

Training Evaluation for Radiological Technologists in 2-Year Medical Staffs Training Program in Taiwan

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Objectives

In Taiwan, in order to establish and improve the clinical training system for the newly medical personnel, the two-years post-graduate training was promoted since 2007. This study aimed to evaluate the radiological technologist trainees for their acquire core competencies after this systematic and structured program.

Table 1. DOPS pre-test and post-test mean scores of paired T test (N=442)

Item	Pre-test (mean ± SD)	Post-test (mean ± SD)
Overall result	5.60 ± 2.09	8.47 ± 0.91***
1. Patient identification	6.40 ± 2.15	8.76 ± 0.99***
2. Requisition of data matching	5.98 ± 2.19	8.65 ± 0.98***
3. Informed consent	5.57 ± 2.30	8.49 ± 1.17***
4. Image and drug checking	5.08 ± 2.26	8.13 ± 1.14***
5. Patient safety	5.82 ± 2.33	8.57 ± 1.07***
6. Communication and protect patient privacy	5.67 ± 2.22	8.28 ± 1.32***
7. Proper preparation before Physical Examination	5.33 ± 2.39	8.38 ± 1.06***
8. Inspection techniques and equipment operation capability	4.88 ± 2.40	8.27 ± 1.21***
9. Image transfer and quality assurance	5.01 ± 2.42	8.29 ± 1.13***
10. Environment and facilities maintenance	5.81 ± 2.40	8.52 ± 1.04**

*** p < 0.001, ** p < 0.001

Table 2. mini-CEX pre-test and post-test mean scores of paired T test (N=268)

Item	Pre-test (mean ± SD)	Post-test (mean ± SD)
Overall result	4.94 ± 2.09	8.09 ± 0.95***
1. Medical interviewing skills	5.31 ± 2.13	8.10 ± 1.48***
2. Physical examination skills	5.04 ± 2.27	8.30 ± 1.08***
3. Humanistic qualities professionalism	5.56 ± 2.24	7.69 ± 1.12***
4. Clinical judgement	4.48 ± 2.35	8.30 ± 1.08***
5. Consultation skills	4.78 ± 2.33	8.18 ± 1.30***
6. Organization efficiency	4.72 ± 2.31	8.01 ± 1.11***
7. Overall clinical competence	4.54 ± 2.35	8.10 ± 1.11***

*** p < 0.001

Results

There are 73 trainees who come from 26 different participating hospitals, and we collected result of times DOPS and 268 times mini-CEX. For understanding training effectiveness, we analyze the results of pre-test and post-test in the same evaluation method. The result in that the post-test scores are higher than pre-test scores, significant differences can be seen (<0.001), by using the statistical analysis with Descriptive Statistics and Paired T Test In the DOPS evaluation results (Table 1), the pre-test scores are between 4.88 and 6.4; the post-test scores are between 8.13 and 8.76. Among these evaluation, there are 4 evaluation items, Inspection techniques and equipment operation capability, Image transfer and quality assurance, image and drug checking, preparation before investigation, which the post-test scores are higher 3 points than pretest scores. In the Mini-CEX evaluation results (Table 2), the pre-test scores are between 4.48 and 5.56; the post-test scores are between 7.69 and 8.3. Among these evaluation, there are 2 evaluation items, Clinical judgement, Overall clinical competence, which the post-test scores are higher 3.5 points than pretest scores. After analyzing the evaluation result, the trainees are having great improving for radiological technologist trainees.

Methods

The radiological technologists should have five core competencies, including lifelong learning, medical ethics, patient-centered attitudes, healthcare quality and professionalism. During the training, we planned 7 major training courses include: general radiography, special interventional radiology, angiography, ultrasonography, computed tomography, magnetic resonance image and quality assurance in medical imaging. We establish assessment criteria with five core competencies and judging criteria with 10-score scale by using "direct observation of procedural skills" (DOPS) and "mini clinical exercise assessments" (mini-CEX). At least 32 times evaluated including 18 times of DOPS and 14times of mini-CEX for each trainee should be taken during the training process. To understand training effectiveness, each evaluation include pre-test and post-test. In order to uniform evaluation, we had a workshop for the participating hospitals to reach a consensus, and we also requested the participating hospitals to announced the consensus to the tutors. The participants are who start radiological technologists training in 2016. Data collection is from 2015 to 2017.

Conclusion

In Taiwan, it is the first time to develop and apply systematic and structured assessment system for radiological technologist trainees, and also put the acquire core competency into the evaluation. We expect through the study we can effectively know the effectiveness of this 2-Year post-graduate training.

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