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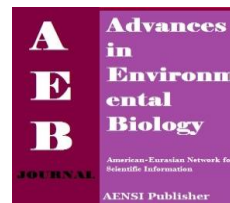Measuring the psychological aspects of organ donation among the families of brain-dead people View project

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Designing and Psychometrics of "Nursing Students' Communication Skills" Questionnaire

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ABSTRACT

This study aims at developing a questionnaire to measure nursing students' communication skills and determining its validity and reliability.This methodology was conducted in two stages. At the first stage, 51 questionnaire items were selected through former texts and studies. At the second stage, formal validity and content validity of the questionnaire was assessed quantitatively and qualitatively and the validity of the structure was evaluated using exploratory factor analysis.During the stage for determining the formal validity in the qualitative method, content validity ratios method and during the quantitative method of impact score,respectively 11; 8 and 4 items were excluded and finally 28 tool items were remained. These items lies in 5 factors: conscious start(3 items), verbal and nonverbal communication skills (9 items), external and internal coordination (6 items), respect to client (5 items) and unconditional client acceptance (5 items).The designed questionnaire has the appropriate validity and reliability to be used for assessing nursing students' communication skills in the studied society.

INTRODUCTION

The communicativeskillis an important characteristic for nurses in nursing care and having the ability to interact appropriately with colleagues, patients and other health agents formsthe basis of clinical skills and is considered as the core of theoptimal medical activities [4,6]. Communication skills,as an important part of medical and nursing services, include a variety of topics and theseareregarded as the prerequisitesfor performing qualitative careson patients [10,11]. Strengthening the relationship leads to a closer affinity between nurses and patients and thus increasing their job satisfaction [14,1]. American Association of Critical Care Nurses specifies 6 standards for establishing and maintaining health care centers, one of which is "communication skills".This Association believes that nurses, as the same as other clinical skills, must have good communication skills, too [7].

Poor communication skillsamong health workers reduce the chances of success and increasingthe probability of facing litigation and complaints. Also, strong communication skills have a positive impact on patient satisfaction. Good communication skills, also, can improve the patient's psychological status as well as promoting satisfaction in a patient's family [17].

Nowadays, instrumental developing is the scientific basis of research all over the world. Researchers are unable to do accurate and scientific researcheswithout access toappropriate and scientific tools and the results obtained from the unverifiedtools are subject to questions. So, in the first phase, in order to determine the accuracy of the study, the adequacy of the measurement tools is assessed,and if the tools are valid,validity of the research is confirmed [2]. In designing a new scale, it is expected to obtain sufficient information on the validity and reliability of the research through studyingprocedures which isused by the researcherto develop the scale [13] because of fundamental importance for assessing and reporting the content validity of using research tools [18].Validity of research instruments refers to theelicitation of facts resulting from statements and shows that to what extent the results and interpretationsderived from the findngs of the evaluation are suitable, explainable, significantandconnected [3].

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Improving nursing students' communication skillsand finding their strengths and weaknesses to improve the quality of education as well as training qualitative nurses are ideal targets in all nursing schools. Theonly possible way toachieve this aim isvia measuring, evaluating and determining the level of these skills withthe use of standard and accurate instruments. So, designingand provision of a reliable and valid questionnaire,in which all standards and stages of producing ascientific questionnaire are taken into account, is necessary to assess nursing students' communication skills. Given that thecommunication skills assessment is often neglected in clinical assessments and the specialized tools are not available for this purpose, this study aims at developing a questionnaire to measure nursing students' communication skills and determining its validity and reliability.

Methods:

This methodology was conducted in two stages. At the first stage, 51 questionnaire items were selected through formertexts and studies. At the second stage, formal validity and content validity of the questionnaire was assessed quantitatively and qualitatively and the validity of the structure was evaluated using exploratory factor analysis.

Formal validity:

Face to face interview was done with 15 nursing students to determine the formal validity as the qualitative methodand the level of difficulty, the appropriateness and uncertainties of the questionnaire were evaluated. Quantitative method of "Impact score" was used to assessformal validity aftercorrecting the issues considered by the students. The 15 students were asked to score to each of the five multiple choice items on the Likert scale from "very important" (5 points), "somewhat important" (4 points), "fairly important" (3 points), "slightly important" (2 points), and "not important at all" (1 point). Finally, the mean score of each item was calculated by multiplying the number of points assigned to each response by the frequency of that responceand dividing the resulting number by 15.If the impact score was more than 1.5, the item was distinguished suitable and maintained for further analyses. Benchmarking1.5 was based on the mean score 3 and a mean frequency 50% [8].

Content validity:

Qualitative and quantitative methods were used to determine the content validity. Qualitative content analysis was performed by 13 skilled nursing and psychology experts who were asked to offer their corrective views about the grammaticality, use of thesuitable words, the position of items in the proper place and the way to score appropriately, in writingform in connection with the above mentioned issues. The two methods of content validity rate and content validity index were used inthe quantitative method. 13 skilled nursing and psychology experts were asked to classify the neccessity of each question into three categories of "Necessary", "Helpful but not necessary" and "Not necessary" to calculate content validity rate based on Waltz and Basel indicators. For each item,the three criterion"Simplicity", "Relevancy" and "Clarity" were separately examined in four -point Likert by 13 skilled nursing and psychology experts to determine content validity index. Items with scores less than 0.79 were excluded based on Waltz and Basel′s content validity index scores [9].

Structural validity:

It was measured by exploratory factor analysis.At first, "Kaiser-Meyer-Olkin" index test of adequacy ofsample size was used,whichis variable between "zero" and "one". The higher the index shows the better factor analysis, and levels upper than0.90andupper than 0.80 are considered excellent and good, respectively [12].Bartlett sphericity test was used to determine the correlation between the tool items and to justify the load factor measurement [19]. Then, some factors were determined and extracted through factor rotation method according to the results of the variables′ correlation matrix, and variables highly correlated with each otherwere operated into a category or a factor.Load factor of each item inthe rotatedmatrix was at least 0.3 and thefactorswere extracted in such way that included 3 items at least [9].300 nursing students (for at least 10 samples per any item considering the probability of loss 10% and non-responsiveness) were selectedthrough random cluster sampling method from Tehran University of Medical Sciences, Baqiyatallah University, AjaUniversity and ShahedUniversity to determine the structure validity. After obtaining the necessary permitions from the authoritiesthe reasearchers went to the mentioned Schools of Nursing and gave the questionnairesto nursing students (educating at most in third semester) and collected them after appropriate filling time.

Reliability:

Internal consistency test was used to determine the questionnaire reliability by calculating Cronbach's alpha and splitting-half.

Results:

During the stage for determining the formal validity in the qualitative method and during the quantitative methodof impact score,because of getting impact score less than 1.5, 11 and 8 items were excludedrespectively, and 32 items were maintained. The content validity ratios for 28 tool items were higher than the value given in Lawshe Table (0.5),and therefore 4 items were excluded. According to the results obtained fromcalculated content validity index, all the remaining values had values more than 0.79 and so at this stage no items were removed.

According to the results of the exploratory factor analysis, the calculated amount of sample adequacy (KMO) was 0.902, that was adequate for factor analysis. Also Bartlett's test of sphericity factor analysis was revealed suitable to identify the structure of factor model (p<0.0001). By referring to theeigenvalues higher than 1 and the slope of the scree plot diagram as criteria, 5 factors were extracted with covering 52.4% of whole variance. The results of the exploratory factor analysis indicated extractive sharing values calculated for each itembetween 0.589 to 0.864 and in 5factors (Table 1).

Table 1: Initial common and extracted amounts and variance percentage of each factor and congregational factor analysis-discovery of nursing students' communicative skills questionnaire.

Factor	Initial eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Loadings		
	Total	Variance	Congregational	Total	Variance	Congregational	Total	Variance	Congregational
1	8.604	30.730	30.730	8.604	30.730	30.730	4.113	14.689	14.689
2	2.254	8.050	38.780	2.254	38.780	8.050	2.949	10.534	25.223
3	1.461	5.217	43.997	1.461	43.997	5.217	2.824	10.087	35.310
4	1.254	4.478	48.475	1.254	48.475	4.478	2.477	8.845	44.155
5	1.120	4.000	52.475	1.120	52.475	4000	2.330	8.320	52.475

Factor loadings of each item are provided after rotation at Table 2.The factors were as follows: The first factor (conscious start)including 3 items (α=0.86), the second factor (verbal and nonverbal communication skills)including 9 items(α=0.80), the third factor (external and internal coordination) with 6 items(α=0.70), the fourth factor (respect to client) including 5 items(α=0.66) and finally, the fifth factor (unconditional client acceptance)including 5 items(α=0.70). The total scale stability based on Cronbach′s Alphawere 0.85 and by the splitting- half method with Spearman correlation testit was equivalent to r=0.73 (p<0.0001).

Discussion:

Most questionnaires used to assess communication skillshave designed not specifically for this purpose especially not for nursing students andsufficient information about reliability and validity of these instruments are unavailable. Some questionnaires are the researcher made that in such cases, necessary knowledge and certainty are not provided considering tool credit quality and its evaluation(Vakili*et al*, 2012).So, this study is an innovation because of designing and justifying"nursing students' communication skills" questionnaire.

The tool has been designed based on justifying process by utilization of target group views and considerable experts. Considering brevity, simplicity, eloquence and observance of a logical sequence of items are worth aspects of this tool. All items and titles of the domains were chosen based on important issues in psychological and communicativesciences. In this research, also, calculated Cronbach′s Alpha coefficients for each factor and the whole questionnaire indicated high coefficient and, besides, internal consistency andquestionnaire stability were confirmed.

Considering communication skills measurement in nursing, we can point to Takahashi*et al.*(2006)that have studied the tool's validity and reliability to provide new and easy way to measure communication skills as self-assessment or evaluation by the patient's family. Takahashi*et al*. [15] divided 29 items through factor analysis to 3 categories including general communication skills (6 items), interaction communication skills (17 items) and assertive skills (6 items) based on content validity process. Factor analysis results indicated that designed tools can predict changes up to 63% and has 0.91 stability, calculatingCronbach′s Alpha coefficient. Although some statements of the questionnaire are, probably,not applicable because of thecultural mismatch, however at this study,the researchers offered complete and accurate information to determine the validity and reliability of their own designed instruments. Contents of item factors of general communication skills of the mentioned questionnaire are consistent with item factors of verbal & nonverbal communication skillsin this questionnaire and in the same way, the item factors of interaction skills with item factors ofrespect to the client.

Another study about designing&justifyingthecommunication skills questionnaire is Vakili*et al. [16]* studyin which a questionnaire of the interpersonal communication skills for healthagentshas designed and justified. In this study the items were classified in 7 factors of general communication skillsand 6 factors of private communication skills. Reliability was reported 0.91, calculatingby Cronbach′s Alpha coefficient. The mentioned tool can predict 68.5% of changes of the wholecommunication skills. Contents of general communication skillsof Vakili′s questionnaire are, also, consistent with verbal & nonverbal communication skills of the present questionnaire.

Engelberg *et al.* [5] has designed and justified a questionnaire including 13 items to measure communication skills in care of COPD patients and hospitalized elderly people in nursing homes,in which the items of communication are consistent, according to the purposes,withthis questionnaire.

Since the questionnaire relies on general skills for communicating with a patient, investigaton of the possibility of theuse of this tool for another medical group, undertaking the duty to the patient, is suggested.

Table 2: The rotated matrix factor analysis-discovery of nursing students' communicative skills questionnaire.

No.	Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1	I begin the communication with saying hello and greetings.	-	-	0.357	-	-
2	I introduce myself to the client at the start of communication.	-	-	-	0.716	-
3	I call the client in full name and respectfully.	-	-	0.569	0.452	
4	I explain to the client's family the goal and reason for establishing the communication	-	-	-	0.731	-
5	I have to speak firmly with the client so that he/she listens to my words.	-	-	-	0.586	-
6	During communication, I encourage the client to express his/her problems.	-	0.347	-	0.520	-
7	I inform the client of my understanding by showing verbal or non-verbal responses.	-	-	0.645	-	-
8	I hesitate after responding and give the client time to show reaction to my response.	0.323	-	0.321	-	0.408
9	At the end of the communication, I try to convey a positive and happy feeling.	-	0.413	0.365	-	-
10	At the end of communication, I give the client time to pose his/her probable questions.	-	0.441	-	0.340	0.435
11	At the end of communication, I ask for the patient's view and feelings	-	0.351	-	0.448	0.498
12	To confirm, admire and praise, I use verbal reinforcements such as well-done, good, great, etc.	-	0.355	-	-	0.342
13	During communication with the client, I try to avoid using sarcastic or threatening or humiliating words.	-	-	0.662	-	-
14	To emphasize my speech, I use general words like never, not at all, etc.	-	-	0.363	-	0.594
15	I try to use words and expressions understandable for the client.	-	-	0.658	-	-
16	When I know what the client is going to say, I don't wait for his/her speech to be completed and respond immediately.	-	-	-	-	0.726
17	I tidy my clothes and appearance before starting communication.	-	0.663	-	-	-
18	I maintain a suitable eye contact while communicating.	-	0.757	-	-	-
19	To convey a message, I use appropriate body gestures or facial expressions.	-	0.684	-	-	-
20	While communicating with the client, I maintain the adequate distance (from 30 to 100 cm.).	0.525	-	-	-	-
21	I avoid rough and coarse language.	0.543	-		0.337	-
22	While communicating with the client, I always stay calm.	0.660	-	0.358		-
23	While communicating with the client, I observe rules regarding polite non-verbal behaviors (such as shaking hands, manner of sitting, standing, entering and leaving the room, etc.).	0.568	-	0.373	-	-
24	I change the intonation and rhythm of my speech in accordance with the client.	0.430	-	-	-	-
25	I present a situation-dependent facial expression (happiness, smiling, etc.).	0.711	-	-	-	-
26	I re-state the client's words in my own words according to my understanding.	0.563	0.447	-	-	-
27	I use my verbal and non-verbal messages to show I am listening to the client's speech (by saying aha, yeah, or nodding).	0.669	0.335	-	-	-
28	Even if a subject is not important for me, I pretend that I am listening.	0.570	-	-	-	-

Conclusion:

The designed questionnaire has the appropriate validity and reliabilityto be usedfor assessing nursing students' communication skills in the studied society.

ACKNOWLEDGMENTS

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