Factor Analysis of Iranian Version of Nursing Students’ Incivility Questionnaire

Abstract

Background: Uncivil student behavior is one of the challenging issues in the nursing schools that disrupts the learning process and teacher-student interactions. Planning to control student’s incivility requires knowing the condition using valid tools. The purpose of this study was to investigate the validity and reliability of the incivility occurrence’s questionnaire among Iranian students. Materials and Methods: This methodological study was conducted on 358 nursing students and 122 nursing faculty members. The samples were selected from the nursing students of second to fourth year from September to October 2019. McDonald’s omega, Cronbach’s alpha coefficients and composite reliability were calculated. Exploratory and confirmatory factor analysis were used to investigate the construct validity of tool. Results: Content validity index was 0.94 for the whole instrument. In factor analysis, three factors of irresponsible, violent, and unsound behaviors were identified. These factors explained more than 50.52% of the variance. Model fit indices Parsimonious Normed Fit Index) = 0.74, Root Mean Square Error of Approximation = 0.05, Parsimonious Comparative Fit Index = 0.78, Goodness-of-Fit Index = 0.92, Comparative Fit Index ( CFI) = 0.92, Adjusted Goodness-of-Fit Index) = 0.89, CMIN=2.58) indicated the proportion of factors. Internal consistency was 0.77 to 0.89. Conclusions: This questionnaire is a three-dimensional tool with appropriate validity and reliability that can be used to evaluate occurrence rate of nursing student incivility in Iran.

Keywords: Incivility, Iran, nursing, factor analysis

Introduction

Disrespect, unwillingness to listen to others’ opinions, lack of honesty and violence have been recognized as uncivil behaviors that undermine one’s self-esteem.[1] Incivility can be found as defamation, humiliation, rudeness, and intimidation.[2] The ethics and professional behaviors must be learned during the educational course. Learning ethical traits such as maintaining dignity and integrity in educational institutions helps to develop healthy relationships in the clinical setting and to achieve positive outcomes in patient care.[3] Disregarding the individual dignity and providing respectful condition is a priority in nursing education and practice.[4] If such behaviors are approved in nursing school, it leads to conditions that are associated with patient comfort and satisfaction.[5] Experts also believed that civil behavior is part of the nursing art and respectful relationships between nurses and patients are necessary to maintain professional integrity.[6] Past evidence indicates a significant prevalence of incivility among Iranian nursing students.[7] In a similar study, about two-thirds of professors reported uncivil behavior.[8] Also, more than 70% of students cheated at least once in formal exams.[9] About 90% of nurses were witness of student’s incivility.[10] In the USA, most students and faculty members reported the occurrence of uncivil behavior among nursing students.[11] According to one study, 60.2% of students engaged in mild uncivil behavior and 47.8% behaved with severe incivility.[12] Vickous (2015) reported the existence of incivility in more than 50% of students.[13] Adopting appropriate strategies to prevent and control uncivil behavior is particularly important.[14] Fostering uncivil behavior requires understanding the current situation and planning to reduce the occurrence rate of incivility among nursing students.[15]

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A systematic review of incivility measurement tools by Masoumpour et al. (2015) indicated that the tools available were tailored to the target population and were not designed for nursing students. The only tool that assessed students’ behaviors from both teacher and student perspectives was Clark’s incivility questionnaire. Another benefit of the questionnaire was that it had fewer questions than the others. It was also designed specifically for nursing students, while other tools were generally used to measure uncivil behavior in students. The validity of the Clark questionnaire has been confirmed in previous studies and reviewed by the instrument designer. This tool is suitable for evaluating all kinds of uncivil behavior and focuses on physical, non-verbal, verbal behaviors and inappropriate use of technology in the classroom. The tool has been translated and used in various languages. The Clark Questionnaire was first designed in 2004 and revised in 2014. The new version includes 24 behaviors of nursing students over the past 12 months. Likert-scale behavior assessments (always, sometimes, often, never) are performed and the overall score is calculated on average. These behaviors are the violation of social norms and has been attributed to diversity of values and rules. Treats of physical harm and weapons are examples of specific uncivil behaviors in some cultures. Due to the necessity of recognizing the appropriateness of the features of this valid and comprehensive tool in the Iranian population, this study aimed to psychometric evaluation of the incivility occurrence questionnaire among Iranian nursing students.

**Materials and Methods**

This methodologic study included factor analysis, testing construct validity and reliability. This research was conducted on 358 nursing students and 122 nursing faculty members. The minimum number of persons for factor analysis is 10 samples per item. Participants were selected from second to fourth year nursing students from July to April 2019. Inclusion criteria included having Iranian nationality, attending college for at least one year, and willingness to participate in the study. After obtaining permission from the tool designer, the questionnaire was translated by forward-backward method. At first, the questionnaire was translated by two nursing faculty members from English to Persian. The Persian version was then translated into English by two other faculty members. They were specialist in English language. The final version was sent to the tool designer and verified in terms of the content of the items.

Qualitative and quantitative methods were used to assess the face validity. Interviews were conducted by 10 nursing students and 10 faculty members. Quantitative evaluation also assessed the difficulty level, proportion, clarity, and essentiality of the items. The Content Validity Ratio (CVR) of the tool was also evaluated. The tool was given to 15 nursing faculty members to evaluate items based on the importance, necessity, use of appropriate words, grammar compliance, and phrase placement. Items were reviewed by researchers and modified based on suggestions. Fifteen faculty members were asked to determine the necessity of each item. Items higher than 0.6 according to the Lawshe table were considered meaningful. Content Validity Index (CVI) was the number of persons who gave a score of 3 or 4 divided on all of them. The scores above 0.8 were considered acceptable. Values of CVI were considered acceptable.

Three factors were identified through exploratory factor analysis. Bartlett test and determination of sampling adequacy index of Kaiser-Meyer-Olkin (KMO) were calculated. To extract latent factors, maximum likelihood was calculated. Data were analyzed by SPSS software (version 25). The presence of an item in the factor using CV = 5.15 \( \sqrt{\frac{n - 2}{n}} \) was considered to be 0.30 (CV is the number of agents and n is the sample size). There must be at least three items per factor for each latent variable. The extracted factors were evaluated using confirmatory factor analysis. The most common goodness-of-fit indices were calculated using AMOS 24 software. Reliability was assessed using test-retest method. The questionnaire was sent to 15 nursing students and 15 faculty members within a two-week interval, and the Intra Class Correlation (ICC) was calculated. Internal consistency of questionnaire was assessed by calculating McDonald’s Omega and Cronbach’s alpha coefficients. Construct Reliability (CR), Maximum Shared Squared Variance (MSV), and Average Variance Extracted (AVE) were calculated. CR values above 0.7 were acceptable. Absolute reliability was calculated using Standard Error of Measurement (SEM) and the formula SEM = SD × \( \sqrt{1 – ICC} \).

**Ethical considerations**

The Ethics Committee of Qom University of Medical Sciences in Iran approved this research (IR.MUQ.REC.1396.46). The aim of the study was explained to students and faculty members. They were assured that the data would remain confidential and written consent was obtained. This paper was part of an extensive research.

**Results**

In the factor analysis, 122 faculty members and 358 students participated. The mean(SD) age of students was 23 (9.22) years. The majority of students were single (87.52%) and female (70.23%). The mean age of faculty members was 45 (3.15) years and most of the professors were married (88.03%) and female (94.56%). The content validity was confirmed after receiving expert views. CVI and CVR were at the optimum level. CVR value of the instrument was 0.96. CVI values for the items were 0.91 to 0.87 and 0.89 for the whole questionnaire. No item was removed in this stage. The result of Bartlett test was
The results of confirmatory factor analysis showed that the goodness of fit of Chi-square was ($\chi^2 = 374.78$, $df = 145$, $p < 0.001$). Other model fit indices were also calculated. Indices Parsimonious Normed Fit Index (PNFI) = 0.74 (above 0.5 acceptable), Parsimonious Comparative Fit Index (PCFI) = 0.78, Root Mean Square Error of Approximation (RMSEA) = 0.05 (less than 0.05), Comparative Fit Index (CFI) = 0.92 (above 0.90 acceptable), Goodness-of-Fit Index (GFI) = 0.92. Adjusted Goodness-of-Fit Index ($AGFI$) = 0.89, $X^2$/df = 2.58 (less than 3 acceptable) confirmed appropriate fit in the final model [Table 2]. Factor load values in this study were more than 0.3 and significant. Internal consistency and reliability of the questionnaire were higher than 0.7 which was acceptable. ICC was calculated 0.9. The domains had a proper ICC of 0.8 and 0.9.

### Discussion

Evaluation of psychometric properties of incivility questionnaire showed that this tool is suitable for measuring Iranian students’ behavior. People’s views on uncivil behavior in each society are different and culturally dependent. Based on the results, three factors were identified that explained more than 50.52% of the variance. The three factors of irresponsible, violent, and unsound behaviors and total variance are consistent with those reported by the original instrument designer. In Clark’s initial questionnaire, uncivil behaviors were described at three levels of threatening, irresponsible, and inappropriate behavior.[18] Other researchers have identified uncivil behavior at three levels of aggressive, irresponsible, and inappropriate.[12]

The first factor in this questionnaire was irresponsible behaviors that included 9 items (7, 6, 9, 8, 10, 4, 4, 5, 512) that were highly correlated with the factor. Irresponsible behavior as one of the dimensions of incivility is also presented in the main questionnaire. This factor has been assessed as mild uncivil behavior.[19]

### Table 1: Exploratory factors extracted from Nursing Students’ occurrence incivility Questionnaire

| Factor                  | Items                                                                 | Factor loading | $h^2$ | $\lambda^2$ | % of Variance |
|-------------------------|-----------------------------------------------------------------------|----------------|-------|-------------|---------------|
| Irresponsible behaviors | Q7. Leaving class or other scheduled activities early                  | 0.86           | 0.57  | 5.47        | 32.40         |
|                         | Q6. Arriving late for class or other scheduled activities              | 0.77           | 0.58  |             |               |
|                         | Q9. Skipping class or other activities                                 | 0.68           | 0.39  |             |               |
|                         | Q8. Being unprepared for class or other activities                    | 0.55           | 0.37  |             |               |
|                         | Q10. Being cold and distant toward others                             | 0.49           | 0.29  |             |               |
|                         | Q4. Refusing or reluctant to answer questions                          | 0.48           | 0.29  |             |               |
|                         | Q2. Making rude gestures or nonverbal actions toward others           | 0.38           | 0.30  |             |               |
|                         | Q5. Using a phone, computer or other media device during class        | 0.37           | 0.42  |             |               |
|                         | Q12. Holding side conversations that distract others                  |                |       |             |               |
| Violent behaviors       | Q22. Threats of physical harm against others                           | 0.83           | 0.54  | 3.85        | 10.00         |
|                         | Q21. Using profanity directed toward others                            | 0.69           | 0.53  |             |               |
|                         | Q23. Property damage                                                  | 0.67           | 0.39  |             |               |
|                         | Q20. Making discriminating statement toward others                    | 0.53           | 0.44  |             |               |
|                         | Q19. Sending inappropriate or rude e-mails to others                  | 0.51           | 0.43  |             |               |
| Unsound behaviors       | Q16. Failing to address, ignoring or encouraging rude behaviors        | 0.84           | 0.59  | 5.39        | 4.77          |
|                         | Q13. Cheating on quizzes or exams                                     | 0.57           | 0.42  |             |               |
|                         | Q15. Demanding make-up exams or other favors                          | 0.53           | 0.27  |             |               |
|                         | Q17. Wanting a passing grade when a grade has not been acquired       | 0.48           | 0.33  |             |               |
|                         | Q14. Making condescending or rude remarks toward others               | 0.43           | 0.44  |             |               |
|                         | Q18. Being unresponsive to emails or other communications            | 0.37           | 0.34  |             |               |

*h^2*: Communality, *\lambda^2*: Eigenvalue

### Table 2: Fit indices scores of the confirmatory factor analysis

| CFA* | PGFI** | CFI*** | GFI**** | AGFI***** | PNFI****** | PCFI****** | RMSEA******* | CMIN/df******** | p    | df | $\chi^2$ |
|------|--------|--------|---------|-----------|------------|------------|--------------|----------------|------|----|---------|
| Indices | 0.70 | 0.92 | 0.92 | 0.89 | 0.74 | 0.78 | 0.05 | 2.58 | <0.001 | 145 | 374.78 |

*Confirmaotry Factor Analysis, ** Parsimonious Goodness-of-Fit Index, *** Comparative Fit Index, **** Goodness-of-Fit Index, ***** Adjusted Goodness-of-Fit Index, ****** Parsimonious Normed Fit Index, ******* Parsimonious Comparative Fit Index, ******** Root Mean Square Error of Approximation, ********* Chi-square/degree-of-freedom ratio, CMIN/DF (<3 good, <5 acceptable), AGFI (>0.5), CFI, IFI (>0.9), RMSEA (<0.08)
Irresponsible and violent behaviors that are consistent with the high-level incivility in Clark’s study. Researchers have also equated these items with the high level of incivility. Questions omitted based on factor analysis results included 11 and 24. To the participants of the study, these behaviors did not exist in nursing students or were seen as a problem in the nursing education environment. It also appears that the threatening statements about weapons was not in line with Iranian culture and therefore did not exist among the nursing students in question. Similar studies have not reported the elimination of items that may be due to different indigenous cultures and social conditions in Iran.

CR, McDonald’s Omega, and Cronbach’s alpha values were above 0.7, indicating good reliability in three factors. The reliability of the tool in Korean students was also confirmed. CR in the questionnaire were desirable. For convergent validity, it must be AVE > 0.5 and CR > AVE and for divergent validity it must be AVE > MSV. The extracted values indicate the absence of convergent and divergent validity. To achieve convergent validity, it is recommended that further investigation with larger sample size be performed. The present study involved more samples than other studies. The difference in findings could be related to the number of students and faculty. A similar study involved 284 students. Clark’s survey included 310 students and 182 faculty members. Different understanding of participants may be helpful in extracting findings. Correlation between some items indicate measurement errors. These items may have had similar meanings. On the other hand, participants may answer the questions differently in two times. This questionnaire, which is used to measure the incidence of incivility occurrence of nursing students, is a self-report tool and its responses can be biased by the accuracy and honesty of students and faculty members. Also, the number of professors and students participating and their views may vary. On the other hand, cultural and class differences between samples may affect the data. Researchers have used random sampling from the two provinces to elicit these limitations. Students and faculty members were in a variety of characteristics and contexts.

Table 3: Convergent and divergent validity, internal consistency

| Factor                  | Ω* | α** | CR*** | Max R (H)**** | MSV***** | AVE****** | ASV****** |
|-------------------------|----|-----|-------|---------------|----------|-----------|-----------|
| Irresponsible behaviors | 0.83| 0.82| 0.82  | 0.83          | 0.56     | 0.37      | 0.83      |
| violent behaviors       | 0.80| 0.79| 0.78  | 0.80          | 0.47     | 0.43      | 0.80      |
| unsound behaviors       | 0.78| 0.77| 0.79  | 0.80          | 0.56     | 0.39      | 0.80      |

McDonald omega coefficient, **Cronbach’s alpha coefficients, *** Construct Reliability, ****Maximum Reliability, *****Maximum shared Squared Variance, ******Average Variance Extracted, *******Average shared Squared Variance
Conclusion

This questionnaire has a proper factor structure and its internal consistency is confirmed. This questionnaire can be used to measure the incidence of incivility among Iranian nursing students and based on the data, appropriate measures can be taken to promote civility. It was also used to determine the impact of interventions.

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Conflicts of interest

Nothing to declare.

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