JERE 7 (1) (2018) 70 – 77

Journal of Educational Research and Evaluation

http://journal.unnes.ac.id/sju/index.php/jere

Development of Breast Self-Examination (BSE) Instrument on Midwifery Student

Sri Lestari✉, **Ani Rusilowati, Oktia Woro Kasmini Handayani**

Universitas Negeri Semarang, Indonesia

Article Info

Article History:
Accepted 17 February 2017
Approved 12 July 2018
Published 10 March 2018

Keywords:
Instrument Development, BSE, Midwifery Students

Abstract

Breast self-examination (BSE) is one of the steps taken to measure the level of validity and reliability. The purpose of this research is to develop a valid, reliable and practical BSE assessment instrument. Small-scale test data was obtained at Muhammadiyah University Semarang (UNIMUS) with 50 students, data field test data was obtained at Kudus Academy and Stikes Widya Husada Semarang with 110 students. Data analysis using source triangulation, grain validity, explanatory factor analysis (EFA), Alpha Cronbach reliability and two way anava and re-analyzed using Hoyt formula and practicality test. The research method used is research and development (R & D). The result of validity of small grains of 26 grains is valid, for anti-image correlation of 26 grains and 3 grains is not valid, small scale reliability value 0.714 and KMO result in field trial show value equal to 0,945, MSA> 0,5 and significance of Barlett test equal to 0,000. The assessment instrument developed is valid constructively because it is able to explain the overall variation of the BSE materials. The reliability value of alpha cronbach is 0.970. Practical results show the BSE instrument in the "very practical" category"The benefits of this study can be a reference in the steps of development of instruments that can support the quality of teaching and learning process of midwifery students.

✉Correspondence Address:
Kampus Pascasarjana UnnesJalan Kelud Utara III Semarang 50237, Indonesia
E-mail: tarilestari053@gmail.com

P-ISSN 2252-6544
E-ISSN 2502-356X

INTRODUCTION

The problem of cancer in Indonesia. Each year an estimated 12 million people in the world suffer from cancer and 7.6 million of them died. It is estimated by the year 2030 the incident can reach up to 26 million people and 17 million of whom died of cancer, and increased more to poor and developing countries. Estimated prevalence for 2012 shows that there are 32.6 million people (over the age of 15 years) life has had a diagnosis of cancer in the previous five years, the incidence of cancer in Indonesia 134 per 100,000 population with the highest incidence in women is breast cancer of 40 per 100,000, followed by cervical cancer 17 per 100,000 and colorectal cancer 10 per 100,000 women. Based on the data of information systems 2010 Hospital inpatient cases, breast cancer 12,014 cases (28.7%), cancer of the cervix 5,349 cases (12.8%) (IARC, 2013).

Breast cancer is the most common cancer and contribute to the high mortality rate of women around the world. An estimated one in every Nine Women living in Western countries will most likely be developing cancer of the breast (Tavafian et al, 2009). This shows that the importance of detecting cancer early, for a better prognosis. Each 2 out of 10,000 women in the world is estimated to be suffering from breast cancer (Health, 2014). Although cancer is a disease of unknown cause of certainty, but is influenced by many factors such as smoking/affected by exposure to cigarette smoke, consume alcohol, obesity and unhealthy diet, genetics, age, and infection dealing with cancer. Experts estimate that 40% of cancers can be prevented by reducing the risk factors of the occurrence of cancer. It is necessary to increase public awareness of efforts to prevent these risk factors and an increase in prevention programs and the proper countermeasures.

Breast cancer still have chances to be cured if found while it was still at an early stage or early. Breast cancer cells only grow by 1 cm, at the time of 8-12 years. These cells are hiding in our body and without we know activeness. These cells are silent in the breast and can spread through the bloodstream throughout the body (Suryaningsih & Sukaca, 2009). Some ways of early detection of breast cancer, among others, Breast Self-examination (BSE), Mammography, ultrasound, Biopsy without surgery, clinical examination of breast by a doctor (Purwanto, 2010). The main problem of breast cancer are irregularity and rarely do BSE properly (Ekanita & Khosidah, 2013).

Early detection of breast cancer is an attempt to detect and identify early breast cancer, so it is expected to be treated with techniques that have little physical impact and a greater chance of recovery. This effort is very important, because breast cancer can be detected at an early stage and treated appropriately, then the cure rate is quite high (80-90%). BSE is a complex issue not just a medical problem, but sociological. Most of the research in the field of BSE practice focuses on the factors associated with BSE, using standardized questionnaires. Thus, ensuring how women make decisions on breast self-examination desperately needs more empirical studies (Yang et al., 2010). %). The government has established BSE as a national program on April 21, 2008. The BSE program is one of the early treatments for breast cancer (Desanti et al, 2010).

Breast self-examination is done every month in a regular way and usually done a week after getting the menstrual cycle. Realize this is very important to do regularly and regularly so it can detect the ferocity that might happen (Decha, 2010). BSE can detect breast structure and changes early (Anderson & Gürsoy, 2008). Lifestyle and development of the age is an important factor that greatly affects adolescents in the risk of breast cancer (Harnianti et al, 2016). The high knowledge of health students about BSE is caused because they are required to know it because their duty later is as a public servant in the field of health both in terms of preventive, curative and rehabilitative continuous. The knowledge of health students challenging BSE is derived from the teaching-learning process given by lecturers

or from internet access, social networks that can easily disseminate health information and prevention efforts.

The purpose of this study was to obtain a valid and reliable BSE assessment instrument. So the development of this instrument is expected to conduct a comprehensive assessment and can improve the quality of learning and can be used as a reference in the making of student assessment in midwifery practices.

METHODS

This research method used in this research is development research. The research is a type of Research & Development (R & D) and uses the development of the instrument proposed by Mardapi which consists of 10 steps (2012). The ten steps of developing this instrument refer to 9 of 10 steps, resulting in the end result of valid and reliable instrument product. The design of the development of the BSE assessment instrument is considered appropriate because the stages of development within it are never independent of the development principles advanced by assessment instrument development experts in general. Sugiyono (2012) development procedure is modified into 3 main stages, namely preliminary study, development, testing.

Data collection conducted in this research using observation technique, interview, documentation study, instrument validation, observation sheet from development result. Data analysis techniques used include source triangulation techniques, validation techniques from validates to see the validity of each developed instrument item (aiken 'V formula), reliability (alpha cronbach and two way anava) on a small scale and construct validity using EFA (exploratory factor analysis) and reliability of alpha conbrach were analyzed with SPSS 16.0 program. The instrumentality tests using questionnaire given to the teacher of reproduction health advisor.

RESULTS AND DISCUSSION

The result of preliminary study that has been done by researcher using observation method, interview, and document study at Muhammadiyah University of Semarang, Stikes Widya Husada Semarang, and Academy of Midwifery Kudus, third Akbid already have BSE assessment instrument that has complied with association standard, but BSE assessment instrument not yet equipped with rubric assessment and has not yet passed the validity and reliability test.

The BSE assessment instrument developed in the form of an observation sheet with the number of grains of 26 per grain has three alternatives scoring options, as for the following instrument specifications; a. Instrument Grille is structured based on the concepts and theories about BSE, the instrument grating is designed to be used to facilitate the researcher in developing the BSE assessment instrument that will be used by the lecturer of reproductive health subject (kespro) in assessing student performance, the assessment instrument BSE grater is 26 grains (attached lattice), b. Rating scale used in instrument and rubric of assessment using scale scale model with lowest score 0 and highest score 2, c. BSE assessment instrument scoring techniques used was (scores obtained) / (max score) x 100, d. Assessment criteria used in BSE assessment instruments are: Very good: 50 - 69, Good: 20 - 39, Not good: 0 - 19.

Content validity (Expert Judgment), Validity, Small Scale Reliability, Field Trial, and Practicality

Validity is done to three experts consisting of one evaluation expert and two health experts. The purpose of the validation of the grain is to produce a valid instrument item of content or material, in addition in terms of evaluation to produce a good quality product in terms of assessment format, assessment scale, and assessment criteria. Validity was performed

to improve the developed BSE assessment instrument.

The results of the validity of the BSE assessment instrument grain analyzed using the aiken'v formula for the akien'v formula if the validity coefficient of less than 0.3 means the grain is said to be inadequate (invalid), otherwise if the validity coefficient of more than 0.3 means the grain is declared adequate (valid). The results of the validity of the experts on the BSE assessment instrument analyzed using aiken'v show that all aspects assessed to represent the aiken'v coefficient, meaning that the initial instrument fulfills a valid validity number. This is in line with research conducted Nugroho, Djuniadi & Rusilowati (2016, p.4). Based on the results of the content validity and reliability analysis of the expert agreement showed a total of 26 points, the instrument already has a value of the criteria that can be said that the assessment instrument has adequate content validity and has a high degree of reliability.

Based on instrument reliability result where inter ratter reliability calculation is done through two way anava test procedures using SPSS 16.0 program. The calculation results using SPSS are presented in Table 1.

Table 1. Results of Two Way Anova Reliability

Dependent Variable:Expert reviewers

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	27.949a	77	.363	.	.
Intercept	544.051	1	544.051	.	.
Rater	11.487	2	5.744	.	.
Subyek	1.949	25	.078	.	.
Rater * Subyek	14.513	50	.290	.	.
Error	.000	0	.		
Total	572.000	78			
Corrected Total	27.949	77			

(Source: The result of the data using SPSS 16.0)

Based on the results of reliabilities done through two way anava test using SPSS 16.0, shows that the magnitude of variance between ratter which is stated Mean Square Rater is S^2r = 5,744 while the variance Error stated by Mean Squer Rater * Subject is S^2s = 0,290. Then recalculated through the reliability of Hoyt (1941) with an average of three raters are:
Rxx = 1- S^2r / S^2s so

Rxx = 1 - 0.290 / 5.744 = 0.95

The result calculated using the Hoyt formula yields a reliability coefficient value of 0.95 means that the ratter agrees to assess the conformity of the content and this also indicates that the scoring given by each ratter is consistent. In line with research conducted Astuti, Hari Wibawanto, Khumaedi (2015, p. 114).

At this stage of the implementation of a small-scale test of the instrument is carried out to find out valid or not measurable criteria. Tests I carried out at the University of Muhammadiyah Semarang (UNIMUS) with a total of 50 respondents. The analysis was conducted with the help of SPSS 16.0, using exploratory factor analysis approach. The result of analysis is seen on Anti-Image Matrix (MSA) especially on Anti-Image Correlation with MSA value 0,5, instrument grain on anti-image column seen that correlation value of item 1 = 0,586, Item 2 = 0,516, Grain 3 Item 5 = 0.585, Item 6 = 0.508, Item 7 = 0.607, Item 8 = 0.190, Item 9 = 0.573, Item 10 = 0.506, Item 11 = 0.607, Item 12 = 0.187, Item 13 Item 15 = 0.727, Item 16 = 0.577, Item 17 = 0.425, Item

18 = 0.538, Item 19 = 0.651, Item 20 = 0.788, Item 21 = 0.657, Item 22 = 0.657, Item 23 = 0.668, Item 24 = 0.573, Item 25 = 0,505, Item 26 = 0.536. I trial results shows that there are 3 criteria to be measured is invalid because it does not meet the MSA value i.e. ≥ 0.5, or have the coefficient kolerasi ≥ 0.3, so do the revision or repair then analyzed back in test II.

After knowing the results of assessment instrument validity, then the next step is to do reliability analysis of BSE assessment instrument by using Alpha Cronbach reliability test for SPSS 16.0 program. Here are the results of the reliability test that can be seen in Table 2.

Table 2. Alpha Cronbach Reliability Reliability Test Results I

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.714	.749	26

Based on the value of coefficients generated in test I conducted reliability values obtained by 0.714> 0.70 so it can be said that BSE assessment instrument consistent in conducting the assessment. This is in accordance with the opinion Litwin (in Khumaedi, 2012) which states that good reliability is when the index is equal to or greater than 0.70.

Validity and Reliability field trials

The main condition of factor analysis are to see the value of KMO accordingly, if the value of KMO> 0.50 then factor analysis can proceed, but if the value of KMO <0.50 factor analysis can not proceed. In the BSE assessment instrument, the KMO score obtained is 0.945> 0.50 with a significance of 0.000, the indicator and the existing sample actually meets the criteria and can be further analyzed, only to prove in advance the results of Anti-Image Matric analysis for the correlation of the existing items in the Anti-Image Matric table especially at the bottom of the Anti-Image Matric Correlation a number of diagonal diagonal numbers (MSA) marked "a" (diagonal direction from top left to bottom right), no correlation indicator is below 0.5 so the analysis results this instrument is eligible for factor analysis Here is an Anti-image Matric Correlation table.

Table 3. Results of Anti-Image Correlation

No	Item	Anti-Image Correlation
1	Welcomes the patient and greets	0,753
2	Be polite	0,738
3	Asking for patient data	0,827
4	Describes the procedure performed	0,821
5	Response to patient reaction	0,764
6	Patience and meticulous	0,894
7	Preparation tool	0,906
8	Preparation of room	0,866
9	Preparation of the patient is	0,913
10	Officials preparation	0,961
11	Implementation The first step of standing / sitting position Standing position, both hands on the waist facing mirror	0,987
12	See signs of changes in breasts	0,991
13	Step two Hand lifted, saw changes in breasts	0,916
14	Step three Putting the milk out of the liquid or not	0,987
15	Step four (Position lying / sleep) Lie down, do the massage on the breast	0,991
16	Starting from the areola to the edge of the breasts	0,987
17	Breast edge massage	0,991

	towards nipple	
18	Massage all breasts to armpits	0,961
19	Step five (Sit / standing position) Sit / stand check for breasts	0,990
20	Massage putting up to the edge of the breasts	0,959
21	Massage from edge to nipple	0,987
22	Breast massage to armpit	0,962
23	Implementing the action systematically / sequentially	0,875
24	Tested conducts communication with patient	0,945
25	Keeping the patient's privacy	0,967
26	Documenting the result of action	0,945

The next step to see how many factors that may be into on factor analysis with the number of samples 110, after the exploratory factor analysis with the help of SPSS 16.0 then produced Total Variance Explained. In the EFA analysis of this research there are 4 factors of 26 items analyzed, it means that 26 items of indicator can be grouped into 4 groups of factors. Thus, factor analysis is continued because the value of Total Variance Explained is sufficient ie> 60% (Santoso, 2014) in total results Total Variance Explained can be described in Figure 1 below:

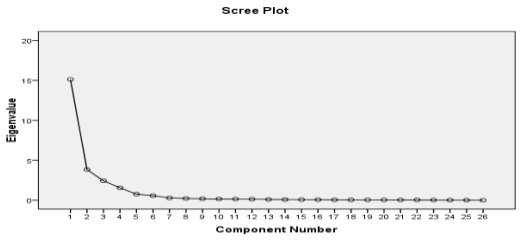

Figure 1. Scree Plot

If the total variance explained value explains the number of factors formed by the number calculation, then the screen plot displays the numbers in the graph. The output of SPSS in figure 1, on the X axis of component number from 1 to 2 decreases sharply eigenvalues is still above the 1, as well as from factor 2 to 3, 3 to 4 eigenvalues is still above 1, while the 5th factor and so on eigenvalues is below 1 , so the number of factors formed from 26 points of assessment that there are 4 factors. Furthermore after the known factors formed amounted to 4 then made the determination of each item will go into any factor of the four factors. The clustering of grains and the magnitude of the loading factor of one factor is seen from the value of the lode factor having a value> 0.3.

Rotated Component Matrix is an output that describes the grouping of grains on the BSE instrument into several factors. In this study the 26 grains of the instrument after being extracted into 4 core groups. For the components formed on Factor 1, 1, 2, 3, 4, 5, and 6, factor 2, 7, 8, 9, and 10, factor 3, 11, 12, 13, 14, 15, 16, 17 , 18, 19, 20, 21, and 22, factor 4 points 23, 24, 25, and 26. Thus, the 26 grains of the reduced instrument are formed by 4 factors. Once the instruments are grouped in the factor components, the next factor component is named according to the aspect of the BSE instrument. Factors formed based on a strong relationship between the grains with eigenvalues loading factor with the criteria of the number of eigenvalues > 1 will form a factor. Factor formed, is a grain that has a loading factor> 0.3, it makes clear that the formed factor have a grain with a loading factor> 0.3 then each factor formed is named after the aspect of BSE in the developed assessment instrument. For factor 1 it is named "Attitude and Behavior", factor 2 is given the name "Preparation", factor 3 is named "Implementation" and factor 4 is named "Technique".

The reliability test of BSE assessment instrument in this research was conducted by using Alpha Cronbach reliability test through

SPSS 16.0 program. The following is the result of reliability test using SPSS 16.0

Table 4. Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.970	.964	26

The results obtained from the reliability test in obtaining a value of 0.970 which means the instrument is consistently very high> 0.70 and can be used in the assessment. The findings in this study are in line with the research of Sujarwo and Rusilowati (2015) on the development of valid performance assessment instruments and reliability in performing performance practices, besides that the instrument reliability must have good consistency.

Practicality of Instrument

The practicality of the assessment instrument is the ease and practicality of an instrument when used by assessment instrument users. The instrument user is a lecturer / examiner of breast self-examination (BSE) at the University of Muhammadiyah Semarang, Stikes Widya Husada Semarang, and the Kid Academy of Midwifery performing the evaluation of BSE performance practice on midwifery students. The instrument practicability test was conducted to three reproductive health lecturers using a questionnaire of instrumentality validity. The practicality questionnaire is provided with the final product developed for assessment.

The results of the assessment given by the lecturer of the eye of reproductive healthcare on the practicality of the BSE instrument contain several aspects of the assessment indicating that the (easy to implement) clarity on how to use the instrument gets 100% percentage, easy checking gets 96% percentage, equipped with clear instructions to get a percentage of 96%, so the BSE assessment instrument is said to be very practical and usable. In line with the research conducted by Ashari, Lestari, and Hidayah (2016, p.17) The results of practical tests performed indicate the instrument has a percentage of 88%, indicating that the results of practical testing conducted by 15 groups of students have a level of practicality with very high category.

CONCLUSION

Based on the results of research and discussion it can be concluded that the BSE assessment instrument developed valid, reliable, and practical. The results of the development of valid and reliable BSE assessment instruments can provide an appropriate assessment of the students' ability in the psychomotor domain (performance) in reproductive health learning. Practical tools can also make it easy for the reproductive health lecturers to assess their ability to practice BSE in their students. The final implementation of assessment are able to express students' ability to practice BSE directed, measurable and effective.

ACKNOWLEDGMENTS

Acknowledgments The researcher conveyed to the parties who have helped during the research process, including; 1) Prof. Dr.Totok Sumaryanto Florentinus M.pd. as a validator expert in the field of development and evaluation, 2) Suherni, S.SiT, M. Kes, as a validator of health experts, 3) Misnaini, S,SiT as a health expert validator, 4) Midwifery Academy of Muhammadiyah University of Semarang, Academy of Midwifery Kudus, and STIKES Widya Husada Semarang, as a place of research that has provided an opportunity for researchers to research activities

REFERENCES

Anderson B, Brown S, Lim S, Smith RA, Taplin S, & Thomas D (2008). Early detection of breast cancer in countries with limited resources. *The Breast Journal.*, 9(2), 51-59

Ashari, L, Hasan, Lestari W, Hidayah T. (2016). Instrumen Penilaian Unjuk Kerja Siswa SMP Kelas VIII Dengan Model *Peer Assessment* Berbasis Android Pada Pembelajaran Penjasorkes Dalam Permainan Bola Voli. Journal of Educational Research and Evaluation, *5*(1)

Astuti P, Wibawanto H W, & Khumaedi M., (2015). Pengembangan Instrumen Penilaian Unjuk Kerja Praktik Perawatan Kulit Wajah Berbasis Kompetensi di Universitas Negeri Semarang. *Journal of Educational Research and Evaluation*, 4 (2),1-7

Decha Care, (2010). Hambat Kanker Payudara. *Jurnal kesehatan*. I (9), 175.

DepKes RI. (2014). *Profil Kesehatan Indonesia 2013*. From: http://www.depkes.go.id.

Desanti, O. P. I., Sunarsih, I., & Supriyadi. (2010). Persepsi Wanita Beresiko Kanker Payudara Tentang Pemeriksaan Payudara Sendiri Di Kota Semarang Jawa Timur. 26 (3), 152-161.

Ekanita, P., &Khosidah, A. (2013). Hubungan Antara Pengetahuan dan Sikap WUS Terhadap Perilaku Pemeriksaan Payudara Sendiri. 26 (1), 167-177

International Agency for Research on Cancer (IARC) / WHO. (2013). GLOBOCAN 2013: Estimated cancer incidence, mortality, and prevalence world wide in 2013.

Khumaedi, M. (2012). *Reliabilitas Instrumen Penelitian Pendidikan*.

Harnianti, Ambo S., Syawal K. S. (2016). Studi perilaku pemeriksaan payudara sendiri (sadari) pada mahasiswi fakultas kesehatan masyarakat universitas halu oleo. *Jurnal Kesehatan*

Mardapi Djemari, (2012). *Pengukuran Penilaian & Evaluasi Pendidikan*. Yogyakarta : Nuha Medika.

Nugroho, bagus setyo., djuniadi., & A, Rusilowati. (2016). Pengembangan Penilaian Kinerja Menggambar Teknik Potongan Di Smk Pada Kurikulum 2013. Journal of Educational Research and Evaluation, *5*(1), 1–7.

Purwanto. (2010). *Evaluasi Hasil belajar*. Yogyakarta: Pustaka Pelajar

Sujarwanto, Rusilowati, A. (2015). Pengembangan Instrumen Performance Assessment Pendekatan Scientific Pada Tema Kalor dan Perpindahan. science education journal. Universitas Negeri Semarang, 4 (1): 780-787.

Suryaningsih, E. K., dan Sukaca, B. E., (2009). *Gejala-Gejala Kanker Payudara.* Dalam: Suryaningsih, E. K., dan Sukaca, B. E., ed. Kanker Payudara. Yogyakarta : Paradigma Indonesia, 35-36.

Tavafian, S. S., Hasani, L., Aghamolaei, T., Zare, S., & Gregory, D. (2009). Prediction of breast self-examination in a sample of Iranian women: an application of the Health Belief Model. *BMC Women's Health*, *9*(1), 37.

Yang, R, J., Huang, L.-H., Hsieh, Y, S., Chung, U, L., Huang, C, S., & Bih, H, D. (2010*).* Motivations and reasons for women attending a Breast Self-Examination training program: A qualitative study. *BMC Women's Health*, *10*(1), 23