PRE AND POST-TEST: FOR DETERMINING THE IMPACT OF BREAST IMAGING WORK SHOP

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ABSTRACT

BACKGROUND: The purpose of the study was to evaluate the impact of breast imaging workshop for enhancing the knowledge of the participants using the pre and post- test as an assessment method. **METHODS:** The study was conducted in the department of Radiology at Aga Khan University hospital in August 2014. Participants with interest in breast imaging who attended the breast imaging workshop were included. Participants who did not attempt the post test were excluded from the study. There were two groups of participants; one group completed both the pre and the post test. The group II comprised of participants who only attempted posttest.

Pretest was administered, followed by the workshop covering all aspects of breast imaging. At the end of the workshop the post test was taken. Data was entered using SPSS version 20.0. Comparison between the average score was analyzed using matched paired t-test with level of significance being 0.05. **RESULT:** A total of 43 physician participated in the workshop. Group I attempted both the pre and posttest. The mean pretest score being 3.82 and post test score was 6.07. The mean post test score of group II was 5.13. The improvement of mean test score in group I was significant with p value of less than 0.05. **CONCLUSION:** The traditional pretest-posttest method provided an easy and useful tool to evaluate, analyze and communicate a change in knowledge and understanding of participants and in demonstrating the outcome and impact of the breast imaging workshop.

Key words: pre-post test; teaching and learning; assessment; breast imaging

Introduction

Breast imaging holds a key position not only in breast cancer screening and diagnosis but also for staging and post treatment surveillance. There are not enough qualified radiologists to interpret breast imaging examinations like screening mammography or to perform diagnostic evaluation in case of abnormal screening finding.[1] The availability of sufficient number of radiologist qualified to interpret mammography and perform breast interventions is a concern not only for radiologist nationally and internationally but also for the health care community.[2] Newly trained radiologist can play an important role in overcoming the staffing shortage; however surveys of radiology residents have found a lack of interest in acquiring fellowship or employment in this subspecialty due to reasons like lawsuits, stress and pay not comparable to other subspecialties like interventional radiology etc.[3]

In addition there are very few institutions in Pakistan with breast imaging sections meeting the international standards resulting in suboptimal training provided to their trainees. Dedicated interactive courses in a simulated environment for enhancing knowledge and skills may provide the trainees with an opportunity to learn and practice these procedures.

Pre and post-test is a teaching learning strategy that quantifies the knowledge attained in the session by a group of students with different educational back grounds and diverse learning experience. Pretest

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assess the amount of base line knowledge and helps the instructor in focusing on topics that are needed to cover in the course based on the students previous knowledge. Post-test measures the learning acquired as a result of the course. In addition it helps in recognition of students who need extra help and guidance. In addition, instructional improvements needed for the course are also identified.

Purpose

The purpose of the study was to evaluate the impact of breast imaging workshop for enhancing the knowledge of the participants using the pre and post-test as an assessment method.

Methods

The study was granted exemption by the institutional ethical review committee.

Study design: Quasi experimental design

Setting and sample: It was conducted in the Department of Radiology in August 2014, using non probability purposive sampling technique. Participants from different institutes of the province-Sindh(Pakistan) with interest in breast imaging who attended the breast imaging workshop were included. Participants who did not attempt the post test were excluded from the study. There were two groups of participants; one group (n=23) completed both the pre and the post test. The other group (n=20) comprised of participants who only attempted posttest. Regarding the ethical issues, the participants were informed that the scores of pre and posttest may be used for study purpose and that the participation in the test was voluntary. Confidentiality of the identity of the participants and their respective institutes was maintained.
The workshop on breast imaging was a half day activity and the objective was to teach and provide knowledge of radiological anatomy of breast, patho-logies and their imaging findings and an overview of interventions. The teaching learning strategy was in the form of lectures and interactive sessions covering the topics of mammography, breast ultrasound, breast MRI and role of nuclear medicine in breast work up. Breast interventions session covered biopsies and needle localization procedures. The second part of the workshop comprised of a reporting session which provide an opportunity to the participants for applying the knowledge gained in the earlier session for critical thinking and problem solving along with hands-on experience for performing the procedures.
The pre and post-test consisted of ten best choice questions with the test items based on the learning objectives covering different aspects of breast imaging. The content validity of the instrument was assessed by a breast imaging radiologist and by experienced medical educationist.
Pretest was administered, followed by the course covering all aspects of breast imaging. At the end the posttest was taken to evaluate the knowledge and understanding gained through the workshop.
The demographics and characteristics of the participants were described by the descriptive data. The educational effect of the course was determined using the average score of the participants in the pre and the post test.
Data was entered using SPSS version 20.0. Comparison between the average score was analyzed using matched paired t-test with level of significance being 0.05.

Result

A total of 43 physician doctors participated in the workshop. 34 were from radiology department and 9 belonged to other specialties like medical oncology and radiotherapy. 18 were employed in private sector and 25 were from public sector. Out of the total number of participants 18 were consultants and 25 were trainees. (Tab. 1)
Group I (n=23) attempted both the pre and posttest. The mean pretest score being 3.82 and post test score was 6.07.The mean post test score of group II (n=20) was 5.13. (Tab. 2) The improvement of mean test score in group I was significant with p value of less than 0.05.

Trainees /faculty	Frequency	Percent %
Trainees	25	58
Faculty	18	42
Specialty		
Radiology	34	79
Others	09	21

Table 1: Participants characteristics

	Group I - Pretest (n=23)	Group I - Post Test	Group II Post test (n=20)
Mean Score	3.82	6.07	5.13
Standard Deviation	1.55	1.44	1.24
Minimum score	1.00	3.00	3.00
Maximum score	8.00	9.00	8.00

Table 2: Scores of the two groups

Discussion

The major aim of the study was to evaluate the effectiveness of the workshop in improving the knowledge and critical thinking of the participants regarding breast imaging. In this study, the subjects were taught different imaging modalities utilized for breast work up like mammography, ultrasound, MRI and nuclear medicine. Interactive sessions facilitated the learning and understanding of the subject in addition to clarification of different queries they had encountered in their earlier experience.The pre post testing illustrates and documents the individual academic gain by the students and abreast them with the progress they have made while in the programme.

Pre post testing is valuable to the teachers as it allows for real time monitoring of the learners progress. It can be a powerful tool to provide feedback to the teachers regarding the academic needs of the students. The results can be used to evaluate and improve educational programme, in addition to measuring the effectiveness and making necessary changes. The pretest determined the amount of pre-existing knowledge of the participants on the course topic which also influenced their learning from the course and hence resulted in improved mean post test scores of group I participants as compared to group II participants who only attempted posttest. Learning is contextual and people need prior knowledge to learn. It is impracticable to incorporate new knowledge without having some baseline developed from prior knowledge.[4] The participants who had been pretested respond differently to the treatment due to pretest –treatment interaction. This is because pretesting may prepare or alert the expe-rimental group to the nature of the treatment and hence the treatment effect is different than with subjects who did not undergo pretest as is also noted in our study and is evident by the different posttest mean scores of the two groups.[5] The characteristic feature of the teaching /learning methodology emplo-yed in the present workshop is that pre and post test problems were explained in detail throughout the workshop. The participants were explicitly asked to apply approaches and strategies acquired during the workshop.

Multiple KAP (knowledge, attitude and practice) studies[6,7] have utilized this pretest and post-test research design to evaluate their course effective-ness. These have shown a difference in the pre and post test scores with regards to knowledge and behavior, without any difference in attitude score.[8]

The purpose of the teaching learning process implemented in the workshop was to develop and enhance the cognitive competence in clinical decision making and critical thinking of the participants. The workshop can be further improved by incorporating the different learning styles of the participants i.e. an individual's preferred method of acquiring information.[9]

The present study was aimed at determining the improvement in participant's knowledge as a result of interactive breast imaging course. Improvement in mean test score was noted in group I participants with significant p value hence emphasizing the effectiveness of workshop.

The results of the study are encouraging, but there are a few limitations. One being the small sample size, due to which comparison between the test scores of the trainees / consultants and radiology /non radiology participants could not be done.

The pre and post-test comprised of questions pertaining to breast intervention but the improvement of the technical skills achieved could notbe assessed in an objective structured format. The post test was conducted immediately after the course, and provides evidence for an effect that will not be present if the post test is administered sometime after treatment. This is due to interaction of time of measurement and treatment effect 5 and poses a threat to external validity.

Conclusion

The traditional pretest-posttest method provided an easy and useful tool to evaluate, analyze and communicate a change in knowledge and understanding of participants and in demonstrating the outcome and impact of the breast imaging workshop.

References

1. Brogdon BG. The radiology manpower equation: a new look. AJR 1990; **154:** 1111-5.

2. Nass S, Ball J, and eds.Improving breast imaging quality standards Institute of Medicine. Washington, DC: national Academies press, 2005.

3. Bassett LW, Monsees BS, Smith RA, Wang L, Hooshi P, Farria DM, et al. Survey of radiology residents: breast imaging training and attitudes. Radiology 2003 Jun; **227(3):** 862-9

4. Alemayehu Bishaw and Yosef G/Egiziabher. Comparison of Traditional and Constructivist Teaching Approaches in Using English Language Learning Strategies; (Grade Eleven Students of Bahir Dar Preparatory School)Ethiop. J. Educ. September 2013; **9(1):**

5. Gay L.R, Mills G.E, Airasian P. Educational research: Competences for analysis and applications. Ninth Edition; 257-60.

6. Hee Yun Lee, Joseph S Koopmeiners, Taeho Greg Rhee, Victoria H Raveis, Jasjit S Ahluwalia Mobile Phone Text Messaging Intervention for Cervical Cancer Screening: Changes in Knowledge and Behavior Pre-Post Intervention. J Med Internet Res. 2014 August; **16(8):** e196.

7. Frida Madeni, Shigeko Horiuchi, Mariko Iida. Evaluation of a reproductive health awareness program for adolescence in urban Tanzania-A quasi-experimental pre-test post-test research Reprod Health. 2011; **8:** 21.

8. Bellingham K1, Gillies P. Evaluation of an AIDS education programme for young adults. J Epidemiol Community Health. 1993 Apr; **47(2):** 134-8.

9. Kharb P1, Samanta PP, Jindal M, Singh V. The learning styles and the preferred teaching-learning strategies of first year medical students. Clin Diagn Res. 2013 Jun; **7(6):** 1089-92.