



## Psychometric properties of the Persian version of the “Hospital Ethical Climate Survey”

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### **Abstract**

In order to improve the ethical climate in health care organizations, it is important to apply a valid measure. This study aimed to investigate the psychometric properties of the Persian version of the Hospital Ethical Climate Survey (HECS) and to assess nurses' perceptions of the ethical climate in teaching hospitals of Iran. A cross-sectional study of randomly selected nurses (n = 187) was conducted in three teaching general hospitals of Tehran, capital of Iran. Olson's Hospital Ethical Climate Survey (HECS), a self-administered questionnaire, was used to assess the nurses' perceptions of the hospital ethical climate. Descriptive statistics, confirmatory factor analysis (CFA), internal consistency, and correlation were used to analyze the data. CFA showed acceptable model fit: an standardized root mean square residual (SRMR) of 0.064, an non-normalized fit index (NNFI) of 0.96, a comparative fit index (CFI) of 0.96, and an root mean square error of approximation (RMSEA) of 0.075. The Cronbach's alpha values were acceptable and ranging from 0.69 to 0.85. The overall Cronbach's alpha coefficient was 0.94. The factor loadings for all ethical climate items were between 0.50 and 0.80, which revealed good structure of the Persian version of the HECS. Survey findings showed that the "managers" subscale had the highest score and the subscale of "doctors" had the lowest score. This study shows that the Persian version of the HECS is a valid and reliable instrument for measuring nurses' perceptions of the ethical climate in hospitals of Iran

**Keywords:** *ethics, ethical climate, organizational ethics*

## Introduction

Ethical climate is part of the overall organizational climate and refers to "shared perceptions of what ethically correct behavior is and how ethical issues should be handled" (1). Olson describes ethical climate as the "individual perceptions of the organization that influences attitudes and behavior and serves as a reference for employee behavior". Attention to nursing and health care ethics has arisen as a result of an increased awareness about the complexity of ethical problems in health care environments. Ethical climate can influence the behavior and beliefs of staff when difficult patient care problems are discussed and resolved in work settings (2). Various studies have shown the influence of hospital ethical climates on ethics stress, job satisfaction, and turnover intentions (3 - 5).

Therefore, it seems important to apply a valid measure in order to improve the ethical climate in health care organizations. A number of self-assessment questionnaires have been developed to measure the ethical climate in health care settings. One of the most widely used surveys is the Hospital Ethical Climate Survey (HECS) developed by Olson in the United States. HECS has good psychometric properties and identifies five subscales of the ethical climate in health care organizations (2). It has been used in different countries and cultures including the United States, Turkey, Jordan, Sweden and South Korea (2, 6 - 10).

Although research on ethical climate is abundant in business, limited studies have been done on the subject in health care organizations (11). Several Iranian studies have used HECS to assess the ethical climate in hospitals throughout the country, but they have provided limited data on the psychometric properties and suitability of the questionnaire for use in Iran. For this reason, the present study aimed to investigate the psychometric properties of the Persian version of the Hospital Ethical Climate Survey (HECS) and to assess nurses' perceptions of the ethical climate in three teaching hospitals in Iran. The findings of this study may provide a better understanding of the ethical climate in teaching hospitals in the country .

## Method

### Study design and sampling

A cross-sectional study was conducted on the nurses working in three teaching hospitals affiliated with Tehran University of Medical Sciences, located in Tehran, the capital of Iran, during 2013. One way to determine the sample size for conducting a confirmative factor analysis (CFA) is to use the number of parameters, and assign at least five cases per parameter (12). Considering the fact that

the questionnaire has 26 parameters, we estimated 260 samples (ten cases per parameter) to be appropriate. Samples were then proportionally allocated to each hospital. Finally the questionnaires were distributed randomly to 260 nurses in 3 hospitals. Systematic random sampling was used to select the nurses in each hospital. The participants filled out the survey voluntarily, and a total of 187 questionnaires were completed .

### The Hospital Ethical Climate Survey

The Hospital Ethical Climate Survey (HECS) was originally developed by Olson in the United States to assess hospital nurses' perceptions of the ethical climate in their work place (2). HECS is a 26-item self-administered questionnaire consisting of five subscales including relationship with peers (4 items), patients (4 items), managers (6 items), hospital (6 items), and physicians (6 items). A five-point Likert scale was employed for the responses. The scales ranged from 0 (almost never true) to 4 (almost always true).

### Preparing the Persian version of the HECS

The HECS items were translated into Persian by one of the researchers. The draft was then reviewed by other members of the research group. Based on their comments and suggestions, the questionnaire was revised for further comprehensibility .

The comprehensibility of the HECS was tested on five nurses who had not been included in the study group and their opinions were used to prepare the final version of the HECS. The resulting questionnaire was then translated back into English by an independent translator in order to compare and contrast the back translation with the original questionnaire. All discrepancies were discussed and resolved until a satisfactory version was achieved.

### Statistical analyses

A confirmative factor analysis (CFA) was performed to investigate whether the factor structure of the HECS could be used with Iranian data. CFA using Linear Structural Relations (LISREL) offers 15 goodness of fit indices, and at least three measures are needed for assessments (13). Kline proposes to report the Chi-squared test, the root mean square error of approximation (RMSEA), the standardized root mean square residual (SRMR), and the comparative fit index (CFI) (14). The fit indices that were used for CFA in this study were: Chi-squared test, comparative fit index [CFI > 0.90 acceptable or > 0.95 good fit], non-normalized fit index (NNFI), also known as Tucker-Lewis Index [NNFI > 0.90 acceptable or > 0.95 good fit], root mean square error of approximation [RMSEA < 0.08 acceptable or ≤ 0.05 good fit] and the standardized root mean square residual [SRMR < 0.08 good fit] (15).

To investigate construct validity, a correlation analysis was carried out among the HECS factors. The internal consistency of the factors was calculated by means of Cronbach's alpha [criterion:  $\geq 0.7$  for each subscale] (16). All statistical analyses were performed using SPSS 20 and LISREL 8.8. The level of significance was set to  $P < 0.05$ . The survey data were summarized as percentage, mean, and standard deviation (SD) values .

The researchers obtained the approval of the ethics committee of Tehran University of Medical Sciences and attained institutional permits. The

selected nurses were informed that participation is voluntary. Completing the survey was considered as consent for participation.

**Results**

Of the 260 distributed questionnaires, 187 valid questionnaires were returned (response rate 72%). Most of the respondents (91%) were female. Fifty-one percent (51%) of the participants had six years or more professional experience and 56% were aged 31 years or younger (Table 1).

**Table 1.** Characteristics of the Samples (n = 187 Nurses)

| Characteristic                  | Category        | N   | %    |
|---------------------------------|-----------------|-----|------|
| <b>Gender (n = 184)</b>         | female          | 168 | (91) |
|                                 | male            | 16  | (9)  |
| <b>Age (n = 163)</b>            | $\leq 31$ years | 91  | (56) |
|                                 | 32 - 40 years   | 51  | (31) |
|                                 | 41 - 49 years   | 17  | (10) |
|                                 | $\geq 50$ years | 4   | (3)  |
| <b>Hospitals (n= 155)</b>       | A               | 93  | (60) |
|                                 | B               | 27  | (17) |
|                                 | c               | 35  | (23) |
| <b>Work experience (n =173)</b> | $\leq 1$ year   | 22  | (13) |
|                                 | 2-5 years       | 63  | (36) |
|                                 | 6 - 10 years    | 34  | (20) |
|                                 | $\geq 11$ years | 54  | (31) |

CFA was performed on the original five-factor questionnaire with 26 items. The data of the 187 participants were used, and the CFA results showed acceptable model fitness between the hypothetical model of ethical climate and the data in this study ( $X^2$  (df) = 589 (289),  $P < 0.001$ ;  $X^2/df = 1.99$ ;

SRMR = 0.064; NNFI = 0.96; CFI = 0.96; RMSEA=0.075).

The factor loadings for all ethical climate items were between 0.50 and 0.80, which revealed good structure of the Persian version of the HECS (Table 2).

**Table 2.** Factor loadings for ethical climate items

| Item   | Factor |          |          |          |            |
|--|--------|----------|----------|----------|------------|
|  | Peers  | Patients | Managers | Hospital | Physicians |
| Q 1: My peers listen to my concerns about patient care.  | 0.69   |          |          |          |            |
| Q 10: My peers help me with difficult patient care issues/problems.                                    | 0.63   |          |          |          |            |
| Q 18: I work with competent colleagues.  | 0.55   |          |          |          |            |
| Q 23: Safe patient care is given on my unit.   | 0.69   |          |          |          |            |
| Q 2: Patients know what to expect from their care.   |        | 0.51     |          |          |            |
| Q 6: Nurses have access to the information necessary to solve a patient care issue/problem.            |        | 0.50     |          |          |            |
| Q 11: Nurses use the information necessary to solve a patient care issue/problem.                      |        | 0.60     |          |          |            |
| Q 19: Patients' wishes are respected.  |        | 0.55     |          |          |            |
| Q 3: When I'm unable to decide what's right or wrong in a patient care situation, my manager helps me. |        |          | 0.60     |          |            |
| Q 7: My manager supports me in my decisions about  |        |          | 0.78     |          |            |

|  |      |      |
|--|------|------|
| patient care.  |      |      |
| Q 12: My manager listens to me talk about patient care issues/problems.  | 0.77 |      |
| Q 15: My manager is someone I can trust.   | 0.80 |      |
| Q 20: When my peers are unable to decide what's right or wrong in a particular patient care situation, I have observed that my manager helps them. | 0.80 |      |
| Q 24: My manager is someone I respect.   | 0.64 |      |
| Q 4: Hospital policies help me with difficult patient care issues/problems.  |      | 0.71 |
| Q 8: A clear sense of the hospital's mission is shared with nurses.  |      | 0.70 |
| Q 25: I am able to practice nursing on my unit as I believe it should be practiced.  |      | 0.60 |
| Q 13: The feelings and values of all parties involved in a patient care issue/problem are taken into account when choosing a course of action.     |      | 0.56 |
| Q 16: Conflict is openly dealt with, not avoided.  |      | 0.60 |
| Q 21: There is a sense of questioning, learning, and seeking creative responses to patient care problems.  |      | 0.52 |
| Q 5: Nurses and physicians trust one another.  |      | 0.55 |
| Q 9: Physicians ask nurses for their opinions about treatment decisions.   |      | 0.69 |
| Q 14: I participate in treatment decisions for my patients.  |      | 0.56 |
| Q 17: Nurses and physicians here respect each other's opinions even when they disagree about what is best for the patient                          |      | 0.74 |
| Q 22: Nurses and physicians respect each other.  |      | 0.66 |
| Q 26: Nurses are supported and respected in this hospital.   |      | 0.79 |

Internal consistency was measured by calculating Cronbach's alpha reliability coefficients for each of the five factors. The Cronbach's alphas for the five factors or subscales were between 0.69 and 0.85. The overall Cronbach's alpha coefficient was

0.94. Table 3 shows the reliability level of the Persian translation as compared to the original English HECS.

**Table 3.** Cronbach's alphas of the HECS/ Persian Version as compared to the HECS

| Factor     | No of items | Cronbach's alpha (α) HECS/ Persian version | Cronbach's alpha (α) HECS * |
|------------|-------------|--|-----------------------------|
| Peers      | 4           | 0.74                                       | 0.73                        |
| Patients   | 4           | 0.69                                       | 0.68                        |
| Managers   | 6           | 0.73                                       | 0.81                        |
| Hospital   | 6           | 0.85                                       | 0.92                        |
| Physicians | 6           | 0.81                                       | 0.77                        |
| Total      | 26          | 0.94                                       | 0.91                        |

\*Olson's study (2)

The interrelation of the ethical climate subscales was investigated. The correlations ranged from 0.507 to 0.752. The highest correlation was found between "hospital" and "physicians" (r = 0.752) while "hospital" and "managers" showed the lowest correlation (r = 0.507) (Table 4).

The overall ethical climate score was 2.75. The score means varied between 2.46 and 3.04 across the 5 factors. The highest scored subscale was "managers" (3.04) followed by "peers" (2.90), "patients" (2.80), "hospital" (2.61) and "physicians" (2.46).

**Table 4.** Inter-correlations of the 5 factors

| Factor | 1 | 2 | 3 | 4 | 5 |
|--------|---|---|---|---|---|
|--------|---|---|---|---|---|

|            |        |        |        |        |   |
|------------|--------|--------|--------|--------|---|
| Peers      | 1      |        |        |        |   |
| Patients   | 0.740* | 1      |        |        |   |
| Managers   | 0.636* | 0.619* | 1      |        |   |
| Hospital   | 0.672* | 0.644* | 0.507* | 1      |   |
| Physicians | 0.696* | 0.721* | 0.700* | 0.752* | 1 |

\*correlation is significant at the 0.05 level.

The items with the lowest mean scores were "Hospital policies help me with difficult patient care issues/problems" with a mean of 2.39, "Physicians ask nurses for their opinions about treatment decisions" with a mean of 1.97, and "Nurses are supported and respected in this hospital" with a mean of 1.91. The items with the

highest mean scores were "My manager is someone I respect" with a mean of 3.36, "When I'm unable to decide what's right or wrong in a patient care situation, my manager helps me" with a mean of 3.14, and "My manager listens to me talk about patient care issues/problems" with a mean of 3.05 (Table 5).

**Table 5.** Descriptive statistics of the survey on ethical climate

| Five subscales and survey items  | Mean        | Std. Deviation |
|--|-------------|----------------|
| <i>Peers</i>   | <b>2.90</b> | <b>0.65</b>    |
| Q 1: My peers listen to my concerns about patient care.  | 2.91        | .868           |
| Q 10: My peers help me with difficult patient care issues/problems.  | 2.91        | .876           |
| Q 18: I work with competent colleagues.  | 2.84        | .820           |
| Q 23: Safe patient care is given on my unit.   | 2.94        | .888           |
| <i>Patients</i>  | <b>2.80</b> | <b>0.64</b>    |
| Q 2: Patients know what to expect from their care.   | 2.42        | .990           |
| Q 6: Nurses have access to the information necessary to solve a patient care issue/problem.  | 2.83        | .867           |
| Q 11: Nurses use the information necessary to solve a patient care issue/problem.  | 3.00        | .870           |
| Q 19: Patients' wishes are respected.  | 2.93        | .823           |
| <i>Managers</i>  | <b>3.04</b> | <b>0.66</b>    |
| Q 3: When I'm unable to decide what's right or wrong in a patient care situation, my manager helps me.   | 3.14        | .826           |
| Q 7: My manager supports me in my decisions about patient care.  | 2.93        | .881           |
| Q 12: My manager listens to me talk about patient care issues/problems.  | 3.05        | .843           |
| Q 15: My manager is someone I can trust.   | 3.03        | .914           |
| Q 20: When my peers are unable to decide what's right or wrong in a particular patient care situation, I have observed that my manager helps them. | 2.70        | .934           |
| Q 24: My manager is someone I respect.   | 3.36        | .829           |
| <i>Hospital</i>  | <b>2.61</b> | <b>0.72</b>    |
| Q 4: Hospital policies help me with difficult patient care issues/problems.  | 2.39        | 1.059          |
| Q 8: A clear sense of the hospital's mission is shared with nurses.  | 2.48        | 1.262          |
| Q 25: I am able to practice nursing on my unit as I believe it should be practiced.  | 2.91        | .932           |
| Q 13: The feelings and values of all parties involved in a patient care issue/problem are taken into account when choosing a course of action.     | 2.52        | .943           |
| Q 16: Conflict is openly dealt with, not avoided.  | 2.70        | .962           |
| Q 21: There is a sense of questioning, learning, and seeking creative responses to patient care problems.  | 2.65        | .850           |
| <i>Physicians</i>  | <b>2.46</b> | <b>0.69</b>    |
| Q 5: Nurses and physicians trust one another.  | 2.79        | .884           |
| Q 9: Physicians ask nurses for their opinions about treatment decisions.   | 1.97        | 1.272          |
| Q 14: I participate in treatment decisions for my patients.  | 2.55        | 1.023          |
| Q 17: Nurses and physicians here respect each other's opinions even when they disagree about what is best for the patient.                         | 2.58        | .943           |
| Q 22: Nurses and physicians respect each other.  | 2.95        | .922           |
| Q 26: Nurses are supported and respected in this hospital.   | 1.91        | 1.246          |
| <b>Overall</b>   | <b>2.75</b> | <b>0.58</b>    |

### Discussion

This study investigated the psychometric properties of the HECS, which demonstrated the validity and reliability of this instrument for measuring the ethical climate in hospitals in Iran as perceived by nurses. Validity of the original five-factor structure with 26 items was confirmed by CFA.

The reliability of the HECS was evaluated by Cronbach's alpha. The overall Cronbach's alpha in this study was 0.94 and was higher than those reported in studies by Olson [Cronbach's alpha = 0.91] (2), Bahcecik and Oztürk (6), Jalali et al. (17) and Ghorbani et al. (18).

The highest HECS scores were observed on the subscale "managers" and items 24, 12 and 3 had the highest average, which is in agreement with findings of other studies (6, 17-19). This indicates that the hospital managers in the present study have succeeded in developing a positive ethical climate (2). The role of managers in creating and maintaining a desirable ethical climate is extremely important. Studies in the United States and Finland have shown one main concern area for nurses to be lack of management support (20, 21).

The lowest HECS scores were observed on the subscale 'physicians', which is consistent with the findings of other studies (18, 19). Furthermore, items 26, 9 and 4 obtained the lowest average, which also confirms the findings of other studies (6, 18, 19, 22). All this indicates a lack of organizational support when dealing with problems, and suggests that low teamwork and inadequate interaction between physicians and nurses can have a negative impact on the ethical climate. Considering the role of the ethical climate in providing safe

and high quality care, certain strategies must be used to improve the communication between nurses and physicians. Given the above findings, it seems that despite cultural differences, the relationship between nurses and their colleagues follows a relatively similar pattern in different countries (22). In general the survey showed that the level of collaboration and communication between nurses and physicians is rather low, and therefore it is necessary to develop plans to improve the situation.

### Conclusion

This study investigated the reliability and validity of the Persian version of the HECS. The results indicate that the Persian translation of the full version of HECS is easy to understand and can be self-administered. Moreover, this instrument has good psychometric properties and its use can be recommended to measure the ethical climate in hospitals in Iran.

### Conflict of interests

The authors declare that they have no conflict of interests.

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## Introduction

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## Method

### Study design and sampling

A cross-sectional study was conducted on the nurses working in three teaching hospitals affiliated with Tehran University of Medical Sciences, located in Tehran, the capital of Iran, during 2013. One way to determine the sample size for conducting a confirmative factor analysis (CFA) is to use the number of parameters, and assign at least five cases per parameter (12). Considering the fact that

the questionnaire has 26 parameters, we estimated 260 samples (ten cases per parameter) to be appropriate. Samples were then proportionally allocated to each hospital. Finally the questionnaires were distributed randomly to 260 nurses in 3 hospitals. Systematic random sampling was used to select the nurses in each hospital. The participants filled out the survey voluntarily, and a total of 187 questionnaires were completed .

### The Hospital Ethical Climate Survey

The Hospital Ethical Climate Survey (HECS) was originally developed by Olson in the United States to assess hospital nurses' perceptions of the ethical climate in their work place (2). HECS is a 26-item self-administered questionnaire consisting of five subscales including relationship with peers (4 items), patients (4 items), managers (6 items), hospital (6 items), and physicians (6 items). A five-point Likert scale was employed for the responses. The scales ranged from 0 (almost never true) to 4 (almost always true).

### Preparing the Persian version of the HECS

The HECS items were translated into Persian by one of the researchers. The draft was then reviewed by other members of the research group. Based on their comments and suggestions, the questionnaire was revised for further comprehensibility .

The comprehensibility of the HECS was tested on five nurses who had not been included in the study group and their opinions were used to prepare the final version of the HECS. The resulting questionnaire was then translated back into English by an independent translator in order to compare and contrast the back translation with the original questionnaire. All discrepancies were discussed and resolved until a satisfactory version was achieved.

### Statistical analyses

A confirmative factor analysis (CFA) was performed to investigate whether the factor structure of the HECS could be used with Iranian data. CFA using Linear Structural Relations (LISREL) offers 15 goodness of fit indices, and at least three measures are needed for assessments (13). Kline proposes to report the Chi-squared test, the root mean square error of approximation (RMSEA), the standardized root mean square residual (SRMR), and the comparative fit index (CFI) (14). The fit indices that were used for CFA in this study were: Chi-squared test, comparative fit index [CFI > 0.90 acceptable or > 0.95 good fit], non-normalized fit index (NNFI), also known as Tucker-Lewis Index [NNFI > 0.90 acceptable or > 0.95 good fit], root mean square error of approximation [RMSEA < 0.08 acceptable or ≤ 0.05 good fit] and the standardized root mean square residual [SRMR < 0.08 good fit] (15).

To investigate construct validity, a correlation analysis was carried out among the HECS factors. The internal consistency of the factors was calculated by means of Cronbach's alpha [criterion:  $\geq 0.7$  for each subscale] (16). All statistical analyses were performed using SPSS 20 and LISREL 8.8. The level of significance was set to  $P < 0.05$ . The survey data were summarized as percentage, mean, and standard deviation (SD) values .

The researchers obtained the approval of the ethics committee of Tehran University of Medical Sciences and attained institutional permits. The

selected nurses were informed that participation is voluntary. Completing the survey was considered as consent for participation.

**Results**

Of the 260 distributed questionnaires, 187 valid questionnaires were returned (response rate 72%). Most of the respondents (91%) were female. Fifty-one percent (51%) of the participants had six years or more professional experience and 56% were aged 31 years or younger (Table 1).

**Table 1.** Characteristics of the Samples (n = 187 Nurses)

| Characteristic                  | Category        | N   | %    |
|---------------------------------|-----------------|-----|------|
| <b>Gender (n = 184)</b>         | female          | 168 | (91) |
|                                 | male            | 16  | (9)  |
| <b>Age (n = 163)</b>            | $\leq 31$ years | 91  | (56) |
|                                 | 32 - 40 years   | 51  | (31) |
|                                 | 41 - 49 years   | 17  | (10) |
|                                 | $\geq 50$ years | 4   | (3)  |
| <b>Hospitals (n= 155)</b>       | A               | 93  | (60) |
|                                 | B               | 27  | (17) |
|                                 | c               | 35  | (23) |
| <b>Work experience (n =173)</b> | $\leq 1$ year   | 22  | (13) |
|                                 | 2-5 years       | 63  | (36) |
|                                 | 6 - 10 years    | 34  | (20) |
|                                 | $\geq 11$ years | 54  | (31) |

CFA was performed on the original five-factor questionnaire with 26 items. The data of the 187 participants were used, and the CFA results showed acceptable model fitness between the hypothetical model of ethical climate and the data in this study ( $X^2$  (df) = 589 (289),  $P < 0.001$ ;  $X^2/df = 1.99$ ;

SRMR = 0.064; NNFI = 0.96; CFI = 0.96; RMSEA=0.075).

The factor loadings for all ethical climate items were between 0.50 and 0.80, which revealed good structure of the Persian version of the HECS (Table 2).

**Table 2.** Factor loadings for ethical climate items

| Item   | Factor |          |          |          |            |
|--|--------|----------|----------|----------|------------|
|  | Peers  | Patients | Managers | Hospital | Physicians |
| Q 1: My peers listen to my concerns about patient care.  | 0.69   |          |          |          |            |
| Q 10: My peers help me with difficult patient care issues/problems.                                    | 0.63   |          |          |          |            |
| Q 18: I work with competent colleagues.  | 0.55   |          |          |          |            |
| Q 23: Safe patient care is given on my unit.   | 0.69   |          |          |          |            |
| Q 2: Patients know what to expect from their care.   |        | 0.51     |          |          |            |
| Q 6: Nurses have access to the information necessary to solve a patient care issue/problem.            |        | 0.50     |          |          |            |
| Q 11: Nurses use the information necessary to solve a patient care issue/problem.                      |        | 0.60     |          |          |            |
| Q 19: Patients' wishes are respected.  |        | 0.55     |          |          |            |
| Q 3: When I'm unable to decide what's right or wrong in a patient care situation, my manager helps me. |        |          | 0.60     |          |            |
| Q 7: My manager supports me in my decisions about  |        |          | 0.78     |          |            |

|  |      |      |
|--|------|------|
| patient care.  |      |      |
| Q 12: My manager listens to me talk about patient care issues/problems.  | 0.77 |      |
| Q 15: My manager is someone I can trust.   | 0.80 |      |
| Q 20: When my peers are unable to decide what's right or wrong in a particular patient care situation, I have observed that my manager helps them. | 0.80 |      |
| Q 24: My manager is someone I respect.   | 0.64 |      |
| Q 4: Hospital policies help me with difficult patient care issues/problems.  |      | 0.71 |
| Q 8: A clear sense of the hospital's mission is shared with nurses.  |      | 0.70 |
| Q 25: I am able to practice nursing on my unit as I believe it should be practiced.  |      | 0.60 |
| Q 13: The feelings and values of all parties involved in a patient care issue/problem are taken into account when choosing a course of action.     |      | 0.56 |
| Q 16: Conflict is openly dealt with, not avoided.  |      | 0.60 |
| Q 21: There is a sense of questioning, learning, and seeking creative responses to patient care problems.  |      | 0.52 |
| Q 5: Nurses and physicians trust one another.  |      | 0.55 |
| Q 9: Physicians ask nurses for their opinions about treatment decisions.   |      | 0.69 |
| Q 14: I participate in treatment decisions for my patients.  |      | 0.56 |
| Q 17: Nurses and physicians here respect each other's opinions even when they disagree about what is best for the patient                          |      | 0.74 |
| Q 22: Nurses and physicians respect each other.  |      | 0.66 |
| Q 26: Nurses are supported and respected in this hospital.   |      | 0.79 |

Internal consistency was measured by calculating Cronbach's alpha reliability coefficients for each of the five factors. The Cronbach's alphas for the five factors or subscales were between 0.69 and 0.85. The overall Cronbach's alpha coefficient was

0.94. Table 3 shows the reliability level of the Persian translation as compared to the original English HECS.

**Table 3.** Cronbach's alphas of the HECS/ Persian Version as compared to the HECS

| Factor     | No of items | Cronbach's alpha (α) HECS/ Persian version | Cronbach's alpha (α) HECS * |
|------------|-------------|--|-----------------------------|
| Peers      | 4           | 0.74                                       | 0.73                        |
| Patients   | 4           | 0.69                                       | 0.68                        |
| Managers   | 6           | 0.73                                       | 0.81                        |
| Hospital   | 6           | 0.85                                       | 0.92                        |
| Physicians | 6           | 0.81                                       | 0.77                        |
| Total      | 26          | 0.94                                       | 0.91                        |

\*Olson's study (2)

The interrelation of the ethical climate subscales was investigated. The correlations ranged from 0.507 to 0.752. The highest correlation was found between "hospital" and "physicians" (r = 0.752) while "hospital" and "managers" showed the lowest correlation (r = 0.507) (Table 4).

The overall ethical climate score was 2.75. The score means varied between 2.46 and 3.04 across the 5 factors. The highest scored subscale was "managers" (3.04) followed by "peers" (2.90), "patients" (2.80), "hospital" (2.61) and "physicians" (2.46).

**Table 4.** Inter-correlations of the 5 factors

| Factor | 1 | 2 | 3 | 4 | 5 |
|--------|---|---|---|---|---|
|--------|---|---|---|---|---|

|            |        |        |        |        |   |
|------------|--------|--------|--------|--------|---|
| Peers      | 1      |        |        |        |   |
| Patients   | 0.740* | 1      |        |        |   |
| Managers   | 0.636* | 0.619* | 1      |        |   |
| Hospital   | 0.672* | 0.644* | 0.507* | 1      |   |
| Physicians | 0.696* | 0.721* | 0.700* | 0.752* | 1 |

\*correlation is significant at the 0.05 level.

The items with the lowest mean scores were "Hospital policies help me with difficult patient care issues/problems" with a mean of 2.39, "Physicians ask nurses for their opinions about treatment decisions" with a mean of 1.97, and "Nurses are supported and respected in this hospital" with a mean of 1.91. The items with the

highest mean scores were "My manager is someone I respect" with a mean of 3.36, "When I'm unable to decide what's right or wrong in a patient care situation, my manager helps me" with a mean of 3.14, and "My manager listens to me talk about patient care issues/problems" with a mean of 3.05 (Table 5).

**Table 5.** Descriptive statistics of the survey on ethical climate

| Five subscales and survey items  | Mean        | Std. Deviation |
|--|-------------|----------------|
| <i>Peers</i>   | <b>2.90</b> | <b>0.65</b>    |
| Q 1: My peers listen to my concerns about patient care.  | 2.91        | .868           |
| Q 10: My peers help me with difficult patient care issues/problems.  | 2.91        | .876           |
| Q 18: I work with competent colleagues.  | 2.84        | .820           |
| Q 23: Safe patient care is given on my unit.   | 2.94        | .888           |
| <i>Patients</i>  | <b>2.80</b> | <b>0.64</b>    |
| Q 2: Patients know what to expect from their care.   | 2.42        | .990           |
| Q 6: Nurses have access to the information necessary to solve a patient care issue/problem.  | 2.83        | .867           |
| Q 11: Nurses use the information necessary to solve a patient care issue/problem.  | 3.00        | .870           |
| Q 19: Patients' wishes are respected.  | 2.93        | .823           |
| <i>Managers</i>  | <b>3.04</b> | <b>0.66</b>    |
| Q 3: When I'm unable to decide what's right or wrong in a patient care situation, my manager helps me.   | 3.14        | .826           |
| Q 7: My manager supports me in my decisions about patient care.  | 2.93        | .881           |
| Q 12: My manager listens to me talk about patient care issues/problems.  | 3.05        | .843           |
| Q 15: My manager is someone I can trust.   | 3.03        | .914           |
| Q 20: When my peers are unable to decide what's right or wrong in a particular patient care situation, I have observed that my manager helps them. | 2.70        | .934           |
| Q 24: My manager is someone I respect.   | 3.36        | .829           |
| <i>Hospital</i>  | <b>2.61</b> | <b>0.72</b>    |
| Q 4: Hospital policies help me with difficult patient care issues/problems.  | 2.39        | 1.059          |
| Q 8: A clear sense of the hospital's mission is shared with nurses.  | 2.48        | 1.262          |
| Q 25: I am able to practice nursing on my unit as I believe it should be practiced.  | 2.91        | .932           |
| Q 13: The feelings and values of all parties involved in a patient care issue/problem are taken into account when choosing a course of action.     | 2.52        | .943           |
| Q 16: Conflict is openly dealt with, not avoided.  | 2.70        | .962           |
| Q 21: There is a sense of questioning, learning, and seeking creative responses to patient care problems.  | 2.65        | .850           |
| <i>Physicians</i>  | <b>2.46</b> | <b>0.69</b>    |
| Q 5: Nurses and physicians trust one another.  | 2.79        | .884           |
| Q 9: Physicians ask nurses for their opinions about treatment decisions.   | 1.97        | 1.272          |
| Q 14: I participate in treatment decisions for my patients.  | 2.55        | 1.023          |
| Q 17: Nurses and physicians here respect each other's opinions even when they disagree about what is best for the patient.                         | 2.58        | .943           |
| Q 22: Nurses and physicians respect each other.  | 2.95        | .922           |
| Q 26: Nurses are supported and respected in this hospital.   | 1.91        | 1.246          |
| <b>Overall</b>   | <b>2.75</b> | <b>0.58</b>    |

### Discussion

This study investigated the psychometric properties of the HECS, which demonstrated the validity and reliability of this instrument for measuring the ethical climate in hospitals in Iran as perceived by nurses. Validity of the original five-factor structure with 26 items was confirmed by CFA.

The reliability of the HECS was evaluated by Cronbach's alpha. The overall Cronbach's alpha in this study was 0.94 and was higher than those reported in studies by Olson [Cronbach's alpha = 0.91] (2), Bahcecik and Oztürk (6), Jalali et al. (17) and Ghorbani et al. (18).

The highest HECS scores were observed on the subscale "managers" and items 24, 12 and 3 had the highest average, which is in agreement with findings of other studies (6, 17-19). This indicates that the hospital managers in the present study have succeeded in developing a positive ethical climate (2). The role of managers in creating and maintaining a desirable ethical climate is extremely important. Studies in the United States and Finland have shown one main concern area for nurses to be lack of management support (20, 21).

The lowest HECS scores were observed on the subscale 'physicians', which is consistent with the findings of other studies (18, 19). Furthermore, items 26, 9 and 4 obtained the lowest average, which also confirms the findings of other studies (6, 18, 19, 22). All this indicates a lack of organizational support when dealing with problems, and suggests that low teamwork and inadequate interaction between physicians and nurses can have a negative impact on the ethical climate. Considering the role of the ethical climate in providing safe

and high quality care, certain strategies must be used to improve the communication between nurses and physicians. Given the above findings, it seems that despite cultural differences, the relationship between nurses and their colleagues follows a relatively similar pattern in different countries (22). In general the survey showed that the level of collaboration and communication between nurses and physicians is rather low, and therefore it is necessary to develop plans to improve the situation.

### Conclusion

This study investigated the reliability and validity of the Persian version of the HECS. The results indicate that the Persian translation of the full version of HECS is easy to understand and can be self-administered. Moreover, this instrument has good psychometric properties and its use can be recommended to measure the ethical climate in hospitals in Iran.

### Conflict of interests

The authors declare that they have no conflict of interests.

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