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INFLUENCE OF INTERACTIVE MULTIMEDIA LEARNING AMONG NURSING UNDERGRADUATE STUDENTS' KNOWLEDGE ABOUT MENTAL STATUS EXAMINATION

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ABSTRACT

Introduction: Mental status examination is a significant phase in delivering nursing care as the basis to make diagnosis. In reality, a lot of nursing students still find it difficult to understand terminologies and structures in mental status assessment. Studies show that interactive multimedia may help students to understand real conditions of the patients which are difficult to visualize. However, in the context of mental status assessment, further researches are required. **Methods:** The design of this study is quasi experimental including pre and post test with control group. The knowledge score measured using instrument 40 items multiple choices self-developed questions based on theory and has been content and construct validity with Cronbach's Alpha 0.94. The result of the study was analyzed by using Mann-Whitney test. **Result:** The result showed that there was a significant difference between mean score of intervention group (65.52+6.958) compared with control group (47.22+3.773) (p=0.000). **Conclusion:** The results of this study indicated there is a significant influence of interactive multimedia learning to improve undergraduate nursing students' knowledge about mental status examination. It is advisable to Nurse Educator to use interactive multimedia to overcome the difficulties of the students in understanding the concepts of mental status examination.

Keywords : Interactive multimedia, Knowledge, Mental status examination, Nursing

INTRODUCTION

Mental status examination is a crucial step in providing nursing cares for psychiatric patients. In other words, mental status examination is conducted in order to base the diagnosis that is to make intervention plans and evaluate the interventions that have been provided (Finney, Minagar & Heilman, 2016; Seider, 2014). Thus, it is necessary to provide nursing students, during their study, with knowledge and skills in conducting this kind of assessment (Lehr & Kaplan, 2013). In the real working field, there are still many nursing students who find it difficult to fully understand the assessment of mental status.

In a study nurses encountered this difficulty as they did not understand the foreign terms that were clinically applicable (Evans *et al.*, 2008). Another study found that the nursing students were anxious and not confident while performing a mental status assessment (Goh *et al.*, 2016). This is in line with Kunst, Mitchell, & Johnston (2016) who stated that it will be very difficult to improve students' knowledge regarding the concept of assessment in psychiatric patients unless they have the visualization of real conditions in the field.

Learning from experience of the researchers, the method that has been used till now in delivering teaching process to the nurses about the mental status assessment of their patient has not given optimal results. So, there is a need for new innovations in approach of delivering the material for mental status examination. In the concept of mental status examination there are terms that need to be visualized to make it easier for students to understand them (Harandi, 2016). Several studies show that interactive multimedia can help students to understand the real condition of patients in the field. In addition, using multimedia can increase the students'

interest and motivation to learn for it is very effectively in accommodation with students' learning styles (Kassim, 2013; Lam & Tou, 2014).

The researchers developed web-based Simulation of Patients (Web-SP) provided for medical, dental and pharmaceutical students. Students said it was easier to understand the patient's condition, it is also easy to use and more interesting (Zary *et al.*, 2006). A study of Randomized Control Trial (RCT) by Liaw *et al.*, (2015) utilized multimedia in Acute Nursing Care among 67 nursing students. The results showed that there was a significant difference of post test score in the intervention group (38.66+6.35) compared with control group (30.41 + 5.31) $p<0.001$.

The effectiveness of multimedia used by students in understanding the assessment of mental status is still limited. In their research, Pohl *et al.*, (1982) used videotape media, simulation methods and lectures in providing material on mental status assessment. The results showed no significant differences amongst groups using videotape, lecture method and simulation. While a study by Evans *et al.*, (2008) developed a web-based interactive learning assessment tool as an independent student learning module. The study findings showed that students understood the terms used in mental status better during assessment. However, this study does not use statistical tests to measure students' knowledge of mental status assessments.

Therefore, based on the literature study the researcher found out about the influence of interactive multimedia on nursing students. Most of the content of the material focuses on patients' care procedures, intrapersonal communication, and skills using instruments. The above findings indicate that further research on the influence of interactive multimedia on the concept of mental status examination is still needed. Hence, the general purpose of this research is to investigate the influence of interactive multimedia as learning media to enhance the knowledge of nursing undergraduate students regarding mental status examination.

RESEARCH METHODOLOGY

Study Design and Sample

This study employed a quasi-experimental design within pre-test and post-test with a control group and an intervention group. The total sample consisted of 62 second level undergraduate students of Nursing in academic year 2015/16. The participants were then grouped into two respondent categories, intervention and control groups, using a random technique. Both intervention group and control group consist of 31 respondents respectively. The total data were collected in four groups, covering 2 pre-tests and 2 post-tests with a 2-day time interval. In the intervention group the respondents were given a teaching and learning process using interactive multimedia while in the control group the students were taught conventionally (usual treatment).

Instrument

Knowledge is measured using a multiple-choice instrument which was developed from the findings of existing research and theories about the concept of mental status assessment and whose content material has been tested by 2 experts. The instrument consists of 40 multiple-choice questions about mental status assessments which have been analyzed in terms of distinguishing power, problem level, quality of spotters with Cronbach Alpha reliability value of 0.94.

Ethical Consideration

This research has been approved by ethical committee of Medical Faculty of University of Tanjungpura with registration number 2685 / UN22.9 / DT / 2017. In this study, the students were given a form of consent that they can either accept or refuse to participate in the research or even resign without any consequence.

Data Analysis

Since the data resulted from both pre-test and post-test in the control group were not normally distributed, Mann-Whitney Test was used to calculate the difference of knowledge mean-scores in both control and intervention groups. While, a *Paired-sample tes*t was used to see the mean-score difference of pre-test and post in intervention group as well as a *Wilcoxon test* in control group with p value of 0.05 was set for statistical significance.

Interactive Multimedia Design Process

The purpose of designing this interactive multimedia tool is to provide visualization through audio, image and role-play video to help the nursing student in the

assessment of mental status. Accordingly, BEST PICK acronym is used to make it easier to remember the aspects of this multimedia mental status assessment. The acronym stands for Behavior and general appearance, Emotions: mood and affect, Speech, Thought content and process, Perceptual disturbances, Impulse control, Cognition and sensorium, and Knowledge: insight and judgment (O'Brien, Kennedy & Ballard, 2008). As for the video, it was then edited using the computer and was validated by the psychiatric nursing expert. Furthermore, the audio, images and video that have been edited were then submitted to software programming experts to be packaged into interactive multimedia.

RESULTS

From the results it was evident that in the intervention group the average ages of the respondents were 19.77 years, and 19.68 years old in the control group. The respondents in both groups were mostly women, with 25 (80.6%) respondents in the intervention group and 23 respondents (74.2%) in the control group. Homogeneity test results showed that there was no characteristic difference in sex (p=0.634), and age of respondent (p=1.000).

Table 1: Study Sample Characteristics

Characteristics	Experimental (n =31)	Control (n = 31)	*p*
Age	19.77 ± 0.669	19.68 ± 0.653	0.566
Range	19 – 21	19 -21	
Sex			
Male	6 (19.4 %)	8 (25.8 %)	1.000
Female	25 (80.6 %)	23 (74.2 %)	

Table 2: Mean score differences in the intervention group and control group

Group	Pretest	Posttest	*t* / Z	*p*
	(*M* ± SD)	(*M* ± SD)		
Experiment (n = 31)	41.89 ± 4.447	65.52 ± 6.958	*t* = - 16.93	0.000*
Control (n = 31)	42.42 ± 4.081	47.22 ± 3.773	Z = - 4.90	0.000**
	Z = 0.667 *p* = 0.505***	Z = -6.582 *p* = 0.000***		

**Paired Sample Test*
***Wilcoxon Test*
****Mann-Whitney Test*

As shown in table 2, there is no significant difference in mean-score of pretest between the two groups (Z=0.667, p=0.505). The results also show that there is an increase in knowledge in the intervention group (t=-16.935, p=0.000) than the control group (Z=-4.901, p=0.000). After using interactive multimedia, the learning process of the students in the intervention group have significantly improved with the increase in knowledge (M+SD, 65.52+6.958) than in the control group (M+SD, 47.22+3.773, Z=-6.582, p=0.000)

DISCUSSION

The purpose of this study was to examine the influence of interactive multimedia on undergraduate nursing student's knowledge about mental status assessment. The result showed that knowledge significantly increased on the group with the interactive multimedia intervention compared to the control group.

The result of this study is similar to previous studies that showed that interactive multimedia has positive impact to increase knowledge. This also matches with Cognitive Theory Learning of Multimedia (CTML) by Mayer (2005) which stated that learning with multimedia helps to understand the text more easily compared to learning from the text only. Learning using multimedia will stimulate interest of the students thus making it easier to absorb information (Joshi, 2012). Significant effect on the group that used interactive multimedia may be associated with various factors. The main difference was due to the presence of role play which gave a realistic experience about patient's condition compared to those in control group that were exposed to text only.

These results are also consistent with the results of the research of Kohpaye *et al.*, (2014) that were using CPR principle interactive multimedia on 70 students of nursing. The results showed that there was a significant difference in the mean score of knowledge on a given group of multimedia (16+2.02) compared to the control group (at 12+2.60) (p<0.001). Study by Kohpaye *et al.*, (2014) showed that using multimedia in delivering drug material revealed significant differences of cognitive enhancement and student satisfaction in the group given the interactive multimedia than the control group (p=0.01).

Interactive multimedia is used in this study to perform role play video that represents the aspects contained in the mental status assessment. The visualization presented in the learning process may create more realistic and more interesting learning experience (Jeffries, 2001). Shabiralyani *et al.*, (2005) said that the visualization is very important for students

because of its ability to present content to the students more easily that was difficult to understand verbally, but it can be easily shown through multimedia. Furthermore, students will gain a deeper understanding on information submitted when compared to using text alone (Mayer & Moreno, 2002).

Study Limitation and Suggestion for Further Study

The limitation of this study is the restricted location where the research was conducted. Since this research was only done in one location, the results of this study cannot be generalized in other populations whose sample's characteristics are different from where this research has been done. Nevertheless, the results of this study can be positively used as a reference for doing further research on interactive multimedia. The interactive multimedia tool for learning process can be combined with other learning methods such as simulations, to see its effects on knowledge and skills in performing mental status assessments.

CONCLUSION

Along with the scientific technological advancement, and the fact that the nursing students face the difficulties to understand the concept of mental status assessment, it is crucial to integrate the technology and teaching and learning process. Therefore, this study finding has significantly proven that using interactive multimedia to teach the nursing students about mental status assessment is more effective than using ordinary or conventional teaching and learning approach using only text descriptions. In other words, the visualization presented in interactive multimedia will provide a deeper understanding of submitted information. Thus, interactive multimedia can create more real and interesting learning, when compared to teaching method that exposes the students to only text in the context of mental health status assessment of patients by the nursing students.

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