Title: The Psychometric properties of the Persian version of “Hospital Ethical Climate Survey”

Short title: Psychometric properties of Hospital Ethical Climate

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*Abstract*

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

*This cross – sectional study was conducted to analyze the psychometric properties of “Hospital Ethical Climate Survey”, in three phases. In the first phase, the items of the original questionnaire were translated and retranslated In the second phase it was attempted to investigate the face validity, content validity, and construct validity of “Hospital Ethical Climate Survey”. In the final phase, the internal consistency (Cronbach’s alpha) and test stability (retest within 10 days) were determined. The findings of the present study indicated that the Persian version of “Hospital Ethical Climate Survey” tool have adequate validity and reliability for measuring the hospital ethical climate in the Iranian society.*

**Key words:** hospital ethical climate, survey, psychometrics, ethics

**Introduction**

The rapid breakthroughs in the medical technologies, medicinal interventions in healthcare, healthcare services in insecure and complicated clinical conditions, and the limitations of healthcare resources have brought about increased ethical issues experienced by healthcare specialists (Hwang J.I &Park A.H., 2014). One of the most significant issues is the ethical climate of workplace. Ethical climate is the basis of policies, method, and procedures adopted by an organization for ethical issues. Ethical climate affects the personnel’s attitude and behaviors and works as a reference for the personnel’s behaviors (Fillipo A.A, 2011). Ethical climate has some subcategories that have to do with individual values and beliefs, hospital’s rules and standards, and the patients’ perception of advantages of receiving healthcare services in a given hospital (Hwang J.I &Park A.H., 2014).

**Background**

Appropriate ethical climate brings about significant effects on nursing cares. Through providing organizational support, appropriate ethical climate will result in reduced turnover and increased satisfaction among the nurses (Fillipo A.A, 2011). Moreover, appropriate ethical climate helps the nurses to reduce their mistakes in providing healthcare services, decrease turnovers, and increase satisfaction with their jobs (Dinc S.M & Huric A, 2017).The climate ruling the atmosphere of a ward affects the behavior and performance of the nurses. Ethical climate, as a constituting element of the organizational climate, affects the performance of nurses by rewarding, punishing, and limiting them (Numminen O, Leino-Kilpi H, & Isoaho H, 2015).

The studies have indicated that ethical climate affects the ethical distress, reduced job satisfaction of nurses, occupational burnout, and unsafe cares provided for the patient (Abou Hashish A.E, 2017; Dinc S.M & Huric A, 2017; Koskenvuori K, Numminen O, & R., 2017; Numminen O et al., 2015).

The studies have indicated that there is a close relationship between hospital ethical climate with occupational commitment and job satisfaction (Fillipo A.A, 2011). Improved ethical climate is of significant importance for investigating ethics stress, job satisfaction, and job rotation(Macdanial C., 1997; Shirey MR., 2005; Raines ML, 2000). The ethical climate of the organization can be investigated through analyzing the personnel’s understanding of organizational climate, decision-making procedures when dealing with ethical issues, and personnel’s participation in solving ethical problems (Bahcecik N & Ozturk H., 2003). By measuring the ethical climate, the researchers will be aware of the climate ruling the organization as well as nurses’ ethical behaviors and performance. How nurses understand a work place is likely to affect their attitude towards ethical issues and their role in ethical decisions made ( Filipova AA., 2009; Olsen LL., 1998; Shirey MR., 2005).

One of the most frequently used tools available for evaluating the ethical climate in hospitals is “Hospital Ethical Climate Survey” (HECS). This tool was first provided by Olson in 1995. This tool was designed by applying the analysis of ethical climate concept in healthcare organization, reviewing the related literature, and conducting an interview with 3 nurses. After conducting the psychometric phases, this tool was then investigated by being conducted on a 360-individual sample of nurses in two acute care hospitals in the United States. This tool was first published in Image Journal and recorded in Measurement Tools in Clinical Ethics (Burkhardt MA, Nathaniel AK, & Walton NA., 2008; Olsen LL., 1998). According to the studies conducted the abovementioned tool (HECS) has been numerously used in different countries including the United States, Turkey, and Iran. Given the importance of ethical climate, its effects on the quality of care and health system, limited studies conducted in this field, the lack of a valid tool about ethical climate in Iran, and inadequate validation of the questionnaire in Iran, there is an increasing need for conducting a psychometric analysis of the abovementioned tool in accordance with the Iranian culture.

Thus, the present study was conducted to analyze the psychometric properties of “Hospital Ethical Climate Survey” in hospitals affiliated with Shiraz University of Medical Sciences.

**Methods**

Design:

The present study is a cross-sectional design followed by methodological approach.

Study conducted in 2016 to investigate the psychometric properties of “Hospital Ethical Climate Survey”.

Data collection:

The participants were 250 individuals including nurses working in the internal, surgery, emergency, and intensive wards of educational-medical hospitals affiliated with Shiraz University of Medical Sciences. The samples were selected by adopting a convenience sampling method. The Hospital Ethical Climate Survey includes 26 items and 5

domains: peers (4 items); patients (4 items); managers (6 items); physicians (6 items); and hospital (6 items). The items were scored on a 5-point Likert scale (Always=5, Often=4, Sometimes=4, Seldom=2, and Almost Never=1). Thus, the total score of the tool ranges from 26 to 130.

Analysis:

In the present study, the psychometric analysis of the tool was conducted in the following phases. First, the questionnaire was translated into Persian by an individual dominant over both English and Persian. Then, it was retranslated into English by an individual dominant over both Persian and English. In the end, for confirming the validity of the questionnaire, the translated tool was evaluated by another specialist (other than the translators). This specialist confirmed the validity of the questionnaire in terms of the original format as well as the meanings of the sentences and phrases. The measurement of face validity of the questionnaire (survey) was conducted quantitatively through using impact score criterion. Thus, the study applied the views of 12 individuals of the target group (nurses working in the hospitals affiliated with Shiraz University of Medical Sciences). In this phase, the importance of each of these items were determined by applying a 5-point Likert scale: very important (5 points), somewhat important (4 points), moderately important (3 points), slightly important (2 points), and not important at all (1 point). Thus, items with the impact score of less than 1.5 were excluded (Lacasse Y, Godbout C, & F., 2002; Polit DF, Beck CT, & SV., 2007).

For determining the face validity of the questionnaire in a qualitative method, the researchers applied the views of 5 nurses working in the hospitals in terms of the writing and wording of the items of the questionnaire.

The measurement of the content validity of “Hospital Ethical Climate Survey” was conducted by using Waltz and Bausell's content validity index. In this stage, the views of 11 specialists of ethics, tooling, and nursing were applied. Waltz and Bausell's content validity index investigates “relevance”, “clarity”, and “simplicity” of the survey’s questions on a 4-point Likert scale. The score of content validity index for each item was measured by dividing the number of specialists agreeing over the items with third and fourth rankings by the total number of specialists(Hyrkäs K, Appelqvist-Schmidlechner K, & L., 2003; Polit DF et al., 2007). For the items to be accepted, Hyrkas et al (2003) have recommended 0.79 and higher scores based on CVI scoring (Hyrkäs K et al., 2003).

In the next phase, based on the average scores of CVI of all phases of the questionnaire, the mean of content validity index (S-CVI/Ave[[1]](#footnote-1)) of the questionnaire was measured. According to Polit and Beck, 0.9 and scores larger than appropriate as the mean of content validity index (Polit DF & CT., 2006). For measuring the content validity ratio (CVR), as many as 12 specialists investigated the necessity of each of the items on a three-point Likert scale: necessary (3 points), useful but not necessary (2 points), and not necessary (1 point)(Waltz CF, Strickland O, & ER., 2010). According to Lawshe table,(CH., 1975). phrases whose CVR were more than 0.56 were significant (P-Value<0.05), and that item was retained.

The construct validity of “Hospital Ethical Climate Survey” was investigated by applying exploratory factor analysis with the samples size of 190 participants (more than 7 times larger than the number of the survey’s items). In the present study, items with factor loading of more than 0.4 were retained. After extracting the factors and the items placed in each item, the consistency of these factors with the main concept and aspects of hospital ethical climate was investigated. The reliability of the survey means calculating the measurement error. In other words, it indicates the measurement accuracy of the tool, stability in frequent measurements, and stability in the simultaneous measurement (Polit DF & CT., 2013). Internal consistency was investigated by using internal consistency (Cronbach’s alpha) and stability (test-retest) for each factor and the entire survey. For measuring stability, the questionnaire was randomly passed out twice among 30 nurses within 10 days. Then, the intraclass correlation coefficient was measured. When this index is more than 0.8, the reliability is considered desired (De Boer MR et al., 2004).

**Results**

In addition to the translation and retranslation of the survey and confirming the validity of the translation by two specialists (well-aware of both English and Farsi), the findings of psychometric phases of the survey, in terms of validity and reliability, are as follows.

The face validity of the questionnaire with the measurement of item’s impact score was reported to be more than 1.5 for all items of the survey. Content validity ratio was measured to be 0.66-1 for each of the items.

Since the analysis of content validity index reported scores less than 0.79 for three items of the questionnaire, the questionnaire was modified in terms of clarity and simplicity, and it was resent to 5 specialists. The findings of the second phase indicate that CVI was 0.9-1. The mean of the content validity index (S-CVI/Ave) of the questionnaire was reported to be 0.92.

For investigating the construct validity of ethical climate survey with 26 items, exploratory factor analysis was applied. At first, for determining the adequacy of the sample size, Kaiser-Meyer-Olkin Measure was used for being used in the factor analysis; it was measured to be 0.89 that is adequate. The significance of chi-square statistic and Bartlett's test is the minimum prerequisite for factor analysis. For this purpose, for investigating the adequate correlation among the items of ethical climate survey, Bartlett's test was used; its value was 2.292 (P<0.0001).

According to the findings obtained from exploratory facto analysis, 6 factors having special values larger than 1 were extracted by applying the main components and Varimax rotation; these factors explained as much as 64.7% of total variance of the scale.

For determining the correlation of variables, rotated factor matrix was used; items with the consistency of higher than 0.4 were included as factors. At the end, the five-factor construct of “hospital ethical climate survey” was extracted: first factor (managers with 6 items), second factor (physicians with 6 items), third factor (hospital with 6 items), fourth factor (peers with four items) and fifth factor (patients with four items).

Thus, by using factor analysis, the adequate construct validity of ethical climate survey was indicated in five subscales (table 1). Moreover, the gravel diagram confirmed the five factors extracted (diagram 1).

For investigating the reliability, Cronbach’s alpha coefficient was α=0.86 in a 30-individual sample for the entire survey. Cronbach’s alpha coefficient was measured for each of the aspects of the survey as well (table 2). The correlation of all items with the total score of the survey was adequate and statistically significant. The intraclass correlation coefficient (ICC) of the survey was 0.83.

Table 2. Internal consistency (Cronbach’s alpha coefficient) of different aspects of “Hospital Ethical Climate Survey”.

**Discussion**

Nurses are the most important human resources in the hospitals, and the effect of hospital ethical climate on them will bring about their increased satisfaction and increased quality of healthcare services provided (Dinc S.M & Huric A, 2017). Every measurement needs to be conducted with valid and reliable tools. The psychometric phases of “Hospital Ethical Climate Survey” have not been reported yet in Iran. The present study was conducted to analyze the psychometric properties of “hospital ethical climate questionnaire” at Shiraz University of Medical Sciences, so that a main step would be taken toward fulfilling this need in the Iranian society by using a valid and reliable tool.

In the present study, for investigating the tool’s content validity, content validity index (CVI) and content validity ratio (CVR) were used. According to the findings obtained, the mean of tool’s content validity index (S-CVI/Ave) was desirable with 0.92. Polit and Beck recommend 0.9 and scores larger than 0.9 to be accepted as the appropriate mean of content validity index (Polit D.F & Beck CT., 2006). Moreover, the tool’s content validity ratio was measured to be larger than 0.56 which is at a desirable level according to Lawshe table (Lawshe CH., 1975). Thus, the content validity of “Hospital Ethical Climate Survey” questionnaire was confirmed. In different studies conducted in Iran, the CVI and CVR of the tool have not been investigated. Moreover, in a study conducted in Turkey to investigate the tool’s validity and reliability, the researchers merely investigated the construct validity (factor analysis) of the tool (Bahcecik N &Ozturk H., 2003).

Moreover, the construct validity of “hospital ethical climate” questionnaire was investigated by conducting factor analysis; this indicates that the questionnaire is multifactorial (there are five factors including ward/department, manager, hospital, peer, and physician). The studies conducted by Bahcecik and Ozturk (2003) and Olson et al (2000) indicate that there are five factors (Bahcecik N & Ozturk H., 2003; Olsen LL., 1998). Thus, it can be claimed that hospital ethical climate tool has adequate construct validity after being translated into Persian. Although Polit assert that understanding the ethics and values based upon organizational climate is closely related to the individuals’ demographic and cultural characteristics, the investigation of the construct validity of this tool in three different cultures (Iranian, Turkish, and American) indicated similar findings(Polit DF & Beck CT., 2013). This might be merely owing to the translation of the tool in these three cultures. To understand the appropriateness of this tool, conducting further studies in different cultures will be helpful.

The measurement of Cronbach’s alpha coefficient of the entire questionnaire indicated that “Hospital Ethical Climate Survey” questionnaire has desirable and adequate reliability: α=0.86. However, the finding of Cronbach’s alpha coefficient was 0.7 in the domain of patients. It is likely that the low reliability in this domain has to do with the limited number of items in this domain. However, in the study conducted by Olson et al, Cronbach’s alpha of the entire questionnaire was 0.91 and 0.68-0.92 for each domain (Olsen LL., 1998). In the aforementioned study, the minimum and maximum reliability coefficients were reported to be 0.68 and 0.92 for the domains of patients and managers respectively. This is consistent with the findings of the present study.

In terms of Cronbach’s alpha of the entire questionnaire, different studies have reported different values; Mobasher et al have reported 0.92(Mobasher M, Nkhaee N, & S., 2008), Ghorbani et al have reported 0.88,(Ghorbani AA et al., 2014) and Bahcecik et al have reported 0.89(Bahcecik N & Ozturk H., 2003). In the study conducted by Hart (2005), Cronbach’s alpha coefficient was measured to be 0.95 for investigating the internal consistency of the questionnaire (Hart SE., 2005). The findings of the present study indicated that HECS questionnaire enjoys appropriate internal consistency and the items measure a similar concept and feature. The intraclass correlation coefficient of 0.83 indicated the stability of this tool. Moreover, the findings indicate that HECS questionnaire has adequate reliability as well.

**Conclusion**

Based on the findings of the present study, the Persian version of “Hospital Ethical Climate Survey” with 26 items and 5 domains has adequate content validity and reliability to measure the ethical climate of the hospitals. This tool can be regarded as a background for further studies on ethics. To conclude, the quality of healthcare services, job satisfaction, commitment, and communications between members of the health team will be promoted by identifying and improving the ethical climate ruling the hospitals.

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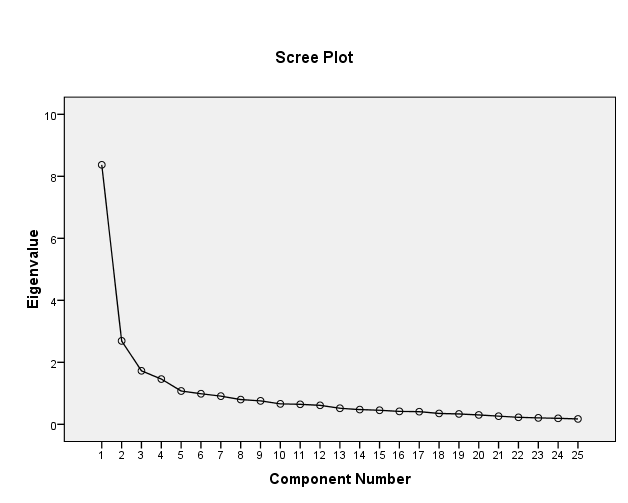
Table 1 - Matrix of the 5th factor variance Questionnaire of the Hospital ethical climate

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Item | Factor1 | Factor2 | Factor3 | Factor4 | Factor5 |
| 12- My Supervisor. Someone I trust him/her | 0.848 |  |  |  |  |
| 13- When my colleagues doubt to recognize the correct care of the patient, I have seen that supervisor helps them. | 0.836. |  |  |  |  |
| 11-Supervisor takes care of issues that about patient care. | 0.817 |  |  |  |  |
| 9-When I doubt about recognize of the correct care of the patient, the supervisor helps me | 0.783 |  |  |  |  |
| 14- My supervisor, respectable person | 0.760 |  |  |  |  |
| 10- - My supervisor, support my decision about taking care of the patient. | 0.681 |  |  |  |  |
| 16-Doctors will discuss nursing about medical decisions. |  | 0.805 |  |  |  |
| 17- I participate in medical decisions for my patients |  | 0.788 |  |  |  |
| 18- Nurses and doctors respect each other opinion, even if they do not agree. |  | 0.711 |  |  |  |
| 15- Nurses and doctors trust each other. |  | 0.709 |  |  |  |
| 19- In this hospital, the "nurse" is supported and respected. |  | 0.619 |  |  |  |
| 20- Nurses and doctors respect each other. |  | **0.465** |  |  |  |
| 23- In choosing care processes, the emotions and dignity of all groups that take part of patient care are taken into consideration. |  |  | 0.789 |  |  |
| 22 - Hospital goals and mission are clearly shared with the nurses. |  |  | 0.723 |  |  |
| 21- The hospital policy it like that helps me solve problems and issues that arise while taking care of the patient. |  |  | 0.698 |  |  |
| 24- Instead of being ignored, differences are clearly proposed and resolved. |  |  | 0.658 |  |  |
| 25- In our ward, exist questioning morality, learning and search for creative responses to care problems |  |  | **0.496** |  |  |
| 26- I am not able to doing my duties as I believe it should be done |  |  | 0.741 |  |  |
| 3- I work with skilled and experienced colleagues. |  |  |  | 0.812 |  |
| 1- My colleagues are paying attention to my comments about patient care |  |  |  | 0.700 |  |
| 2- My colleagues help me about problems and issues related to patient care. |  |  |  | 0.589 |  |
| 4- In our ward, regard the principles or criteria for safe care |  |  |  | 0.537 |  |
| 7- Nurses use information that is needed to resolve patient care problems |  |  |  |  | 0.732 |
| 6- Nurses have access to essential information to resolve care issues or issues |  |  |  |  | 0.672 |
| 5- Patients are aware of their care plan. |  |  |  |  | 0.573 |
| 8- Patient rational requests are respected. |  |  |  |  | 0.543 |

Table 2: Internal consistency (Cronbach's alpha coefficient) dimensions of "Ethical climate questionnaire in hospital"

|  |  |  |  |
| --- | --- | --- | --- |
| Row | Factor | Cronbach's alpha coefficient | Items |
| 1 | Managers | o.92 | 6 |
| 2 | Physicians | 0.88 | 6 |
| 3 | Hospital | 0.75 | 6 |
| 4 | Colleagues | 0.73 | 4 |
| 5 | Patients | 0.63 | 4 |
| Total dimension | | 0.86 | 26 |

Chart-1 - Scree plot: explaining the factor analysis of the "Ethical Climate Questionnaire of the Hospital"

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1. Scale-level Content Validity Index / Averaging Calculation Method [↑](#footnote-ref-1)