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**ORIGINAL ARTICLE**

# The Relationship Between Nurses' Attitudes Toward Vital Signs Monitoring and Emotional Intelligence Levels

# Hemşirelerin Yaşam Bulgularını İzleme Tutumlari ile Duygusal Zeka Düzeyleri Arasındaki İlişkinin İncelenmesi

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**ABSTRACT**

**Aim:** The study aims to determine the relationship between nurses' attitudes toward vital signs and emotional intelligence levels.
**Method:** The descriptive and correlational study was conducted on 301 nurses. Data were collected using the Nurse Information Form, V-Scale and Emotional Intelligence Evaluation Scale. The data analyzed using descriptive and correlational statistics.
**Results:** The V-Scale and Emotional Intelligence Evaluation Scale total scores average of the nurses were good level and no statistical relationship between them (p>0.05). However, remarkable relationships between the total and sub-dimension scores of the relevant scales were demonstrated. Communication, empathy, emotional awareness, managing skills, gender, education and unit were important competences for vital signs monitoring.
**Conclusion:** Based on the findings obtained from the research, it can be concluded that nurses' attitudes toward vital signs monitoring, and emotional intelligence could be affected from emotional intelligence sub-dimensions scores and nurses' individual characteristics. In future, different types (experimental, qualitative etc.) of studies should be for explaining between nurses' attitude to monitoring vital signs and emotional intelligence. Policy makers and managers should focus more on variables that affect nurses' attitude to monitoring vital signs.

**Keywords:** Communication, early warning, intelligence, nursing, patient monitoring, vital signs.

**ÖZ**

**Amaç:** Bu araştırma, hemşirelerin yaşam bulgularını izleme tutumları ile duygusal zeka düzeyleri arasındaki ilişkinin incelenmesi amacı ile gerçekleştirildi.
**Yöntem:** Tanımlayıcı ve ilişki grayıcı türdeki çalışma, 301 hemşire ile yürütüldü. Veriler, Hemşire Bilgi Formu, Yaşam Bulguları Ölçeği ve Duygusal Zeka Değerlendirme Ölçeği ile toplandı. Veriler tanımlayıcı ve ilişki arayıcı istatistikler ile analiz edildi. Bulgular: Hemşirelerin Yaşam Bulguları ve Duygusal Zeka Değerlendirme Ölçekleri toplam puan ortalamaları iyi düzeydeydi ve aralarında istatistiksel ilişki bulunmadı (p>0,05). Ancak, ilgili ölçeklerin total ve alt boyutları arasındaki dikkat çekici ilişkiler açığa çıkarıldı. İletişim, empati, duyguların farkında olma, duyguların yönetimi, motivasyon, cinsiyet, eğitim ve çalışılan birim yaşam bulgularını izleme tutumlarında önemli etkenlerdi.
**Sonuç:** Araştırmadan elde edilen sonuçlar doğrultusunda, hemşirelerin yaşam bulgularını izleme tutumlarının duygusal zekanın alt boyutları ile hemşirelerin bireysel özelliklerden etkilenebildiği sonucuna varıldı. Gelecekte, farklı türlerde (deneysel, kalitatif vb.) planlanan çalışmalar ile hemşirelerin yaşam bulgularını izleme tutumları ile duygusal zeka düzeyleri arasındaki ilişkinin incelenmesi önerilebilir. Bununla birlikte, politikacı ve yöneticilerin hemşirelerin yaşam bulgularını izleme tutumlarını etkileyen değişkenlere daha fazla odaklanması önerilebilir.

**Anahtar kelimeler:** Erken uyarı, hasta izlemi, hemşirelik, iletişim, yaşam bulguları, zeka.

## 1.Introduction

Monitoring of vital signs is an essential part of the care and treatment of hospitalized patients (1) and a major component of nursing diagnosis. This nursing follow-up is a process that includes diagnosis, interpreting data, and generating meaningful responses (2,3). Vital signs should be regularly monitored in all patients. However, the frequency with which vital signs are evaluated, and the measurement methods and tools vary depending on the individual being cared for and the clinic (4,5).

Regular monitoring of vital signs allows to obtain basic data for diagnosing sudden, urgent and life-threatening problems such as septic shock, cardiac events, bleeding, infection and making clinical decisions for the required interventions (6). It reduces mortality and morbidity, which are key indicators for patient safety (4). Yet, deficiencies in monitoring of vital signs have been demonstrated by several studies in the literature (5,7). Monitoring of vital signs has been associated with the phenomenon of missed/ unmet/ rationing nursing care, and inadequate monitoring was reported to potentially lead to the failure to detect important problems timely and delay curative care and treatment (7). A retrospective study conducted by Redfern concluded that 31.3% of vital signs monitoring were delayed and 17.1% were missed assessment. Mok et al. (5) reported that respiratory rate findings were the least diagnosed. The reason for this missed assessment may be related to the inability to use many technological devices used in blood pressure, pulse and fever measurement and in the evaluation of respiratory rate, depth and characteristics in unmonitored patients (8).

Timely and accurate monitoring of vital signs and their effective use in clinical decision making is a matter of patient safety (9). However, nurses' care behaviors are known to be affected by many personal, professional and institutional factors. One of these factors, emotional intelligence, plays an important role in ensuring patient safety in the health care environment. As a matter of fact, emotional intelligence can increase the quality of nursing care together with four basic behaviors, namely defining the emotions of oneself and others, using emotions to reason, understanding and managing emotions (10).

Emotional intelligence, which is an indicator of productivity and success, can influence the behaviors responsible for the quality of care. It affects not only psychological but also physical care. A study on this topic has found a relationship between emotional intelligence and nurse-sensitive indicators (pressure injury, falls, and infections) (11). A study conducted with nursing students underlined the relationship between students' pain knowledge and attitudes and emotional intelligence levels (12). Similarly, a comprehensive review by Nightingale et al. (13) concluded that emotional intelligence can affect nursing care behaviors and that nurses with a high level of emotional intelligence can provide better physical and emotional care and better embrace their role/responsibilities. In this context, emotional intelligence can play a role in reducing unnoticed problems and systemic errors in the care environment as a means for effective communication in patient safety (10). Previous studies have recommended examining the effects of emotional intelligence on nursing actions (11,13-15). However, no study was found in the literature that examined the relationship between the nurses' attitudes toward monitor vital signs, which is one of the most common practices, and their emotional intelligence levels. There is thus a need for studies designed using valid and reliable objective diagnostic tools on this topic.

### 1.1.Purpose and Research Questions

This study aims to examine the relationship between nurses' attitudes toward vital signs monitoring and emotional intelligence.

**Research questions:**

1.What are the nurses' attitudes towards monitoring vital signs and their emotional intelligence levels?

2.Is there a relationship between nurses' attitudes towards monitoring vital signs and their emotional intelligence levels?

3.Do the individual characteristics of nurses affect their attitudes towards monitoring vital signs and their emotional intelligence levels?

## 2.Materials and Methods

### 2.1.Design

This was a descriptive and correlational research.

### 2.2.Participants and Settings

The population of the study consisted of 390 nurses working at a university hospital between July and September 2021. Sample size calculation was made in the G*power program based on the 95% confidence (1-α), 95% test power (1-β) the effect size (d= 0.41) according to the literature (16). The sample consisted of 301 nurses working in this hospital. Sampling criteria were nurses who were working actively in internal and surgical services and volunteered for the participation after being informed about the study.

### 2.3.Instruments

Nurse Information Form: The form developed by the researchers based on the literature (5,8,17) includes 6 questions. The questions are about nurses' age, gender, education level, years of experience, and the unit they work in.

V-Scale: The scale was developed by Mok et al. (5) to evaluate nurses' attitudes towards monitoring vital signs, and its Turkish adaptation was done by Ertuğ (18). The five-point Likert-type scale consists of a total of 16 items and five sub-dimensions. Sub-dimensions are workload (item 1-2-3-4), technology (item 13-14-15-16), communication (item 8-9), knowledge (item 5-6-7) and key indicators (item 10-11-12). The scale is scored from strongly disagree (1 point) to strongly agree (5 points). The lowest score obtainable from the scale is 16 and the highest score is 80 and does not have a cut-off score. A low score indicates a low and a high score indicates a high attitude. Items 5, 8 and 9 of the scale are positive while other items are negative, and reverse scored. The Cronbach Alpha coefficient (Cronbach's α) for the Turkish version of the scale is 0.764 (18). In this study, the Cronbach's α of the scale was found as 0.678.

Emotional Intelligence Evaluation Scale (EIES): It was developed by Nick Hall (1999) to evaluate the level of emotional intelligence, and its Turkish adaptation was studied by Ergin (19). It is a six-point Likert-type scale with a total of 30 items scored as from disagree strongly to agree strongly (1 to 6 points). It consists of five sub-dimensions including Emotional Awareness (items 1-2-4-17-19-25), Managing Emotions (items 3-7-8-10-18-30), Self-Motivation (items 5-6-13-14-16-22) Empathy (items 9-11-20-21-23-28) and Social Skills (items 12-15-24-26-27-29). The scale score is calculated by summing the scores corresponding to the answer given to each item. The scores that can be obtained from the scale range from 30 to 180. A high score indicates a high emotional intelligence level. In the adaptation study, the Cronbach's α of the scale was found as 0.84 (19). In this study, the Cronbach's α of the scale was found

as 0.960.

### 2.4.Data collection

The collection of research data began after obtaining the institutional permission and ethics committee approval required for the implementation of the study. The data were collected from the nurses who agreed to participate after the researcher explained to the nurses the purpose, content, and what was expected from them. Data collection took place at times that would not affect the care and treatment of the patients. Oral and written consents were obtained from the nurses who agreed to participate in the study.

### 2.5.Ethical Considerations

Ethics Committee Approval (Date=26/07/2021, Number= E-54022451-050.05.04-24442) from a university hospital ethics committee and institutional permission (Date=10/10/2020, Number:3428) was obtained. Consent of the authors who adapted the scales to Turkish were also obtained. The principles of the Declaration of Helsinki were followed in the conduct of the study.

### 2.6.Data Analyses

R version 2.15.3 software (R Core Team, 2013) was used for statistical analysis. Minimum, maximum, mean, standard deviation, median, first quartile, third quartile, frequency and percentage were used when reporting the study data. The fit of the quantitative data to the normal distribution was evaluated with the Shapiro-Wilk test and graphical examinations. The evaluation of normally distributed variables was used independent groups t-test for two groups and one-way analysis of variance for more than two groups, and Bonferroni test was used to determine the source of significance in case of significance. The Kruskal-Wallis test was used in the intergroup evaluations of variables that did not show normal distribution, and the Dunn-Bonferroni test was used to identify the source of significance in case of statistical significance. Pearson correlation analysis was used to determine the level of relationship between quantitative variables. Cronbach's a was used to find out the internal consistency levels of the scales. Statistical significance was accepted as $p<0.05$ and highly significance was $p<0.001$.

## 3.Results

Of the nurses participating in the study, 81.1% (n=244) were women, their mean age was 25.99±6.18 years (min- max:20-62) years, and 38.3% (n=115) had graduate or postgraduate degree. The nurses had an average of 5.47±5.91 years of professional experience, and the average years of experience in the unit they worked at was 2.37±2.63 years. 24.9% (n=75) worked in internal units, 25.9% (n=78) in surgical units, 10% (n=30) in intensive care units, 9% (n=27) in emergency services, 25.2% (n=76) in pediatric units and 5% (n=15) in other units.

The mean V-Scale total score of the nurses participating in this study was 58.45±7.41 (min-max: 35-75). Their mean scores from V-Scale sub-dimensions were 15.22±3.68 for workload, 13.81±3.31 for technology, 8.67±1.92 for communication, 11.51±2.01 for knowledge, and 9.24±2.06 for key indicators sub-dimensions (Table 1).

The nurses' EIES total mean score was 140.82±29.35 (min-max:30-180). Their mean scores from the sub-dimension were 28.55±6.51 for emotions, 26.92±6.68 for managing emotions, 28.73±6.51 for self-motivation, 29.53±6.36 for empathy and 27.10±6.48 for social skills (Table 1).

**Table 1.** Nurses' V-Scale and EIES average scores (n=301)

| Scales | Mean±SD | Min.-Max. |
|---|---|---|
| Workload | 15.22±3.68 | 4-20 |
| Technology | 13.81±3.31 | 6-20 |
| Communication | 8.67±1.92 | 2-10 |
| Knowledge | 11.51±2.01 | 4-15 |
| Key indicators | 9.24±2.06 | 3-15 |
| V-Scale Total | 58.45±7.41 | 35-75 |
| Awareness of emotions | 28.55±6.51 | 6-36 |
| Managing emotions | 26.92±6.68 | 6-36 |
| Self motivation | 28.73±6.51 | 6-36 |
| Empathy | 29.53±6.36 | 6-36 |
| Social skills | 27.10±6.48 | 6-36 |
| EIES Total | 140.82±29.35 | 30-180 |

Abbreviations: SD=Standard deviation, Min=Minimum, Max=Maximum

No statistically significant correlation was found between the nurses' V-Scale and EIES total scores ($p>0.05$). There was, however, a statistically significant positive correlation between V-Scale Total and EIES managing emotions and self-motivation sub-dimensions ($r=0.119$, $p=0.040$; $r=0.168$, $p=0.003$, respectively). There was also a positive and statistically significant relationship between the V-Scale communication sub-dimension and emotional awareness, managing emotions, self-motivation, empathy, social skills and EIES total ($r=0.246$, $p<0.001$; $r=0.160$, $p=0.005$; $r=0.194$, $p=0.001$; $r=0.162$, $p=0.005$; $r=0.161$, $p=0.005$; $r=0.205$, $p<0.001$, respectively, Table 2).

A positive and statistically significant relationship was found between the V-Scale knowledge sub-dimension and emotional awareness, managing emotions, self-motivation and EIES total ($r=0.187$, $p=0.001$; $r=0.130$, $p=0.024$; $r= 0.159$, $p=0.006$; $r=0.154$, $p=007$). There was also a statistically significant positive correlation between the V-Scale workload sub-dimension and the EIES self-motivation sub-dimension ($r=0.131$, $p=0.023$, Table 2).

A statistically significant negative correlation was found between V-Scale key indicators and EIES total, emotional awareness and managing emotions sub-

dimensions (r=-0.115, p=0.046; r=-0.126, p=0.028; r=-0.125, p =0.030, respectively). No statistical correlation was found between other sub-dimensions (p>0.05, Table 2).

**Table 2.** The correlation between the nurses' attitudes toward vital signs monitoring and emotional intelligence levels (n=301)

| | | V-Scale | | | | | |
|---|---|---|---|---|---|---|---|
| **EIES** | | **Wokload** | **Technology** | **Communica-tion** | **Knowledge** | **Key Indicators** | **V-Scale Total** |
| **Awareness of emotions** | r | 0.029 | -0.087 | 0.246 | 0.187 | -0.126 | 0.055 |
| | **p** | 0.617 | 0.133 | **<0.001**** | **0.001*** | **0.028*** | 0.343 |
| **Managing emotions** | r | 0.066 | 0.098 | 0.160 | 0.130 | -0.125 | 0.119 |
| | **p** | 0.251 | 0.090 | **0.005*** | **0.024*** | **0.030*** | **0.040*** |
| **Self motivation** | r | 0.131 | 0.081 | 0.194 | 0.159 | -0.096 | 0.168 |
| | **p** | **0.023*** | 0.161 | **0.001*** | **0.006*** | 0.097 | **0.003*** |
| **Empathy** | r | 0.033 | 0.022 | 0.162 | 0.109 | -0.102 | 0.070 |
| | **p** | 0.571 | 0.702 | **0.005*** | 0.058 | 0.077 | 0.228 |
| **Social skills** | r | -0.003 | 0.013 | 0.161 | 0.108 | -0.069 | 0.056 |
| | **p** | 0.952 | 0.826 | **0.005*** | 0.061 | 0.233 | 0.334 |
| **EIES Total** | r | 0.057 | 0.029 | 0.205 | 0.154 | -0.115 | 0.104 |
| | **p** | 0.325 | 0.621 | **<0.001**** | **0.007*** | **0.046*** | 0.072 |

Pearson correlation analysis *p<0.05, **p<0.001

Significant differences were found between V-Scale total and gender (in favor of women), education (in favor of associate degree graduates) and unit of work (in favor of pediatrics unit) (p<0.001). There was no statistically significant difference between V-Scale total and age, years of experience and years worked in the current unit (p>0.05, Table 3).

**Table 3.** The comparison of the nurses' individual characteristics and attitudes toward vital signs monitoring (n=301)

| | | V-Scale Total | |
|---|---|---|---|
| | **n** | **V-Scale Mean±SD** | **P-value** |
| **[c]Gender** | | | |
| Female | 244 | 59.26±7.01 | **<0.001*** |
| Male | 57 | 54.98±8.14 | |
| **[b] Education Level** | | | |
| Health High School | 110 | 58.15±6.97 | |
| Associate Degree | 76 | 61.17±7.38 | **<0.001*** |
| Bachelor's Degree/Graduate Degree | 115 | 56.94±7.41 | |
| **[c]Unit** | | | |
| Medical | 75 | 56 (51, 62) | |
| Surgical | 78 | 59 (52, 65) | |
| Intensive Care Unit | 30 | 57.5 (52, 59) | **<0.001*** |
| Emergency Unit | 27 | 63 (54, 67) | |
| Pediatric Unit | 76 | 62.5 (55.5, 66) | |
| Other | 15 | 59 (50, 64) | |

Independet groups t-test , b One-way analyses of varians cKruskal-Wallis test, results presented as median (first quartiles , third quartiles) ,*p<0.001

## 4.Discussion

Monitoring of vital signs is a critical and fundamental nursing practice in the clinical setting (5,7). However, despite being acknowledged as the cheapest, simplest, and most important patient evaluation method, there have been reports of important deficiencies in timely, accurate diagnosis, accurate recording and follow-up (20,21). This study aimed to reveal the relationship between nurses' attitudes towards monitoring vital signs and their emotional intelligence levels, which is described as an important factor in nurses' care behaviors.

Nurses' attitudes towards monitoring vital signs mean total scores were 58.45±7.41 in this study. In another study conducted in Turkey using the V-Scale, the mean total score of the nurses' V-Scale was 58.52±8.13 (8). Mok et al. (5) found the V-Scale total score average as 55.6±7.7 for the registered nurse group and 54.1±6.9 for the enrolled nurse group. The findings of both studies were very close to the score of the nurses in this study. The V-Scale total score average of the nurses can be considered to indicate a good level. On the other hand, it appears that individual and institutional efforts are needed to further increase these scores on this critical practice for patient safety. To this end, it is recommended to support nurses in individualized monitoring of vital signs (4) with structured guides defined as early warning systems/ rapid response systems for monitoring vital signs in the education of nurses (5,18,21). In addition, nurses' attitudes can be affected by their knowledge of vital signs monitoring and technology opportunities in the care environment (21), intuition (22), excessive workload and unawareness of the importance of vital signs monitoring (23) and communication inadequacies (20). Therefore, focusing on the sub-dimensions of workload, technology, communication, knowledge and key indicators, which constitute the scale of attitudes towards monitoring vital signs, in attempts to raise the attitude scores of nurses will contribute significantly to developing positive attitudes.

Another important finding of the study was the total and sub-dimension scores of the emotional intelligence levels of the nurses, according to which the emotional intelligence levels of the nurses were above average. Considering that emotional intelligence is an important factor in nurses' care behaviors, it is recommended to focus more on emotional intelligence to improve patient outcomes (13). A high level of emotional intelligence significantly affects how effectively the individual's physical and psychological care needs are met. A nurse who uses emotional intelligence skills and notices the patient's non-verbal responses indicating that he/she is uncomfortable or anxious or is withholding information establishes eye contact with the patient, checks these responses and tries to verify this information by obtaining data (14).

It improves the quality of care by contributing to identifying additional care needs with effective nurse-patient interaction during the monitoring of vital signs (6). Thus, emotional intelligence can affect nurses' communication characteristics (with patients, colleagues and other healthcare team members) and their attitudes towards monitoring vital signs (5,20). From this point of view, the relationship between nurses' vital signs and emotional intelligence total scores was examined in this study, and contrary to expectations, no statistical relationship was found between them. On the other hand, the most prominent result of this study was the statistically significant positive correlation between the V-Scale communication sub-dimension and the EIES total and all sub-dimensions, supporting the previous studies in the literature (5,14,20). This finding may explain the positive effect of high emotional intelligence on nurses' communication skills.

The positive and statistically significant relationship between V-Scale Knowledge and total scores and EIES's emotional awareness, emotional management and self-motivation sub-dimensions was remarkable. It showed that nurses who were successful in managing their emotions and were highly motivated had good attitudes towards monitoring vital signs and a high level of knowledge on this subject. In addition, the positive relationship between nurses' V-Scale workload score and EIES self-motivation score showed that increased motivation positively affected nurses' workload attitude. Negative effects of workload (stress, fatigue, etc.) can lead to obtaining inaccurate patient data and missing/omitting data or misinterpretation of the obtained data. In such an environment, the reassuring therapeutic relationship between the patient and the nurse as an input of emotional intelligence will help to minimize these mistakes (14). Based on these findings, it can be recommended to encourage nurses to benefit from individual and institutional motivators and to support educational activities that promote raising emotional intelligence.

In this study, the key indicators sub-dimension of the V-Scale Scale was aimed to determine the attitudes of nurses towards the assessment of respiratory rate and the first clinical sign of deterioration in the patient. In the literature, measuring respiratory rate is an important consideration based on the fact that it is the most missed vital sign despite being the first sign of clinical change in the patient (5,18). The negative significant relationship between emotional intelligence and the key indicators sub-dimension of the V-Scale was a surprising finding in this study as nurses with high emotional intelligence were expected to score higher on the V-Scale key indicators sub-dimension.

When the difference between the individual characteristics of the nurses and the V-Scale total was examined, women's V-Scale total scores were found higher than the men's scores. This indicates a need for supportive measures to increase male nurses' vital signs monitoring attitude scores. Besides, nurses with an associate degree (2 years of nursing education after high school) had a higher V-Scale total score than those with graduate and postgraduate degrees. This finding did not confirm the positive relationship between nurses' attitudes towards monitoring vital signs and education. The effect of nurses' different variables such as clinical care environment and postgraduate education specialized for monitoring vital signs, rather than general vocational education, can be evaluated in future studies.

When the V-Scale total scores of the nurses were compared on the basis of the unit they worked, in it was notable that the nurses working in the pediatric unit had higher scores. The fact that the vital signs of the patient population in pediatrics are sensitive and require close monitoring (17) was considered as a positive finding showing that the nurses participating in the study were aware of the characteristics of this patient group. Mok et al. (5) reported a statistical difference between the staff working in specialized units and other units. However, a study conducted in Türkiye to determine the attitudes of pediatric nurses to monitor vital signs found that nurses had high attitude scores (17). Similarly, Gülnar et al. (8) found that pediatric nurses' V-Scale total score averages were the highest (59.30±9.54) compared to internal and surgical units, supportive of the literature.

### 4.1.Limitations

The self-report scales were used which might be afflicted with the potential of bias. At the same time, the descriptive and correlational study could explain causality to a limited extent.

## 5.Conclusions

This first study examining the relationship between nurses' attitudes towards monitoring vital signs and their emotional intelligence levels has obtained important findings that will contribute to the literature on this subject. Although no statistical relationship could be determined between V-Scale and EIES total scores, remarkable relationships between the total and sub-dimension scores of the relevant scales were demonstrated.

It can be concluded that communication, empathy, emotional awareness, managing emotions and self-motivation affect attitudes towards monitoring vital signs. Qualitative and quantitative (experimental, quasi-experimental, longitudinal etc.) studies in large sample groups regarding the effects of emotional intelligence on increasing the V-Scale total scores of nurses can therefore be recommended. Besides, it can be suggested to use different research techniques and analyzes such as structural equation modeling to reveal the effects of other mediator and moderator variables on the effects of gender, the unit they work in and education level on attitudes towards monitoring vital signs. There was no difference between the age, total working time, working time in the relevant unit and V-Scale total scores of the nurses. We may suggest

that the effect of these individual characteristics on the attitudes towards monitoring vital signs be re-evaluated in future studies.

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**Conflicts of interest**

The author(s) declared no potential conflicts of interest.

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