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Adaptation of Clinical Decision Making in Nursing Scale to Undergraduate Students of Nursing: The Study of Reliability and Validity

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ABSTRACT

A clinical decision making skill is essential in the implementation of nursing knowledge and reflecting on patient care. The research was planned to measure the reliability and validity of The Clinical Decision Making in Nursing Scale (CDMNSTr) for undergraduate nursing students from Turkey. This study is a methodological design. This study was conducted on 210 undergraduate students of nursing. For validity; Language – Content Validity and Construct Validity (Exploratory and Confirmatory Factor Analysis) were examined. For reliability; CDMNS's Cronbach's alpha reliability coefficient, item-total score correlation coefficients and stability analysis (test-retest) were examined. Item Content Validity Index and Scale Content Validity Index were calculated as .81 and .83 respectively. Confirmatory factor analyses showed that goodness of fit indexes were acceptable. Cronbach alpha value of the scale was .78. Item-to-total score correlation coefficients ranged from .13 to .56. The correlation coefficient for test-retest was .82. The scale can be used as a valid and reliable measurement tool to determine the perceptions of Turkish undergraduate students of nursing regarding to clinical decision making.

Keywords:
Decision Making, Nursing student, Reliability, Validity

1. Introduction

Decision making skills are fundamental for nurses who must make effective decisions in a complex and ever-changing healthcare environment (Jenkins, 2001). Nurses are health personnel who analyze the data of the change in patient's condition patients' conditions and determine the priorities; they are also responsible for clinical decision making in care together with the patient and family (Tanner, 2006). Clinical decision making defines practicing as the most appropriate, useful and acceptable alternative among the solutions in order to overcome the problems of the client or patient and his family (Thompson & Dowding, 2002). Clinical decision making in nursing includes the type of care that comes after the effect of illness on patient and family. It also includes determining emotional, socio-cultural and economic shortcomings of patient and family and then using necessary skills to cope with those shortcomings (Tanner, 2006). Briefly, clinical decision making in nursing means practicing professional nursing knowledge and skills (Jenkins, 1983; Tanner, 2006).

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"Clinical decision making" is one of the basic skills developed during baccalaureate nursing education and all graduates are expected to be equipped with these skills (American Association of Colleges of Nursing, 2008). The World Health Organization (WHO) has published the golden standards of nursing education and according to these standards, the development of clinical decision making skills should be provided in nursing school programs (World Health Organization, 2009). Decision making is required in order to acquire expertise (Dunphy & Williamson, 2004). It is necessary to determine the perception of nursing students in clinical decision making, and to develop and evaluate their decision making skills. Therefore, valid and reliable measurement tools are required to evaluate students' perceptions in clinical decision making as well as the way they make decisions. Both at the national and the international level, the number of measurement tools which evaluate clinical decision making skills is limited. Only the Clinical Decision Making in Nursing Scale (CDMNS) was found in the study as a measurement tool for evaluating the perceptions of nursing students in decision making. Adapting the CDMNS to Turkey fulfilled the need at the national level and provided an opportunity to retest the scale in a different culture at the international level.

The CDMNS is used to identify and to evaluate clinical decision making in nursing. The CDMNS was developed by Jenkins (1983). The internal reliability of the items used in the scale where the CDMNS was developed was discussed during a panel with expert educators of undergraduate nursing education and the items on which a consensus was reached were included. Cronbach's alpha reliability coefficient of the original CDMNS internal consistency was found to be .83 and the explanatory factor analysis has showed that the four-factor structure explain 72.3 % of the total variance (Jenkins, 1983 & 1985).

Byrnes and West (2000) used the scale to evaluate the perceptions of nursing students in clinical decision making in Australia. The reliability and validity of CDMNS was not examined in their study. Girot (2000) found that Cronbach's alpha reliability coefficient was .78 among the Canadian graduate nurses. The validity in this study was tested by a group of experienced practitioners who were considered to be 'expert decision-makers' in practice and they established content validity. On the other hand, Baumberger-Henry (2005) found that Cronbach's alpha coefficient was .81 among the nursing students in the USA and the validity in this study was not tested. Gorton (2010) used the CDMSN tool to investigate clinical judgment of the nurse practitioner students and the reliability of the instruments used in this study was evaluated. Cronbach's alpha coefficient was .73 for the CDMNS tool and .67 for the CDMNS evaluation and reevaluation subscale.

No study directly evaluating the clinical decision making of undergraduate students in Turkey was found. However, the evaluative studies on the problem solving processes and critical thinking skills of nursing students state that these skills would indirectly affect decision making. It is obvious that there is a need for a valid and reliable measurement tool that would evaluate the clinical decision making skills of nursing students to help them prepare for professional life. This study was conducted in order to examine the validity and the reliability of the Turkish version of the CDMNS as a tool for evaluating the perception of nursing students in clinical decision making.

2. Method

The research method was a scale adaptation study which was structured based on screening model.

2.1. Sample of the Research

The research was conducted in Dokuz Eylul University, school of nursing in 2009. The research sample comprised 210 undergraduate students of nursing who had previous experience of clinical practice. In thelight of Tavşancıl's recommendations; there were 5 to 10 people per item of an instrument (Tavşancıl, 2006) and the sample size of 210 was considered to be sufficient to conduct factor analysis of the CDMNS which comprised 40 items.

The data were collected with a "Defining Characteristics" form which was composed of three questions and the "CDMNS" in the classroom environment. 210 undergraduate nursing students participated in the research. These students completed their clinical practice. The mean age of the students was 21.13 ± 1.07. All of the students were female. 28.6% of the students (n= 60) were sophomores, 38.1% (n= 80) were in their third year and 33.3% (n=70) were seniors.

2.2. Instruments

Data were collected by using a Demographic Form and The Clinical Decision Making in Nursing Scale.

2.2.1. ***The Clinical Decision Making in Nursing Scale (CDMNS):*** The original CDMNS was developed by Jenkins (1983) with nursing students in the USA. This scale describes the perception of the nursing students in clinical decision making based on self-expression (Jenkins, 2001).
The original CDMNS is composed of 40 items and four subscales. The subscales of the scale are "search for alternatives or options", "canvassing of objectives and values", "evaluation and reevaluation of consequences", and "search for information and unbiased assimilation of new information". Each subscale is composed of 10 items. 22 items (1, 3, 5, 7, 8, 9, 10, 11, 14, 16, 17, 18, 20, 26, 27,28, 29, 33, 35, 36, 37 and 38) are written as positive. 18 items (2, 4, 6, 12, 13, 15, 19, 21, 22, 23, 24, 25, 30, 31, 32, 34, 39, and 40) are written as negative. In this scale, 18 items are inversely scored. Each item of the scale is evaluated through the five-point likert scale as 5=Always, 4=frequently, 3=occasionally, 2=Seldom, and 1=Never (Jenkins, 1983). Minimum and maximum points to be taken are 40 and 200 in the whole scale and 10 and 50 in the subscales, and there is no cutting point. A high score taken from the scale indicates that the perception in decision making is high, whereas a low score indicates that the perception in decision making is low. The scale is evaluated through the scores obtained from each subscale and the total scale (Jenkins, 1983; 1985; 2001).

2.3. Data Collection

The researchers were given information about the scale and about how to fill it. The objective of the study was explained to a total of 216 students. 210 students volunteered to participate in the study and 6 students refused it. The scales were distributed to the students participating in the study by the researchers. The students completed the scale.

Each student was asked to write down their self-selected password on the scale both during the first attempt and the test-retest practice which was conducted 6 weeks later to check the stability of the scale. Thus, it was possible to gather the data safely by hiding the students' identities and to match them up. As a result of the re-test, 109 students (51.9 %) who responded to the scale were taken into consideration, incomplete forms and forms with mismatching passwords were excluded. Each participant needed approximately 10-15 minutes to complete the scale. Demographic data were self reported by the students and subsequently obtained from the demographic form.

2.4. Ethical considerations

Ethical approval was obtained from the Ethics Committee of the School of Nursing. During data collection, the students were informed about the aim of the research and verbal informed consent was obtained from each participant.

2.5. Data analysis

Data were analyzed by using Statistical Package for Social Sciences (SPSS) version 15.0 and LISREL 8 statistical program software. The Content validity of the Turkish version of CDMNS was tested by requesting opinions of experts using the Content Validity Index (CVI). The Exploratory Factor Analysis (EFA) and The Confirmatory Factor Analyses (CFA) were used to determine the construct validity. The Confirmatory Factor Analyses (CFA) was used to determine the construct validity of the Turkish version of CDMNS with LISREL 8 statistical program software. In terms of scale reliability, Cronbach's alpha reliability coefficient and the item analysis were used to find out the internal consistency of the scale and the subscales. The stability of the scale was tested by test-retest reliability coefficients.

3. Results

3.1. Descriptive Statistics of CDMNS-Tr

The CDMNS-Tr score mean is 160.82±10.75 and the subscale score means are between 39.78±3.29 and 40.58±3.45. The lowest and the highest scores for CDMNS were 132.00 and 185.0 respectively. The standard error value of the scale was determined to be .74 whereas the standard error values were between .21 and .25 for the subscales in Table 1.

Table 1: Results of the Clinical Decision Making in Nursing Scale and Subscale Analysis (n: 210)

CDMNS and Subscale	Mean-SD	SE*	Median	Min	Max	r+	α≠
Search for alternatives or options	40.58±3.45	.23	41.00	29.00	50.00	.82	.50
Canvassing of objectives and values	39.78±3.29	.22	40.00	32.00	49.00	.77	.44
Evaluation and reevaluation of consequences	39.91±3.72	.25	40.00	30.00	49.00	.80	.52
Search for information and unbiased assimilation of new information	40.54±3.13	.21	41.00	31.00	50.00	.74	.40
The total of CDMNS	160.82±10.75	.74	161.00	132.00	185.00		.78

*SE: Standart errors

+r: Correlation coefficients

≠α: Cronbach's Alpha Reliability Coefficient

3.2. Validity of the CDMNS-Tr

3.2.1. ***Linguistic Validity.*** In order to ensure the language validity of the original CDMNS, language experts who are familiar with both languages and cultures translated the scale from English to Turkish. The most suitable expressions were selected from the translated versions of the CDMNS, and a single version of the scale was created. In order to test whether the Turkish version of the scale provided the same meaning, the resultant Turkish version of the CDMNS was backtranslated into English, the scale was once more translated by two different experts who had not seen the English version of the scale and had a good command of both languages. The items of the back-translated scale were examined and it was seen that the meanings were close to the original scale. The linguistic validity of the CDMNS was confirmed.

3.2.2. ***Content Validity.*** To test content validity, a total of eight experts specializing in nursing education were asked to give their opinions about the CDMNS whose content validity was confirmed. Each question in the CDMNS was scored by the experts on a 4-point scale: 1=not relevant, 4=highly relevant. In accordance with the experts' recommendations, necessary changes in the items were made. Evaluations of expert opinions were made with Content Validity Index (Polit & Beck, 2006). The Content Validity Index (CVI) was calculated both for the items and the scale. The item–CVI was calculated by using the formula of the number of experts who gave three points (quite relevant) or four points (highly relevant) for each item divided by the total number of experts. The calculated ratios were then added up and the total ratio was divided by the total number of items. It was recommended not to have Item Content Validity Index below 0.78 (Polit & Beck, 2006), if there were six or more experts. For the scale- CVI, each expert was separately evaluated at the first step. For each expert's evaluation, the total number of their rating of 3 or 4 (i.e. quite or highly relevant) was divided by the total number of items. Then the ratios which were calculated for each expert were added up and divided by the total number of experts. Scale- Content Validity Index was recommended to be 0.80 minimum (Polit & Beck, 2006). The Content Validity Index for Items (I-CVI) and The Content Validity Index for Scale (S-CVI) were calculated as .81 and .83 respectively.

3.2.3. ***Pre-application***. Linguistic and content validity of the CDMNS was completed. It was piloted on 12 senior students having the characteristics of the study sample. Three students stated that items 14, 20 and 31 were not comprehensible. In accordance with the feedback from these students, necessary changes were made on the items without altering the meaning. As a result of these revisions in the scale, the final version of the scale was applied to the whole sampling group.

3.2.4. ***Construct Validity.*** In the adaptation study of the scale, the construct validity was first tested by exploratory factor analysis and then confirmatory factor analaysis in the same sample group (n:210). Recently, it has been suggested to perform exploratory and confirmatory factor analysis for similar but separate samples. It can be considered as a limitation to perform for the same sample in this study. The results were given separately under different subtitles.

In Exploratory Factor Analysis (EFA), Kaiser-Meyer-Olkin value was the evaluation criteria for sample adequacy. Kaiser-Meyer-Olkin value was .73. (Bartlett's Test of Sphericity; X^2: 2039,161, df: 780 and p< 0.001). Seven factor of scale explains 60.8 % of the total variance.

Secondly, confirmatory factor analysis (CFA) with structural equation modeling was conducted to check the construct validity of the CDMNS-Tr. In CFA, the goodness of fit statistics and modification index results were examined without any restrictions in the model by adding new connections. The results of the goodness of fit statistics of the scale were as in the following: [(χ^2 (740, N= 210) =1725.02, p=0.000, RMSEA=.080, S-RMR=.089, GFI=.71, AGFI=.68, CFI =.76] (Table 2). The results of the goodness of fit statistics of the items that constitute the subscale were as in the following: [(χ^2 (734, N = 210) = 1711.93, p=0.000, RMSEA=.08, S-RMR=.089, GFI=.71, AGFI=.68, CFI=.76].

Table 2: Confirmatory Factor Analysis of Clinical Decision Making in Nursing Scale

CFA Model Compatibility Indexes	**Expected Values**	**CDMNS^{Tr} Form**
Minimum Fit Function Chi-Square (χ^2) Degrees of Freedom (df)	χ^2 / df < 5	χ^2 / df = 2.3
Root Mean Squared Error of Approximation (RMSEA)	<.08	.08
Standardized Root Mean Square Residual(SRMR)	<.08	.089
Comparative Fit Index (CFI)	>.90	.76
Goodness of Fit Index (GFI)	>.90	.71
Adjusted Goodness of Fit Index (AGFI)	>.90	.68

3.3. Reliability of the CDMNS-Tr

3.3.1. ***CDMNS's Cronbach's Alpha Reliability Coefficient***. The total Cronbach's alpha reliability coefficient of the CDMNS was .78. It was found out to be .50, .44, .52 and .40 in the subscales, respectively (Table 1).

3.3.2. ***CDMNS's Item - Total Correlation.*** Item analysis is the method of assessment of correlation coefficients between item and total score. CDMNS's item - total correlation ranged from .13 to .56 for CDMNS-Tr. All correlation coefficients were statistically significant (P< .05). The items 2, 11, 27 and 28, respectively were .20 less than the scale item the total correlation. The items which were .20 less than the scale item total correlation coefficients were 2,11,27 and 28, respectively. These items were about professional responsibilities and values. There was no increase in the correlation coefficients in the absence of these items. Cronbach's alpha coefficient did not change during the analysis in the absence of these items. These items were excluded from the scale since the total score of the scale; the total score of the sub-scale and sub-scale total correlation were high and acceptable. The total scale score and the total subscale score correlation were between .74 and .82 (Table 1).

3.3.3. ***CDMNS's Stability Analysis***. CDMNS's stability was examined by comparing the test-retest Pearson correlation coefficients. There was not a significant difference in the scores for the CDMNS-Tr between test–retest total scores and the subscale total scores (P> 0.05). Correspondingly, the CDMNS's test-retest total score correlation coefficient was .82 and subscale total score correlation coefficients were .66, .56, .63, .67, respectively and this difference was significant (p=0.000).

4. Discussion

In this study, we tested the reliability and validity of the CDMNS for the Turkish culture in a sample of nursing students. This study examined the linguistic validity, content validity, construct validity and reliability of CDMNS in nursing students within Turkish culture.

4.1. Validity

Linguistic validity. Translation of a scale from its original version to the target language and its back translation was the most commonly used methods (Aksayan & Gözüm, 2002). Translators' knowledge and experience have a great influence on the result. Therefore, translators who know cultures and who have a good command of both languages should be selected (Aksayan & Gözüm, 2002). The CDMNS's language understandability was evaluated. For this reason, the scale was translated into Turkish by two people knowing both languages and cultures well and its back translation was made by two other people who know both languages and cultures well but had not seen the scale before. While preparing the Turkish form of the scale, particular attention was paid to ensure that the statements were suitable for the Turkish language structure and had the same cultural connotations (Hilton & Skrutkowski, 2002). The linguistic validity was confirmed.

Content validity. The aim of content validity is that experts decide whether items of a scale represent the construct planned to be measured and create a scale including meaningful items (Eser, 2007; Ercan & Kan, 2004). It is recommended that expert opinion regarding the content validity should be requested from three specialists minimum and ten specialists maximum (Polit & Beck, 2006). In this study, to test the content validity of the scale, a total of eight experts specialized in nursing education were asked to comment on whether the items of the CDMNS were appropriate.

CVI was used to determine whether the experts agreed (Polit & Beck, 2006). CVI is computed two ways; item and scale CVI. Item -CVI was computed for each item and should be greater than .78. Scale -CVI was computed for the all the items of scale and should be greater than .80 (Polit & Beck, 2006). In this study I-CVI and S-CVI values of the CDMNS-Tr was found acceptable. (Polit&Beck, 2006). The values indicated a consensus among experts concerning items of the CDMNS-Tr.

Construct validity. KMO value was .73 in explanatory factor analysis. KMO values between .70 and .79 were considered to be good values. This showed the sample size to be sufficient to carry out the factor analysis (Akgül and Çevik, 2005).

Confirmative factor analysis (CFA) was usually used to develop scales, revise the scales or evaluates construct validity (Jackson, Gillaspy, Purc-Stephenson, 2009). Confirmative factor analysis (CFA) is used to give information about the construct validity. In order to observe the construct validity of the scale adaptation, the similarity to the original scale factor construct was checked by CFA (Dimitrov 2010; Şimşek, 2007). CFA showed that the goodness of fit statistics were [(χ^2 (df= 740, N=210) = 1725.02, p=0.000, X^2/df: 2.3 RMSEA=.080, S-RMR=.089, GFI=.71, AGFI=.68, CFI=.76]. The analysis showed that the Chi square value (χ^2) was significant. A high χ^2 value was common in the majority of the samples. Therefore, the calculation was done by dividing χ^2 value by degrees of freedom (df). This ratio being five or lower indicates that the model has acceptable goodness of fit (Şimşek, 2007). As the value obtained by dividing the CDMNS's χ^2 into df was 2.3, the model had acceptable goodness of fit. In addition to χ^2 values, CFA examined many other goodness of fit statistics. The most common ones among these are GFI, AGFI, CFI, RMSEA and SRMR. GFI, AGFI and CFI values above .90 (Schreiber, Nora, Stage, Barlow, King, 2006; Ullman 2006; Şimşek, 2007; Jackson, Gillaspy, Purc-Stephenson, 2009), and RMSEA and SRMR values below .80 are indicators of acceptable goodness of fit (Schreiber, Nora, Stage, Barlow, King, 2006; Şimşek, 2007). However, in this study GFI, AGFI and CFI were all below .90 and hence, the goodness of fit was not as expected. On the other hand, RMSEA and SRMR were both .80 and were within the acceptable limits, indicating that the factor construct is similar to that of the original scale. The model constructed according to the subscales also has the same characteristics (Table 2). In the modifications suggested for this model, items were associated with the subscales as; item 3 with the subscale of 'search for information and unbiased assimilation of new information', items 11, 15 and 29 with the subscale of 'search for alternatives or options', item 36 with the subscale of 'canvassing of objectives and values' and item 40 with the subscale of 'Evaluation and

reevaluation of consequences'. The suggested modification analyses were not conducted as these suggested items were closely correlated and all the items had a theoretical relationship in general.

CFA showed that the items 2, 11, 25, 27, 28, 30 and 31 were statistically insignificant ($p>0.05$, t value <1.96). The correlation coefficients of these items was less than 0.20. When these items were excluded, CFA goodness of fit values did not manifest a significant change [(χ^2 (df= 528, N=210)=1088.74, p=0.000, RMSEA=.084, S-RMR=.090, GFI=.73, AGFI=.70, CFI=.76]. Therefore, the items were not excluded from the model. These items were related with professional values, patients' and families' values which were the important components of clinical decision making and it was needed to reevaluate the relationship between these items and before mentioned values. Correlation coefficients of confirmatory factor analysis were under acceptable limits in this study and this meant that the scale needed to be reevaluated.

4.2. Reliability

The standard error of the scale is presented in Table 1 as a measure to support its reliability. The low standard error of the scale means that its reliability is high, whereas a high standard error indicates low reliability (Tavşancıl, 2006). The low standard errors of both the CDMNS total and the subscales strengthen the reliability of the measurement tool.

Cronbach's alpha reliability coefficient is an important indicator of reliability. The total Cronbach's alpha reliability coefficient of the CDMNS was .78. It was determined to be .50, .44, .52 and .40, respectively in the subscales. Cronbach's alpha reliability coefficient ranging between .60 and .80 indicates that the scale is notably reliable, whereas a value between .40 and .60 specifies that the scale has low reliability (Özdamar, 2004; Tavşancıl, 2006). According to these criteria, the CDMNS is reliable; nevertheless the subscales has low reliability. The original CDMNS Cronbach's alpha reliability coefficient was 0.83. Jenkins (1985) did not report reliability for any of the subscales of the original CDMNS. Whereas the study of Baumberger-Henry (2005) found it out to be 0.81 and the subscales were .53, .57, .58 and .51. Cronbach's alpha reliability coefficients of the scale and the subscales were similar. The results indicate that the scale items are consistent and they constitute a whole. The scale should be applied as a whole. The sub-scales of CDMNS have low Cronbach's alpha reliability coefficients. Therefore, the sub-scales of CDMNS are not used alone. Even though the reliability coefficients of total scale were under acceptable limits in this study, they were at lower yet acceptable levels in subscales and this was important as it showed that the measurement tool needed to be further improved.

One of the methods that show the internal consistency of the scale is item analysis. It is observed that the CDMNS's item-total correlation coefficients vary between 0.13 and 0.56 and these values are statistically significant ($p<0.05$). The correlation coefficients of the scale-total score and the subscale-total score were .74 and .82, respectively (Table 1). Although it was not presented in the findings, the subscale item-total correlation coefficients were within the range of .22-.57. Jenkins (1983) did not provide the item correlations of the original scale. Except for the 4 items that are below the acceptable levels in the item analysis, it is seen that 40 items are consistent among them and thus constitute a whole. Given that the correlation coefficients below .20 indicate a weak relationship these items were suggested to be excluded from the scale, but this is not a strict rule. When the item correlations are below .20 and the items are deleted, it is recommended to check the change in Cronbach's alpha coefficient. Only if Cronbach's alpha coefficient increases when an item is excluded, can the item be deleted. It should be noted whether these items could be distinctive (LoBiondo-Wood & Haber, 2005; Özdamar, 2004; Şencan, 2005). It was seen that the items 2, 11, 27 and 28 scored below 0.20 when the CDMNS's item-total correlations were observed. When the items related to the perception in professional responsibility and values are excluded, it is seen that Cronbach's alpha coefficient does not change. Scale-total score, subscale-total score and subscale-item-total score correlation coefficients are high and above the acceptable levels and this indicates that these items should not be excluded. Therefore, it was concluded that these items support the scale and do not change the reliability.

Test-retest values in the adapted scale indicate the consistency of the measurement tool from practice to practice and its stability through time. In the light of the recommendation to assess stability over a 2 to 6weeks period (Tabachnick&Fidell; 1996), we administered the retest approximately 6 weeks after the initial administration.

It is suggested that both measurement results should be similar (Gözüm & Aksayan, 2003; LoBiondo-Wood & Haber, 2005). The similarity of the CDMNS's test-retest total scores and subscale scores ($p>0.05$), and their intermediate and high correlation ($p= 0.000$) show that the scale is consistent and stable.

Limitations

Although it is an important tool to evaluate the clinical decision making, the cronbach's alpha reliability coefficient of the subscales and the results of the goodness of fit statistics of the scale are low. This is a limitation.

5. Conclusion

In conclusion, it is observed that the Turkish version of the Clinical Decision Making in Nursing Scale ($CDMNS^{Tr}$) is a reliable and valid tool for examining the perceptions of the Turkish undergraduate students of nursing in clinical decision making. However, the low correlation coefficients in some items observed during the item analysis are related to different interpretations of language, culture and professional values. Although the original meaning was obtained in the language validity of the scale, it is possible that the adapted society has diverse cultural conceptual schemes. Therefore, it is suggested that the concepts put forward by the items be qualitatively examined and that the items be re-arranged. In general, the results indicate that the CDMNS would be useful in determining the perceptions of undergraduate nursing students in decision making after their first clinical practice at the national level. The data gathered through this scale could provide the basis for developing the perceptions of the students in decision making and improving the nursing curriculum in order to help students gain this skill.

References

Akgül, A., Çevik, O. (2005). Faktör analizi, İstatistiksel analiz teknikleri SPSS'de işletme yönetimi uygulamaları. 2.Baskı. Ankara, Kişisel Yayınlar.

Aksayan, S., Gözüm, S. (2002). Kültürlerarası ölçek uyarlaması için rehber I: Ölçek uyarlama aşamaları ve dil uyarlaması. *Hemşirelik Araştırma Geliştirme Dergisi*, 4(1):9-14. http://hemarge.org.tr/ckfinder/userfiles/files/2002/2002-vol4-sayi1-147.pdf

American Association of Colleges of Nursing (AACN). (2008). The essentials of baccalaureate education for professional nursing practice. Retrieved from *http://www.aacn.nche.edu/Education/pdf/BaccEssentials08.pdf* (19 Kasım 2013)

Baumberger-Henry, M. (2005). Cooperative learning and case study: does the combination improve students' perception of problem-solving and decision making skills?. *Nurse Education Today*, 25(3), 238–246. doi:10.1016/j.nedt.2005.01.010

Byrnes, M., West, S. (2000). Registered nurses' clinical reasoning abilities: a study of self perception. *The Australian Journal of Advanced Nursing*, *17(3)*, 18-23.

Dimitrov, D.M. (2010). Testing for factorial invariance in the context of construct validation. Measurement and Evaluation in Counseling and Development, 43(2),121-149. doi:10.1177/0748175610373459

Dunphy, B. C., Wıllıamson S. L. (2004). In pursuit of expertise toward an educational model for expertise development. *Advances in Health Sciences Education*, 9(2), 107–127.

Ercan, İ., Kan, İ. (2004). Ölçeklerde güvenirlik ve geçerlik. *Uludağ Üniversitesi Tıp Fakültesi Dergisi)*, 30(3):211-216. http://www.utf.dergisi.org/pdf/pdf_UTF_149.pdf

Eser, E. (2007). Sağlıkla ilgili yaşam kalitesi ölçeklerinin kültürel uyarlaması. *2. Sağlıkta Yaşam Kalitesi Kongresi, Kongre Öncesi Kurslar Kitabı*, İzmir.

Girot, E.A. (2000). Graduate nurses: critical thinkers or better decision makers?. *Journal of Advanced Nursing*, *31(2)*, 288-297. doi: 10.1046/j.1365-2648.2000.01298.x

Gorton, K.L.(2010). *An Investigation into the relationship between critical thinking skills and clinical judgment in the nurse practitioner student.* Published Doctor of Philosophy Dissertation, College of Natural and Health Sciences, School of Nursing, Program of Nursing Education, University of Northern Colorado.

Gözüm, S., Aksayan, S. (2003). Kültürlerarası Ölçek Uyarlaması İçin Rehber II: Psikometrik Özellikler ve Kültürlerarası Karşılaştırma. *Hemşirelikte Araştırrma Geliştirme Dergisi*, 5(1), 3-14. http://hemarge.org.tr/ckfinder/userfiles/files/2003/2003-vol5-sayi1-65.pdf

Hilton, A., Skrutkowski, M. (2002). Translating instruments into other languages: development and testing processes. *Cancer Nursing*, *25(1),* 1-7.

Jackson, D. L., Gillaspy, J. A. Jr., & Purc-Stephenson, R. (2009). Reporting practices in confirmatory factor analysis: An overview and some recommendations. *Psychological methods, 14*(1), 6-23.

Jenkins, H. (1983). Perceptions of decision making among baccalaureate nursing students as measured by the clinical decision making in nursing scale. doctors of thesess, University of Maryland.

Jenkins, H. (1985). A research tool for measuring perceptions of clinical decision making**.** *Journal of Professional Nursing*, *1(4),* 221-229.

Jenkins, H.M. (2001). Cinical decision making in nursing scale. In: Waltz, C.F., Jenkins, L.S. (Eds.), Measurement of Nursing Outcomes volume:1 measuring nursing performance in practice, education and research, Springer Publishing Company, 33-37.

LoBiondo-Wood, G., Haber, J. (2005). Nursing research in Canada. Methods, critical appraisal and utilization. Elseiver Mosby, Canada, 327–347.

Ozdamar, K. (2004). Güvenirlik ve soru analizi, Paket programlar istatistiksel veri analizi. 4. Baskı, Eskişehir, Kaan Kitabevi, 661-676.

Polit, D.F., Beck, C.T. (2006). The content validity index: are you sure you know what's being reported? critique and recommendations, *Research in Nursing & Health*, 29(5), 489–497. doi: 10.1002/nur.20147

Schreiber, J.B., Nora, A., Stage F.K., Barlow E.A., King J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: a review. *Journal of Educational Research*, 99(6), 323-337. doi**:**10.3200/JOER.99.6.323-338

Sencan, H. (2005). Sosyal ve davranışsal ölçümlerde güvenirlik ve geçerlik. Ankara, 250-252.

Simşek, Ö.F. (2007). Yapısal eşitlik modellemesine giriş temel ilkeler ve lisrel uygulamaları. Ankara, Ekinoks,11-49.

Ullman, J.B. (2006). Structural equation modeling: Reviewing the basics and moving forward, *Journal of Personality Assessment*, 87(1), 35-50. doi:10.1207/s15327752jpa8701_03.

Tanner, C.A. (2006). Thinking like a nurse: a research-based model of clinical judgment in nursing. *Journal of Nursing Education*, 45(6), 204-211.

Tabachnick, B.G. (1996). Fidell, L.S. Using Multivariate Statistics. Northridge, CA: HarperCollins.

Tavşancıl, E. (2006). Ölçme ile ilgili temel kavramlar. Tutumların ölçülmesi ve SPSS ile veri analizi. 3. Basım, Ankara, Nobel yayın dağıtım, 17-19.

Thompson, C., Dowding, D. (2002). Clinical decision making and judgement in nursing. London, Churchill Livingstone.

World Health Organization (WHO). (2009). Nursing & Midwifery Human Resources for Health, Global standards for the initial education of professional nurses and midwives. Retrieved June 22, 2010, from *http://www.who.int/hrh/nursing_midwifery/en/*.