

Designing a Tool to Assess Medical Students' Knowledge and Attitudes of Confidentiality and Disclosure of Patient Information

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Abstract

Background and purpose: Respecting confidentiality of documents and medical information about individuals, as one of the most important issues in medicine, guarantees patients' trust in the health system. Therefore, this study is an attempt to design a valid and reliable tool to assess knowledge and attitudes of medical students about the principles of confidentiality and disclosure of patient information.

Methods: To design the questionnaire, a comprehensive review of literature was conducted. Since to the best of our knowledge, there was no valid and reliable tool, a 34-questions questionnaire consisting of two sections of knowledge and attitude was designed. Then, face and content validity of the questionnaire was investigated by expert opinion. Finally, content validity index (CVI), content validity ratio (CVR) and item usability index (IUI) were calculated, and the reliability of the instrument was measured by Cronbach's Alpha. Then, the final questionnaire was assessed by faculty members of ethics and medical education (n=10) for simplicity, relevance, and clarity of the questions. Lastly, the questionnaire was distributed among medical interns (n=40) and its reliability was examined. Afterwards, the questionnaire was distributed among 160 medical interns, and the reliability and validity of its structure was evaluated.

Results: The designed questionnaire CVI and CVR were 0.80 and 0.81 for knowledge and 0.78 and 0.83 for attitude sections. All the questions were confirmed as valid and reliable. The validity of the questionnaire for knowledge and attitude sections were 0.79 and 0.82, respectively.

Conclusions: Validity and reliability of all the designed questions (17 in each section) were confirmed.

Keywords: CONFIDENTIALITY, DISCLOSURE OF PATIENTS' INFORMATION, VALIDITY, RELIABILITY, QUESTIONNAIRE

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Introduction

Confidentiality in the medical profession is one of the most important concerns of medical ethics discipline which has been the focus of attention for many years. The

Hippocratic Oath "Wherever I may enter, in the course of my practice and whatever I may see or hear I will keep as a secret" is a famous saying in this regard (1).

To keep individuals' health information confidential has its specific complexities in medical profession, health issues recorded in the patient's chart are not just available to one physician and other health team members involved in the treatment of the patient have access to it, therefore hiding details could jeopardize the patient health status and might

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cause some problems for the physician, because a committed physician must provide his colleagues with thorough information to render care and to make wise therapeutic decisions. The more various data a doctor gathers, the harder and more complicated the confidentiality and secret keeping would be (2).

Defining diverse levels of appropriate access to information, developing legislations about how to reveal information, the type of information and the extent to which it is permitted to be revealed, the appropriate time and place to reveal information and those who are eligible to access the information, are subjects of debate among urban or remote hospitals and/or health center managers. In addition, there are major cases of complaints against managers of health care centers, physicians, and other health team members around the world on the issue of illegal disclosure of information. People are also sensitive to confidentiality of their medical records. Legal and defined approaches to exchange important medical information, protect patients' rights and prevents damages and at the same time protect managers, physicians, and other health care team members against criminal charges and patients' complaints (3).

In November 2009, Iran Ministry of Health and Medical Education publicized the Charter of Patient's Rights, one of the main pillars of which is confidentiality. Therefore, it could be concluded that to respect patient confidentiality is absolutely crucial according to the divine rules, Hippocratic Oath, and Iranian Charter of Patient's Rights. However, sometimes to ignore this confidentiality is inevitable, therefore, physicians and other health team members must be familiar with legal rules and regulations and be able to distinguish between reportables and confidentials, even if they are asked for disclosure. On the other hand, in conditions of patient's informed consent, public interest or life threat, confidentiality might be ignored (7). In articles 6 and 7 of the Iranian Charter of Patient's rights it is emphasized

that: "The patient has the right to be assured of confidentiality of the content of her/his medical records, clinical examination and consultation reports, except in cases of higher authorities inquiry" and "The patient has the right to be sure of reliability of physicians and other health team members; therefore, the clinical presence of those who are not directly involved in the treatment process, will be subject to the informed consent of the patient" (4).

The conditions under which one is entitled to ignore patient's confidentiality vary with time and place and all health team members and physicians should be aware of them. In cases that the release of patient information is required, the issue must be discussed with her/him and she/he must be convinced and agree upon the case. In cases that the physician comes to conclusion that disclosure of information without patient's consent is required, two other issues should be taken into account: 1) to whom the information is to be disclosed? and 2) to what extent the information must be disclosed? Typically, disclosure is permitted to the extent that it contains the necessities to avoid the expected health risk, and should only be disclosed to relevant people. The least harm and suffering of the patient are crucial in disclosing information (5).

The fact that medical students must follow the rules of confidentiality and patient's privacy is undeniable. Since to the best of our knowledge no valid and reliable tool for assessment of students' knowledge has been developed in this regard, this study is an attempt to design a valid and reliable tool to assess the knowledge and attitudes of medical students of the principles of confidentiality and disclosure of patient's information.

Methods

This study is based on a literature review. The cornerstones of the study are the findings of Moridzadeh (6), Sheikh-Taheri, et al. (7), and Farzandipour (8) studies. After literature review, a questionnaire was designed

according to the expert opinion. Then, different kinds of validity, including face validity, content validity, content validity index (CVI), content validity ratio (CVR) and item usability index (IUI) were calculated. Discriminant validity and factor analysis were used to confirm construct validity, and Cronbach's alpha was used to measure internal consistency.

Questionnaire design

A tool was designed to assess knowledge and attitudes of medical interns of confidentiality and disclosure of patients' information.

Then, experts were asked to provide feedback on the content of the items and the questionnaire was modified according to their opinions (face validity), CVI, CVR and IUI were calculated for which each participant checked the face and content validity from the point of robustness, difficulty level, mismatch and ambiguity; and, provided feedback on the proposed questions. All the responses were analyzed and the questions were revised accordingly. Then, to determine content validity index and content validity ratio, the proposed method of Lawshe (1975) was used (10). The questions were categorized as essential, useful but not essential, or not necessary. Also, in order to calculate the IUI, the participants (n=10 experts) voted for simplicity, relevance, and clarity of the questions as quite related, related, partially related and irrelevant; quite simple, simple, partly simple and not simple; quite clear, clear, partially clear and unclear.

Specifying the questionnaire questions

First, a questionnaire consisting of 34 questions was designed. 17 questions were related to knowledge and 17 questions were related to attitude. All the questions include the most important concerns related to confidentiality and disclosure of patients' information according to the literature.

Results

Distribution and collection of the questionnaires

Faculty members were contacted via e-mail or face to face appointment, 12 questionnaires were distributed from which 11 were returned (10 fully completed and 1 incomplete that was excluded from the study).

Data entry

Content Validity Ratio (CVR) was calculated according to the following formula: (10)

$$\frac{\text{Necessary vote} - \frac{\text{Total number of experts}}{2}}{\frac{\text{Total number of experts}}{2}} = CVR$$

According to the formula, if less than half of the participants choose the "necessary" option, CVR would be negative. If half of the people choose the option "necessary", and the other half choose other options, CVR would be zero. If everyone chooses the option "necessary", CVR would be 1. Finally if the number of respondents who choose the option "necessary" is more than half, CVR would be between 0 and 0.99.

Table 1 and 2, provides interpretation of the acceptance or rejection of each question. The following assumptions to interpret the CVR include:

- 1- When there is no general agreement on the item, it is assumed that the item is completely unnecessary.
- 2- When there is a general agreement on the option "necessary", since the participants were experts and professionals, it is assumed that the question has been significantly considered as "necessary".

The criteria to accept or reject the questions are as follows:

- Unconditional acceptance of all the questions given that CVR is higher than 0.5 and the average number of judgments in each of the questions was above 2.5, showed that more than half of the participants chose the option "completely necessary" or "useful".

The criteria to determine the IUI and finalize the questionnaire:

After the calculation of the CVR to calculate IUI, the questionnaire was distributed among a group of experts. They were asked to comment on each of the items according to the following criteria based on a four point Likert's type scale related to relevancy or specificity, simplicity, fluency and clarity or transparency.

IUI represents a comprehensive judgment on the usability of the final questionnaire. In fact, the higher content validity of the final product results to an IUI closer to 99% (11). Result of CVR and IUI of questions are shown in table 3.

To measure the questionnaire reliability coefficient of the confidentiality and disclosure of patients' information, the

Table 1. Content validity ratio of knowledge questions of confidentiality and disclosure of patient information according to the expert opinion

Question	Average Number of Judgment	CVR	Acceptance or Rejection
Recording the type of illness in medical certificate for sick leave	3	1	Accepted
Sharing patient's medical records with other researchers to promote research	2.9	0.8	Accepted
Disclosure of patient's disease diagnosis to her/his family before informing the patient	2.9	0.8	Accepted
Disclosure of patient's disease to her/his fiance/finacee	2.9	0.8	Accepted
Disclosure of patient's medical records to another physician upon her/his request	2.9	0.8	Accepted
Disclosure of test results of a patient, hospitalized in an emergency ward, to the Police in cases of "Probable Suicide with Psychotropic Drugs and Alcohol"	3	1	Accepted
Providing the information of a prisoner, hospitalized due to seizure, to his guardian	2.8	0.6	Accepted
Disclosure of health information of hospitalization of celebrities to reporters	2.8	0.6	Accepted
Issuing fitness to work medical certificate in response to requests of officials	2.9	0.8	Accepted
Concealing the reason of a child's illness from father, upon her/his mother's request	3	1	Accepted
Disclosure of HIV affliction to the victim spouse	2.9	0.8	Accepted
Disclosure of the cause of an adolescent's disease to her/his parents (despite her/his consent)	2.8	0.8	Accepted
Disclosing the results of genetic tests revealing that the father is not the biological one	2.8	0.8	Accepted
Disclosure of patient's medical information for self-defense in courts	2.9	0.8	Accepted
Disclosure of the cause of a disease to the physician by a medical student (despite patient's consent)	2.7	0.6	Accepted
Disclosure of the cause of hospital referral and hospitalization of a famous person to other physicians	2.7	0.6	Accepted
Disclosing the risk of homicide by a schizophrenic patient	3	1	Accepted

questionnaire was distributed among 40 medical interns (20 men and 20 women), from which 30 questionnaires were returned and the initial reliability was calculated. Afterwards, the questionnaire was distributed among 160 students and final reliability was

calculated. Considering the students' answers to the questions, in addition to measuring the internal reliability, the reliability of each questionnaire domain was evaluated. Cronbach's alpha coefficient was used to determine the internal consistency of the questionnaire.

Table 2. Content validity ratio of attitudinal questions of confidentiality and disclosure of patient information according to the expert opinion

Question	Judgment Average Number	CVR	Acceptance or Rejection
Recording the type of illness in medical certificate for sick leave	2.8	0.6	Accepted
Sharing patient's medical records with other researchers to promote research	2.9	0.8	Accepted
Disclosure of patient's disease diagnosis to her/his family before informing the patient	2.9	0.8	Accepted
Disclosure of patient's disease to her/his fiance/finacee	2.9	0.8	Accepted
Disclosure of patient's medical records to another physician upon her/his request	2.9	0.8	Accepted
Disclosure of test results of a patient, hospitalized in an emergency ward, to the Police in cases of "Probable Suicide with Psychotropic Drugs and Alcohol"	3	1	Accepted
Providing the information of a prisoner, hospitalized due to seizure, to his guardian	2.8	0.6	Accepted
Disclosure of health information of hospitalization of celebrities to reporters	2.8	0.6	Accepted
Issuing fitness to work medical certificate in response to requests of officials	2.9	0.8	Accepted
Concealing the reason of a child's illness from father, upon her/his mother's request	3	1	Accepted
Disclosure of HIV affliction to the victim spouse	2.9	0.8	Accepted
Disclosure of the cause of an adolescent's disease to her/his parents (despite her/his consent)	2.8	0.8	Accepted
Disclosing the results of genetic tests revealing that the father is not the biological one	2.8	0.8	Accepted
Disclosure of patient's medical information for self-defense in courts	2.9	0.8	Accepted
Disclosure of the cause of a disease to the physician by a medical student (despite patient's consent)	2.7	0.6	Accepted
Disclosure of the cause of hospital referral and hospitalization of a famous person to other physicians	2.7	0.6	Accepted
Disclosing the risk of homicide by a schizophrenic patient	3	1	Accepted

Table 3. Content Validity Index (CVI) of Knowledge and attitude questions in regard to confidentiality and disclosure of patient information considering the expert opinion

Question	Knowledge CVI	Attitude CVI	Question	Knowledge IUI	Attitude IUI
1	0.86	0.8	10	0.83	0.83
2	0.76	0.8	11	0.86	0.86
3	0.76	0.8	12	0.86	0.9
4	0.8	0.83	13	0.76	0.8
5	0.8	0.76	14	0.86	0.86
6	0.86	0.83	15	0.73	0.76
7	0.83	0.83	16	0.86	0.86
8	0.8	0.9	17	0.83	0.86
9	0.73	0.86			

For construct validity of the knowledge section of the questionnaire discriminant validity method was used which is based on the correlation of the questions of this section to each other. High correlation between the questions indicates overlapping and inappropriateness of the questions to evaluate knowledge. In this study, to study correlation between the questions, Landa was used. And, the correlation between 17 questions of knowledge was minor, therefore, they will properly evaluate knowledge.

To determine the construct validity of the attitude section, the confirmatory factor analysis and the LISREL were used.

The results of the content validity index and presentation of the final questionnaire

In this study, after validation, all the questions of knowledge and attitude were accepted. The item usability index was calculated according to the following formula:

$$\frac{\text{The Number of Evaluators Chose Items 3 and 4}}{\text{Total Evaluator Number}} = IUI$$

Therefore, IUI of the questionnaire for knowledge and attitude sections were 0.81 and 0.83, respectively. These results indicate that the questionnaire is well designed and has a high validity.

Construct Validity. The results indicate that there is no robust correlation ($r < 0.5$) between the questions in knowledge section (below

0.5). Correlation table is a proof for the proper validation of knowledge questions of the questionnaire.

To determine construct validity of the attitude section, confirmatory factor analysis via LISREL software (v 8.8) was used. The Chi-Square calculated value was 625.1104. According to the fact that dividing this value to $df=526$ equals 2.1 (< 3), the desirability of confirmatory factor analysis model is concluded. Other criteria indicating efficiency of the model is the P value, which equals to 0.152, and since it is above 0.05 (non-significant) was favorable.

In addition, based on factor loadings of all the questions (greater than 0.2) all the items remain in the model. According to these parameters, construct validity of the attitude section is confirmed, and the questionnaire can measure attitude.

The third criterion for the desirability of the model is root mean square error of approximation, which was 0.0254, closeness of this error to zero indicates the good fit to the model.

Considering the above parameters, the construct validity of the attitude section is confirmed, and the questionnaire can measure attitudes.

Internal consistency

In this study, after completion of questionnaires by 160 medical students, the Cronbach's alpha coefficient for knowledge and attitude sections were 0.79 and 0.82,

respectively which indicate the acceptable internal consistency of the questionnaire.

Discussion

The aim of this study is to design a valid and reliable tool to measure medical interns knowledge and attitude towards the confidentiality and disclosure of patient's information. The extensive literature search did not reach a relevant valid and reliable questionnaire; therefore, a questionnaire was designed by reviewing confidentiality and disclosure of patient's information rules and regulations and experts' feedbacks, which was reviewed continuously by the research team and after revisions the necessity of inclusion of all the questions was confirmed. In this study, one of the most reliable methods to calculate content validity (CVR) was used, and the questionnaire mean IUI value indicated that it is acceptable and appropriate. In order to determine the reliability of the designed questionnaire, internal consistency and repeatability of the tool was tested, which indicated the high reliability of the questionnaire.

Therefore, in order to assess knowledge and attitudes towards the issue of confidentiality and disclosure of patients' information, the designed questionnaire can be used due to the desired reliability and validity.

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