation.	,577						
Q14 Prejudice gives rise to conflicts.	,561						
Q28 Cognitive experience is a key to good communication.		,698					
Q31 Self-control encompasses the control of thoughts.		,698					
Q29 Stereotypical thinking constitutes an obstacle to mental activities.		,637					
Q30 Needs play an effective role in interpreting sensations.		,629					
Q34 Putting oneself in another person's place is a significant mental activity.		,629					
Q39 Not only the presence but also the functioning of mind shape mental activities.		,553					
Q38 Love includes attentiveness.		,545					
Q33 I sympathize with patients trying to solve a problem.		,545					
Q20 Empathizing enables us to get more information about our interlocutor.		,538					



Q21 <i>Effective communication is important for empathy.</i>	,410	,536				
Q57 <i>In order to fulfill something, there is a need to accept it mentally.</i>			,718			
Q56 <i>People must adhere to moral values of the society in which they live.</i>			,672			
Q58 <i>Being an adult requires being able to control oneself.</i>			,588			
Q60 <i>Mentalization provides freedom of thinking.</i>			,528			
Q46 <i>Fairness means that everyone gets their share.</i>			,474			
Q45 <i>A good outcome is an important criteria in human acts.</i>			,457			
Q44 <i>Moral intelligence skills are strengthened by being repeated.</i>			,414			
Q72 <i>Intelligence includes adaptation skills.</i>			,409			
Q64 <i>No discrimination must be made among patients.</i>				,700		
Q63 <i>It is important that patients trust healthcare professionals.</i>				,690		
Q65 <i>I display polite behaviors towards patients.</i>				,591		
Q62 <i>Fairness is the ultimate value.</i>				,561		
Q66 <i>Empathy is of great importance in the field of healthcare.</i>				,537		
Q50 <i>I believe that I know myself to the extent possible.</i>					,705	
Q51 <i>I have self-esteem.</i>					,660	
Q53 <i>I have the power to change my thoughts.</i>					,654	
Q52 <i>I support patients' individualization.</i>					,540	
Q54 <i>Patients are always prone to make mistakes.</i>					,498	
Q75 <i>Unconscious thoughts may shape behaviors.</i>						,740
Q76 <i>Mentalization means making sense of something in the mind.</i>						,672
Q74 <i>Mental state of a person is important.</i>						,658
Q77 <i>A good behavior must be subject to the filter of conscience.</i>						,522
Q42 <i>Human beings are evaluated by their actions.</i>						,729
Q41 <i>It is important that a patient shows respect to me.</i>						,618
Q43 <i>Mentalization requires decision making.</i>		,430				,582