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Assessment of Diploma Nursing Program Curriculum Implementation Using Kirkpatrick's Approach: A Case Study at Kilimanjaro College of Health and Allied Science-Tanzania

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Abstract: The study conducted at Kilimanjaro College of Health and Allied Science-Tanzania, to assess Diploma nursing program curriculum implementation using Kirkpatrick's approach. The four levels of the model used in assessment. Microteaching steps examined classroom nurse tutors behavior of curriculum implementation process. Aimed to assess how CBET implemented, as since inception in 2008 not assessed and that if, Microteaching technique adhered to in the process besides if implementers has regulatory qualities and experience to the implementation. These help to identify gaps of the implemented curriculum besides the way forward to the solution. Census used with the study. A descriptive cross-sectional design of both quantitative and qualitative methods of data collection used. Scaled Likert's questionnaire following the model, face-to-face interview along with observation used as tools. Nurse tutors was the treatment group whereas students were the control group and tested concurrently. SPSS v20 analyzed the model; paired sample *t-test* tested the performance significance whereas *eta- squared* evaluated it. The results between pre (M=3.36, SD=2.69) and post-test [M=6.44, SD=2.64, t (305) =20.671 p< .001 indicated significant increase in performance. The *eta squared* statistics evaluation of 0.58 indicated a large effect size change. From the study, tutors were committed, had enough knowledge and experience with curriculum implementation. Nevertheless, they are not sufficient compared to the modules taught. Observed major and minor errors in the study, need rectification. Therefore; Kirkpatrick's model of assessment and Microteaching skills are innovations to measure medical education competences, need campaigns. My opinion, tutors roles need promotions moreover re-defined for awareness.

Keywords: Assessment, Competence, Curriculum, General Nursing, Kirkpatrick's approach, Learning and teaching and Microteaching.

INTRODUCTION

Background

According to Joshi (2012), Said, assessment of medical schools educational program depends on the educational policy at the institution level. This stimulates the formation of plans for change and quality improvement in alignment to the international standards.

A recent study by Mahmud I & Rawshon S (2013) reported that, worth education is largely dependent on trained implementers/teachers, a learner-centered approach, useful assets and facilities, relevant curricula and material, personal and community support, gender-sensitive design, a safe and favorable learning environment. These variables are necessary evaluated periodically for standard maintenance and gaps identification.

Tanzania education standards for undergraduate is governed by National Council for Technical Education (NACTE), established by Act No. 9 of 1997 to coordinate and establish efficient national qualification system and ensure technical institutions are of high quality as well as respond to technological innovation in the world. Therefore, the vital role is to create, sustain, regulate, and maintain values in technical institutions education in the country (NACTE, 2019).

Moreover, Section 5 (1) (b) of the NACTE offers the command to register technical teachers countrywide. For tutors to be registered, one must own a tiniest requirements of educational qualification relevant to subject area at least one level higher than the level instructing. Needs to have acquired instruction techniques and teaching methodology by attending a teacher training course or attended Competence–Based Education Training (CBET) facilitation course, possess a range of individual abilities that operate in the four fields of teaching/learning space, institution; community; and the teaching profession. Be of good personality and be educated for a minimum period of two years.

Diploma in nursing is among the program at KICHAS with full registration from NACTE. It trains pre service and in-service nursing program, awarding Diploma in Nursing and Midwifery (KCMC, 2014).

Abedini & Johari (2011) in their views said, health care industry needs qualified nurses that perform professionally at workplace.

Hence, a clear and well-designed curriculum will provide evidence of Health education implementation standards to nurses, and has to remain regularly assessed to realize if the described objectives comply with the intended goal together with labor market demand (Mmari, 2019).

Bligh *et al*., (2001) Said, poor curriculum design, poor nurse Tutor's curriculum execution, poor community support, poor learning environment and evaluation leads to poor graduate performance in health care industry. Henceforth, the human resource for health shortage added up the crisis due to misdistribution, brain drain, retirement and unemployment (Sirili, *et al*., 2014).

Frenk, *et al.,* (2010) on their report assumed, learners has to be assisted in acquiring knowledge, skills and attitude while Tutors help them to acquire the aforementioned through the implementation of the curriculum.

Masood & Usamani, (2015) on their view said, Kirkpatrick approach of curriculum or program evaluation is the best measure for medical education competences, in which student reaction, learning process, behavior change and outcome measured to determine levels of classroom understanding

Student reaction measures how student reacted to the training model assessed by asking questions that establishes the trainee thoughts and figure out if the students enjoyed their experience and if they found the material useful for their learning, thus students pay attention to the session process.

Learning examines if students truly understood the session in sense of knowledge, skills or experience means student developed in expertise, knowledge or mind set. The technique vary from informal to formal test and self-assessment to team assessment the individual take the test prior to the session (pre-test) and following session post-test to work out how the student understood.

Behavior change looks at students if they are utilizing what they learned from the session. The level analyses the differences in student's behavior in class after session (Naliah & Idrisa, 2014). Assessing the behavior change makes it possible to discover if the knowledge, skills of the session taught, used in class post-test. The level offers true assessment to individual usefulness. The level measured immediately after session.

Outcome or results determine if the material has positive impact on the training process. The level measures factors like lower or higher returns of investments, improved quality of learning, efficient utilization of time and higher quantity of student graduates. The use of control group determines the process.

The assessment starts with level one as outlined and proceed in use order and data after all levels as foundation for the analysis level. Kirkpatrick approach is best a known model for analyzing and assessing the results of training and educational program (Brauer & Furguson, 2015). Using these levels as key steps in learning assessment, systematically help nurse tutors to rely on.

Since first the introduction of Microteaching competences in Stanford University, USA in 1963, is being measured during classroom learning and teaching process. The method established to articulate actual tutors with the aim of adjusting their behavior and subsequently then been refined and applied in medical education including nursing profession (Mahmud, I., & Rawshon, S. 2013).

Skills of introduction utilizes the previous experience with the use of appropriate procedures and technique in questioning, Explanation, storytelling, demonstration, the use of audiovisual aids, dramatization, use of examples for maintenance of continuation in the ideas and information which is relevant to verbal or non-verbal behavior.

Skills of questioning involve the skills type of questions in which lower order questions asked comparable in textbooks. The middle order questions are those answered by own students expression and sentences and the higher ones are enquired in the form of application while skills of probing questions are the encouraged technique used in pursuing extra

information focusing on upward critical thinking. Skills of explaining comprises of the use appropriate beginning statement using explaining links for testing students understanding and using appropriate conclusion statements of the training session.

Skills of demonstration entails clear objectives, relevant equipment's used with its examples, handling techniques, technique in assembling the apparatus, student's participation, blackboard usage and giving explanation with tangible examples of the session matters. Visibility of appropriate media used, pointing to details, handling of several parts to focus attention by giving inspiring examples, Clarity explanation for sequencing demonstration with the use of precautions while the skills of reinforcement contain repeated desired skills or behaviors required reflected by positive verbal or non-verbal reinforcement, repeating and rephrasing together with writing students answer.

Skills of blackboard writing comprises of the readable hand writing, neatness orderliness, variation, appropriateness, adequacy with content covered, continuity and relevancy, bolding or emphasizing the important points with the use of color, charts , tables and diagram or pictures. Furthermore, skills of stimulus variation cover student's class attention to the session executed by making frequent movements, gesturing, and change of speech pattern during explanation, change of teaching or instruction using at least 3 styles. The skills bond lesson practice and learned skills.

Skills of achieving closure-involving revision, recapitulation, remarks and giving home assignment for the preparation of next session.

The study assessed key areas of learning and teaching process in the implemented curriculum and microteaching skills as innovation in medical education.

EXPERIMENTAL SECTION

Kirkpatrick four levels approaches used to assess the implemented curriculum. Standard questionnaires based on approaches used. A descriptive cross-sectional study design of both quantitative and qualitative used to collect data. Whereby, Likert's scale questionnaires was used to collect Quantitative data following Kirkpatrick's levels of approach and structured face to face interview used to collet Qualitative data additionally, Observation assessed Microteaching skills. All 10 nurse tutors and 305 student nurses from all levels (NTA level 4, 5 and 6) of the program in semester two were involved in the study.

Data collected and analysed using statistical Package for the Social Science (SPSS) software version 20 (Dino *et al.*, 2013). Analysis of the quantitative data, descriptive statistics summarized, for scale data considering Mean, standard deviation and frequency distribution table for categorical variable. Paired sample

t-test utilized to analyse mean differences between pre and post-test. This measures the extent to which expectations and compared to actual observed data following the Kirkpatrick model of evaluation. The qualitative data analysed thematically considering the key themes provided by respondents. The collected information managed by the principal investigator and checked for accuracy and completeness.

Permission to conduct research sought from AMIU Ethical and Scientific Review Committee (ESRC), Nairobi - KENYA and the National Institute for Medical research (NIMR) - Tanzania. Consent form given for voluntary participation, and the collected information treated confidential.

RESULTS AND DISCUSSION

The study observed the four levels models of assessing curriculum with the help of a Likert's questionnaire using a sample of 10 nurse tutors as treatment and 305 nurse students as control group in teaching program. The Kirkpatrick four levels models of training assessment included Reaction, Learning, Behaviours change and the Outcome/performance stands to measure the formative learning and teaching of the implemented curriculum at Kilimanjaro COHAS, Tanzania. These levels are the indicators of success training

Quantitative data variables

From the study of the present assessment indicated that, overall significant proportion of participants exhibited better learning through the nurse tutor's training program. The results showed statistical significant increase at posttest performance with the highest improvements in curriculum development tracked by the research methods and assessment sections of the formative learning and teaching sessions.

The assessment revealed that, there is very low proportion of participants who not changed their behaviors concerning classroom training. This signifying that, the behavior change do not occur rapidly but better changes occur with passageway of time, repeated behavior, or with follow up sequences. Generally, it appeared that the Kirkpatrick's models practically capture all the required facets of program assessment for nurse tutor's preparations.

The study findings regarding the reaction focused on student reaction on the training session. The second level focused on learning and knowledge gained from the session. The third level concentrated on the changes in behavior of students after session and the fourth level fixated on the changes in performance or pre and post-test caused from changes in behavior invented in training.

Students training satisfaction focusing on reaction

According to the findings of the first study objective demonstrated that, 95.5`% of participants satisfied with the session with effective use of time and objectives cover. Approximately 93.0% appreciated the teaching styles and steps used besides 6.0% observed not stimulated with the learning and teaching process though learning environment said to be conducive for learning. Constant worth training modules for nurse students has done successfully in terms of creating constructive attitudes and reaction in learners. Internal motivation like body language, material preparation, nurse tutors teaching skill, motivated learning.

Moreover, the findings related to the study done by Masood and Usami, (2015) said, negative results have negative impacts but positive reaction demonstrates learning motivation. Pavlov, (1869) reflected to behaviorist learning theory said, motivation is a primary source of individual learning and that, learning involves active listening and class participation. Aliakrabari *et al.*, (2015), trusted on learning as development of competence. Therefore, the expectations of the student nurses in classroom session, who were new in the system, met in an acceptable level and seems to be prepared for learning.

Level of Learning and teaching focusing on Kirkpatrick's level two

From the study findings of the second research objective on level two of the approach, general results indicated that, participants have acceptable improvement in their learning as 93.0% students acquire what is required and the majority rate of understanding was high laidback with the expected degree of change. 95.0% of participants applied their learning skills to post- test and gained the required skills and the rate of general understanding of the session was 96.0% while the institution culture contributed to 89.5% of their learning`. Nurse students had recognized that, the level of learning had increased.

Allan (2019), on his contribution, considers the ability to learn in classroom is based on knowledge, skills, and attitude while McLeod, (2018) said cognition and reflection are the key learning process. Besides, Piaget's (1958), believed that, learning has stages and schemas. it reflected with the Pavlov theory (1869), who realizes that learning is a change of behavior.

Degree of behavior change in terms of learners' knowledge application activities through Kirkpatrick's level three

According to brooms taxonomies level of learning, application of knowledge is a higher order of thinking which involves construction of idea. By practicing and applying the simple and small behavior making them consistently, constant and repeatedly learning will take place. From the study, 95.4% apply their learning skills to post test, supported, and motivated to use knowledge by 95.0%.

Constructivist's theorists believe that learning is the integration of knowledge and practice to bring up meaning while, Taylor & Hamdy (2013) considers learning as a method of constructing new knowledge from previously known. In linking with the findings of the third research objective, results displayed that, sessions directed to learners' professional behavior changing (pre-test M ± SD [3.38 ± 2.69]) and (post-test M ± SD [6.44 ± 2.64]). Therefore, students suggestively confirmed that, learning has taken place through the session after pre and post-test that shows high score. In this respect, they would be capable to practical knowledge and apply their special understanding and awareness to others. Naliah & Idrisa, (2014) on his report said, the behavior of the trainees applied at ordinary classroom then in a real event.

Training outcome in changing learners' knowledge and confidence, Kirkpatrick's level four.

Paired-samples t-test on the pre and post-test

M ± SD		T	Df	P	Eta squared
Pre-test	**Post-test**				
3.38 ± 2.69	6.44 ± 2.64	20.671	303	<0.001	0.5843

In connection with the findings of the fourth objective, to assess training outcome in changing learners knowledge, the results from paired sample-test analysis confirmed with eta squared statistics of 0.58 led to the conclusion that, after training sessions the knowledge indicated a large effect size change of *t* 20.671 and *p*<.001. Therefore, student's confidence increased ominously.

Tutors data

With tutors findings on class self-evaluation, students seems to be very attentive during classroom learning and teaching, taking their lecture notes

indicating that tutors were able to manage or control the class, able to measure skills and apply teaching skills. Alzahrani, (2016) said, the use of different teaching styles and technique, motivates students.

The level of leadership to promote learning skills together with the work environment was in high standard led to high performance in post-test compared to pre-test. CBET were the implemented curriculum and known. UNESCO. (2013) on the International Bureau of Education said, leadership for better learning atmosphere must support learning.

Microteaching Skills

Microteaching Skills Microteaching skills is an innovation that utilized by nurse tutors in learning and teaching experience. Small sessions plan used in teaching in a small group of student using varieties of technique, motivate learners during classroom learning and teaching. From the study, 94% of tutors utilized microteaching competences whereas some skills of demonstration, reinforcement, Closure, stimulus variation and blackboard use, poorly and inefficiently kept in practice (Benerjee et al, 2015). May be it is because of too much activities with limited time to plan for session lead to behavior incompetence. Kundu (2017) said, Microteaching skills articulates actual teachers with the aim of adjusting teacher's behavior.

Qualitative

In focus to the interviews done on nursing curriculum assessment, it has seems to be well known to tutors as curriculum is a foundation of learning and has to be planned well by professional nurses in order to meet standards. Mulder, (2012) considers curriculum as a base of learning, and constructed in high standards and be known by the implementers. From the results, implementers has idea of the CBET curriculum and their importance of it.

CBET Curriculum assessment

Classroom learning and teaching assessment as revealed by the study seems to comply with the study done by Mmari et al, (2019), that since inception in 2008 with its major revision in 2017 no assessment done to date. Same observation from the nursing curricula implementers, said, no regular assessment done regularly and gaps not corrected. However, they believed CBET is suitable in preparing students to work as independent professional (Abedin & Johari S, 2011). UNESCO (2013) insisted on regular assessment of curriculum, curriculum monitoring, and supervision to support implementation and that, to allow strategic training, make best use of resources, measure returns of investment and build self-confidence, furthermore, identify gaps for extra training.

Challenges of implementation

On the issue of CBET curriculum implementation, they said, it is too much demanding of human resources and time consuming; study revealed that overload or too much module and extra curricula activities, inadequate number of employees made tutors not to concentrate with teaching so the curriculum become inadequately implemented or being conducted as a crash program. Student are overloaded with materials and sometimes using their leisure time attending class for session, which is torturing. Schoening, (2009), study on making the transition from the Nurse to Nurse Educator said, inadequate implementation, limited resources, and increase workloads caused challenges associated with curriculum. Moreover, Abedini, S., & Johari (2011),

reported that, the limited number of nurse tutors to fill gap created by retired educators add to incompetence curriculum implementation.

Another challenge was on curriculum change without evaluation; With this, Curriculum seems to lacks some supportive documents like assessment and practicum guide, may be because of it's not regularly assessed or evaluated. Some gaps are not identified instantly adding to the implementation deficit. Raza (2009) on examining autonomy and accountability said, education sector around the world suggests that countries are modifying their system to the level of accountability and shifting from being state controlled to state supervised system will help the institute account early for identification of curriculum gaps.

CONCLUSION

The study assessed the implementation of Diploma nursing curriculum under the utilization of Kirkpatrick's approach done at Kilimanjaro College of Health and Allied Science as a case study – TANZANIA. Based on the results, the appropriate Curriculum assessment that could workout for nurse tutors must base on Kirkpatrick's approach. The technique provides immediate learning and teaching implementation gaps and the skills may be used for further research design. The study shows commitment of tutors in classroom teaching evidenced by p<.001 with few gaps to overcome. I recommend Kirkpatrick's approach and microteaching skills as innovation in medical education need promotion. CBET workshops, teaching methods and Microteaching skills for nurse tutors will learn and promote teaching. With regular training will benefit full time and novice part time tutor for their personal and professional development. Furthermore, the training body need to strengthen strategies for learning and teaching supervision and monitoring, these will improve professional skills however, motivation will made nurse tutors to be committed. Moreover, nurse tutors role need to be re-defined and motivated.

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DECLARATION

This report is my original work and has not been presented to any other University/ Institution.

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