Development of Measurement Tool Mini-CEX (Mini Clinical Evaluation Exercise) as an Evaluation Tool of Nursing Students in Teaching Hospital of Universitas Muhammadiyah Yogyakarta

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ABSTRACT- Mini-CEX (Mini Clinical Evaluation Exercise) was a method of evaluation to assess the clinical skills of students through direct observation and provide constructive feedback. To develop a measure tool mini-CEX as an effective measure of evaluation, it is necessary to the validity and reliability of the accuracy of the mini-CEX to improving students' learning and develop clinical education program. In the developing country, very few studies have been designed and conducted on Mini-CEX of Nursing. Moreover, in Indonesia, there is no instrument Mini-CEX of Nursing yet.

Generally, this research aims to develop the use of the mini-CEX measure as professional nurses performance evaluation tool. In particular aims (a) to analyze the mini-CEX measure existing in the profession nurses, (b) to analyze the mini-CEX focused on nursing education, (c) for the validity and reliability of the tool with the mini-CEX as educational evaluation tools Nurses.

This research was a descriptive quantitative method with cross sectional design. It developed an assessment tool in measuring competencies nursing students from the competencies published by PSIK UMY, 2011 adopted of ABIM (American Board of Internal Medicine), 1995; Taiwan, 2011; and British Dermatological Nursing Group. Content validity was done by the expert review to consist of 4 people are 2 nursing education and 2 medical education. The result validity are trial with used questionnaire. The respondents were 35 preceptors in the teaching hospitals of Universitas Muhammadiyah Yogyakarta. The reliability test was done by Cronbach alpha test.

From the initial assessment tool which had 51 items, it became 47 items after the expert review and the reliability test. The computed Cronbach's alpha for the 47-item scale for mini-CEX was 0.988, indicating high internal consistency. So the instrument is reliable for measuring the competencies of nursing students. This research concluded that the assessment tool in measuring competencies of the nursing student had demonstrated evidence of internal consistency reliability and content validity. It provided an objective tool for assessing the nursing students competencies during do clinical education program.

Keywords: Mini-CEX, measurement tools, evaluation

Background

Mini clinical evaluation exercise (mini-CEX) is one method of evaluation the performance that can be used to assess the clinical competence of students (Norcini et al, 2003). Evaluation of learning outcomes in the performance of clinical or field needs to be well-crafted, sustainable, and provide the opportunity for students to showcase professional skills optimal, so the competencies to be achieved each stage or level can be met (Nursalam, 2011). System design evaluation of student learning outcomes concurrent with the purpose of education should be tailored to the curriculum and used (Arikunto & Jabar, 2009). Evaluation said to be good when using a measuring instrument or measuring the right method (Nursalam, 2011). One of the tools or the proper method of measurement is to use the mini-

CEX. Mini-CEX method provides many opportunities for students to gain a wide range of patients or cases directly observed by the examiner (Kogan, JR et al, 2003). It can enhance student learning and to develop student professionalism in serving patients.

According to WHO (2009), Mini-CEX is one health professional assessment format that used to determine student competency. Mini-CEX was first developed by the American Board of Internal Medicine (ABIM) in 1972 (Norcini et al, 2003). In 1978, the State Australia also uses mini-CEX to evaluate medical graduates International held by the Australian Medical Council (AMC) (Nair et al, 2008). In Indonesia, the use of mini-CEX is recommended by the Ministry of Health. It is listed in the appendix of Health Decree No: 659/MENKES/PER/VIII/2009 Date August 14, 2009, the standard 5 is a partner hospitals as educational institutions doctor / specials using the mini-CEX method in judging learners (Ministry of Health, 2009). The use of mini-CEX is not only used for the medical profession, but can also be used on the mini-CEX nursing. It has been implemented in the Taiwan and Indonesia in the first 2011.University apply the mini-CEX of clinical educational program in Indonesia is Universitas Muhammadiyah Yogyakarta (UMY).

Mini-CEX is a method of assessment is designed to measure student performance in the clinical stage. Mini-CEX assessment in education UMY nurses conducted by examiners observe students interacting directly with the patient for 15 minutes, then 5 minutes testers provide constructive feedback to students on their achievement. The results of this assessment, written in the assessment form which consists of seven components, namely assessment of therapeutic communication skills, physical exam skills, clinical professionalism, making nursing intervention, consultation / education health, organization / efficiency, and clinical competence of nursing in general. There are various methods of clinical evaluation in the education profession observation, writing (reports), oral (viva-voce), objective structured clinical examination (OSCE), the mini-CEX, multisource feedback (MSF), case-based discussion (CBD) and direct observation of procedural skills (DOPS) (Nursalam, 2011, Carr, 2012). However, the most effective method is the mini-CEX because it has higher accuracy in the assessment of clinical competence student. Beside that's, the mini-CEX also allows assessment clinics at various places and various patient conditions and executed directly with patients (Norcini, et al , 2003).

Based on the above, the evaluation of student learning outcomes is important because it can increase competency of students. The using of method or instruments evaluation competency must comply the principles of validity, reliability, objective, non-discriminatory, comprehensive, applicable and have a good influence on student learning. This study gives evidence on the validity and reliability of an assessment tool in measuring competency for nursing students in establishing the nursing student's competencies**.**

Methods

This development of an assessment tool in measuring competencies for nursing students used a non-experimental descriptive design with approach cross-sectional. The study consisted of two phase: (1) preliminary phase, and (2) gathering data or research phase including five steps.

The respondents of this study were thirty five preceptors in teaching hospital Universitas Muhammadiyah Yogyakarta. Samples of this study used quota sampling method. These methods used to decide the sample from the population have characteristic certain until total wished (Sugioyono, 2007).

There were two parts in the study: the preliminary phase and the data gathering or research phase.

Part I-Preliminary phase

The researcher did searching literature in internet about measuring tools mini-CEX as evaluation tool to the student's nurse's competencies. Measuring tools got the researcher from PSIK UMY 2011 adopted by ABIM (American Board of Internal Medicine), 1995; Taiwan, Feng, 2011; and British Dermatological Nursing Group.

Part II- Data Gathering Phase

This instrument was developed in five steps:

Step 1. Researcher constructed the items of the instrument from PSIK UMY, 2011 adopted of ABIM, Taiwan 2011, and British Dermatological Nursing Group instrument tools. Then researcher selected some items which are appropriate in relation with assessment competencies student's nurses.

Step 2. Four experts were asked to give agreement or disagree and comment each item in the instrument.

Step 3. The result validity trial with the questionnaire was distributed of preceptors teaching hospital Universitas Muhammadiyah Yogyakarta .

Step 4. The items was distributed done realibility with analyses Cronbach Alpha.

Step 5. The last step was conducted measuring competencies for student nurses.

This assessment tool measures consisted the seven main components. Each component has its parts with several items.

The first component is therapeutic communication skills. This component has 6 items. The second component is Physical examination skills. There are in this component are 8 items. The third component is Clinical Professionalism. It has 8 items. The fourth component is making nursing interventions. There are 4 items included in this component. The five components is Consultation /health education. This component has 4 items. The six components is Organization / efficiency. There are 5 items included in this component. The Seven components is General nursing clinical competence. This component has 9 items. All in all, this assessment tool has 44 items. Statistical analysis was carried out using SPSS. Internal consistency was assessed by utilizing Cronbach's alpha.

Results

The researcher is searching instrument Mini-CEX in the internet. Instrument the first from PSIK UMY, 2011 adopted of ABIM (1995). These instruments have 7 components and 36 items. Instrument the seconds from Taiwan, 2011 consisted 7 components and 17 items. Instrument three from British Dermatological Nursing Group. This instrument consisted 7 components and 24 items. Instrument tools from UMY still focused assessment competencies students medical. In other word, it does not focus on the competencies student nurses.

However the researcher did combine the items in the whole instrument tool.

Assessment Tool Be Designed

The first draft of this tool was submitted to four the experts for comments and suggestions. After the expert review, there were several items considered as unclear. There are in components 1 of number (4,5), components 2 of number 8, components 3 of number 7, components 5 of number (4,5), components 6 of number five, components 7 of number 9. So those items were deleted from the tool. Some items are added to the greeting and introduce himself placed in item 1 in the first component, the ability to demonstrate skills of active listen placed in item 7 in parts 1, demonstrating the ability of caring, eye contact, tone, posture item7 placed in the component 3. From 51 items that the toll had before, finally it has 47 items.

The first component is Nursing Communication Skills. This competency has 7 items. There are say hello and introduce yourself, tells the patient medical history, capabilities deliver effective and appropriate questions to obtain accurate information and adequate, ability to provide appropriate responses to verbal and non-verbal reactions, evaluation of the effect after taking the last time, ability to assess pain, demonstrate the ability to hear the active skills.

The second's component is Physical Examination Skills. There is efficiency, logical, suitability checks with existing problems, the ability to explain to the patient, keep privacy patient, ability to collect data objective

The three components is Professionalism Nursing Intervention. These components have 8 items. There are show respect, Sensitivity to disease or suffering client, Empathy, Build trust attitudes, Shows confidence, Behaviors that demonstrate ethical values and Islamic, Demonstrated ability caring, eye contact, tone, posture, the ability to see the limitations of self and patient

The four components is Nursing Conduct Capability. There are the ability to make appropriate nursing diagnoses, make the appropriate priority client's condition, the ability to make the action criteria.

The five components is Make appropriate planning. There are capabilities provide Consultation / Health Education, ability to provide health education according to the needs of clients, understanding of the client's ability to evaluate, make appropriate health education planning client's condition (SAP).

The six components is Implementation organization. These components have four items. There are structure and suitable actions, the effectiveness of time and action, effectiveness instrument, effectiveness place.

The seven components is Nursing Clinical Competence in General. There are ability to demonstrate a satisfactory capability of clinical decision, the ability to synthesize, the ability to care, ability to protect patient safety and patient confidentiality, effectiveness, efficiency, the use of appropriate tools, the balance between the benefits and risks.

Validity and Reliability of the Instrument

Validity of the Instrument

Validity is a measurement that shows level validity the instrument. This research used content validity. Measuring content validity of instrument is important because can help to ensure construct validity and give confidence to the reader and researchers about the instrument. Researcher asked the expert to check the relevance of each item in the instruments. The experts are having many experiences in research and expert in education. The expert this research is two nursing education and two medical educations. Many items in the instrument

changed based language and balance inter sentence by the experts.

Reliability of the Instrument

Reliability of the instrument is a instrument can believed for used as tools gathering data because the instrument already enough good. In this research, the reliability of the instrument was tested using the cronbach's alpha technique. The value Coefficients reliability the instrument to have a range 0 until 1. The increase coefficient reliability to near range 1 that's mean very high reliability.

The computed Cronbach's alpha for the 47 item scale measurement tools mini- CEX as evaluation student nurse's competencies was 0.988, indicating very high internal consistency. This means there is a very high degree of association between the items in the scale. The corrected item-total correlations showed that all items had positive correlations with the total scores, the lowest of which was 0.677, which implies that all the items in the scale are good indicators of the competencies of student nurses. So, all items is valid because instrument valid if correlation of high 0.60 (Sugiono, 2007). This research supported by Durning et al (2002) with title research "Assessing the Reliability and Validity of the Mini-Clinical Evaluation Exercise for Internal Medicine Residency Training" that result the research obtained value Cronbach's alpha is 0.90.

Conclusions

Forty seven (47) items were composed in the nursing student's competencies measuring tool. The instrument for measuring of competencies for students nurses to be valid and reliable tool for assessing competencies for student nurses. The researcher suggested that this be utilized by preceptors to do evaluation to the student's nurses. Then, qualitative design may be utilized in the future research to strengthen the result of this study.

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Appendix:

Instruments	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1.Nursing Communication Skills	.677	.988
a. Say hello and introduce yourself	.794	.988
b. Tells the patient medical history	.837	.988
c. Capabilities deliver effective and appropriate questions to obtain accurate information and adequate	.863	.988
d. Ability to provide appropriate responses to verbal and non-verbal reactions	.825	.988
e. Evaluation of the effect after taking the last time	.827	.988
f. Ability to assess pain	.896	.988
g. Demonstrate the ability to hear the active skills	.858	.988
2. Physical Examination Skills	.677	.988
a. Eficiency	.907	.988
b. Logical	.903	.988
c. Suitability checks with existing problems	.926	.988
d. The ability to explain to the patient	.949	.988
e. Keep *privacy* patient	.890	.988
f. Ability to collect data objective	.912	.988
3. Professionalism Nursing Intervention	.677	.988
a. Show respect	.824	.988
b. Sensitivity to disease or suffering client	.901	.988
c. Empathy	.933	.988
d. Build trust attitudes	.925	.988
e. Shows confidence	.935	.988
f. Behaviors that demonstrate ethical values and Islamic	.925	.988
g. Demonstrated ability caring, eye contact, tone, posture	.926	.988
h. The ability to see the limitations of self and patient	.761	.988
4. Nursing Conduct Capability	.677	.988
a. The ability to make appropriate nursing diagnoses	.824	.988
b. Make the appropriate priority client's condition	.824	.988
c. The ability to make the action criteria	.863	.988
d. Make appropriate planning	.855	.988
5. Capabilities Provide Consultation / Health Education	.677	.988

a.	Ability to provide health education according to the needs of clients	.838	.988
b.	Understanding of the client's ability to evaluate	.847	.988
c.	Make appropriate health education planning client's condition (SAP)	.825	.988
d.	Implementation organization	.677	.988
e.	Structure and suitable actions	.880	.988
f.	The effectiveness of time and action	.886	.988
g.	Effectiveness of tool	.918	.988
h.	Effectiveness of place	.844	.988
7.	Nursing Clinical Competence in General	.677	.988
a.	Ability to demonstrate a satisfactory capability of clinical decision	.805	.988
b.	The ability to synthesize	.789	.988
c.	The ability to care	.933	.988
d.	Ability to protect patient safety and patient confidentiality	.926	.988
e.	Effectiveness	.967	.988
f.	efficiency	.905	.988
g.	The use of appropriate tools	.967	.988
h.	The balance between the benefits and risks	.958	.988

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