Impact of a training course on the quality of chest radiography to diagnose pulmonary tuberculosis

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Setting: Socio-economically underprivileged urban areas in the Philippines.

Objective: To assess the performance of radiological technicians (RTs) 3 years after their participation in a training course to improve the quality of chest X-ray (CXR) and to test a monitoring visit after the course.

Design: A cross-sectional and observational study including on-site monitoring of X-ray facilities in Manila and Quezon City and assessment of CXR films taken by 23 RTs who previously attended a training course in 2009 or 2010. The sum of the assessment scores for each of six assessment factors at four points, i.e., before and after the training course that had been previously analysed, and before and after the monitoring visits that were currently analysed, were compared.

Results: Two assessment sum scores, identification mark or patient positioning, did not show significant differences. However, assessment of density, contrast, sharpness and artefact significantly improved after the training course, and before and after the monitoring visit, compared with before the training. There were no significant differences in any of the assessment factors before and after the monitoring visits.

Conclusion: The training course appears to have had a long-term effect on maintaining CXR quality. The post-training monitoring visit did not significantly improve CXR quality.

Chest radiography (CXR) is extensively utilised worldwide, comprising approximately 25% of all X-ray examinations.¹ The number of CXRs performed may be much higher in low-income than in high-income countries due partially to the limited number of other advanced X-ray examinations such as computed tomography.² CXR is a sensitive tool in the detection of abnormal lesions in the lung field,³ but has not been generally recommended as a primary diagnostic tool for pulmonary tuberculosis (PTB), mainly because of its lack of specificity, and it is associated with over-diagnosis of PTB.⁴ However, CXR is one of the most important tools for diagnosing PTB in patients with sputum-negative bacteriological results,^{5–7} including those with human immunodeficiency virus (HIV) infection.^{8,9} In addition, CXR is important as a screening tool to identify or exclude active PTB patients from among high-risk groups, such as those in contact with infectious PTB patients, immigrants from high tuberculosis (TB) prevalence countries^{10,11} and patients with HIV infection.^{12–14} The National Tuber-

culosis Control Programme (NTP) in the Philippines has also used CXR as a secondary tool in patients with sputum smear-negative results.¹⁵ It is of critical importance to ensure the quality of CXR to make sound clinical judgments in TB diagnosis.¹⁶

The Research Institute of Tuberculosis/Japan Anti-Tuberculosis Association Philippines Inc (RJPI), a non-government organisation (NGO), provides technical assistance on TB control for poor urban populations in Manila City and in Quezon City. Efforts include strengthening government organisation/NGO networking and conducting a series of 4-day training courses in 2009 and 2010 on CXR quality assurance for radiological technologists (RTs) to enhance their skills.¹⁷

A series of intensive 4-day training courses on CXR quality was conducted in 2009 and 2010 based on a CXR quality assurance handbook developed by the Tuberculosis Coalition for Technical Assistance (TBCTA) in 2008.¹⁸ The course was composed of a series of lectures on the NTP and on CXR quality assurance. It also included practical sessions to assess CXR films taken by participants in accordance with the six assessment factors indicated in the handbook. The training courses were conducted in close collaboration with the Philippine Association of Radiologic Technologists Inc (PART), an accredited professional organisation for registered RTs in the Philippines, to promote a model intervention to improve CXR quality. Each of the 36 participants submitted a total of 12 CXR films for assessment; 6 films taken before the training course and 6 taken shortly after. Assessment of the CXR films indicated significant improvement in performance after the course. However, it was still unclear how long the improved quality of CXR would be sustained and whether monitoring on site field visits by external CXR specialists would maintain or improve CXR quality after the training course.

The present study aimed to assess the quality of the CXRs performed by participants approximately 3 years after the training course, and to develop a CXR quality-monitoring framework at X-ray facilities by visiting CXR specialists in the context of the NTP in the Philippines.

DESIGN AND METHODS

This cross-sectional, descriptive, observational study was conducted using on-site investigations and monitoring of X-ray facilities to evaluate the quality of CXR performance after the training course, which included

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interviewing RTs and assessing the quality of CXR films. All of the 19 X-ray facilities that had been enrolled in the previous study, 10 in Manila and 9 in Quezon City,¹⁷ were selected as eligible facilities in the present study. A monitoring team of two senior CXR specialists visited the X-ray facilities, collected data on them using a data collection form and interviewed RTs who had attended the training course in 2009 or 2010. The form included specific information about the X-ray equipment and film developer.

In addition to the X-ray facility assessment and interviews with RTs, CXR quality assessment was independently conducted by two RTs (MM and TD). A total of 12 CXR films were collected and evaluated: 6 before monitoring from 3 male and 3 female patients, and 6 after monitoring from 3 male and 3 female patients, as was done in the previous study. The CXR films submitted were randomly ordered, and the two assessors were blinded to the date and the name of the facility.

The quality of CXR was assessed using six quality factor scores: 1) identification marks, 2) patient positioning, 3) density, 4) contrast, 5) sharpness and 6) artefacts, and was carried out in accordance with the CXR assessment sheet described elsewhere.¹⁷ Factors 1 to 5 were graded numerically as follows: 1 for 'good', 2 for 'fair' and 3 for 'poor'; factor 6 was scored as 1 for 'none', 2 for 'slight' and 3 for 'present'. The total score for the six assessment factors was summed as 1 for 'excellent' if the total score was ≤ 7 , 2 for 'good' if it was between 8 and 11 (with no score of 3), 3 for 'fair' if it was between 8 and 13 (with one or two scores of 3), and 4 for 'poor' if it was ≥ 14 .¹⁷ The final score was determined by the two assessors; any disagreements were resolved by discussion.

We compared each of the quality sum scores between all of the assessment points, i.e., pre- and post-training course, using the data from the previous study, and the pre- and post-X-ray facility monitoring field visits collected in the current study. The scores were analysed for quartiles, and the differences in the sum of the scores were analysed using the Wilcoxon matched pairs test using STATA, version 13.1 (StataCorp, College Station, TX, USA) for statistical analysis. $P \leq 0.05$ was considered statistically significant.

Informed consent was obtained from all patients who agreed to submit their CXR films for assessment after the RTs had explained the study outline. The research protocol was approved by the Ethics Review Committee of the Western Pacific Regional Office of the World Health Organization (2012.39.PHL.5.STB) and by the Department of Health Research Ethics Committee of the Philippines (DREC 2013-25).

RESULTS

Two senior RTs as CXR specialists conducted post-training monitoring visits to 19 X-ray facilities, 10 in Manila City and 9 in Quezon City. Two facilities with three RTs were excluded from the analysis due to failure to obtain the required CXR films for evaluation. A further 10 RTs were excluded from the analysis: 5 due to failure to obtain the CXR films, 2 due to absence during the

monitoring visit or refusal to participate in the study and 3 due to an incomplete set of CXR films or incomplete data on CXR films submitted. The remaining 17 X-ray facilities (9 in Manila City, 8 in Quezon City) and 23 RTs were included in the study.

The monitoring team visited the X-ray facilities once or twice, as necessary, in July or October 2013, approximately 3 years after the training course in 2009 and 2010. The monitoring team found that the X-ray equipment settings varied widely between the facilities (Table). For example, although the tube voltage was set between 40 and 110 kV, 14 facilities had adjusted them to higher voltage settings and 10 facilities had shortened the exposure time after the training.¹⁷ In addition, two X-ray facilities (number 2 and number 7 in Table) had introduced automatic film processors.

The two assessors (MM and TD) independently evaluated all of the 276 CXR films submitted by the 23 RTs. The identification mark and patient positioning assessment scores did not show significant differences before or after the training course in 2009 or 2010, or before or after the 2013 monitoring field visits (Figure 1). The sum of the scores for both identification mark and patient positioning were relatively low, i.e., the sum of the score level was good throughout. This implies that the training course and the monitoring did not significantly contribute to improvements in these two factors, but rather that the RTs maintained these two assessment points on their own (Figure 1).

The four other factors—density, contrast, sharpness and artefact—showed significant improvement when the training course and the monitoring field visits were compared. For example, the sum of the scores of density before and after the monitoring field visit (Density 3 and 4, respectively) showed significant improvement over the scores before or after the training course (Density 1 and 2, respectively; Figure 2).

We observed significant improvement in assessment factors before the training course, and either before or after the monitoring visits in all four assessment factors: density ($P = 0.001$ for Density 1 and 3, $P = 0.01$ for Density 1 and 4, respectively); contrast ($P = 0.02$ for Contrast 1 and 3, Contrast 1 and 4); sharpness ($P = 0.02$ for Sharpness 1 and 3, $P = 0.01$ for Sharpness 1 and 4); artefacts ($P = 0.002$ for Artefacts 1 and 3, $P = 0.007$ for Artefacts 1 and 4); and total assessment ($P = 0.003$ for Total Assessment 1 and 3, $P = 0.0008$ for Total Assessment 1 and 4) (Figure 3). This finding implies that the training course had a relatively long-term positive effect, at least in the four assessment factors and the total assessment. On the other hand, there were no significant differences in any of the assessment factors before and after the monitoring field visits.

DISCUSSION

To our knowledge, this is the first study to evaluate the long-term effects of a training course on CXR quality in an urban setting in the Philippines. The monitoring field visit was conducted onsite as a trial to evaluate CXR performance 3 years after the training course. The monitoring team conducted a field visit, observed and

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Conflicts of interest: none declared.

TABLE Essential characteristics of X-ray facilities and setting of X-ray machines for CXR, the Philippines

Facility serial number*	City	Facility belonging to	Average CXRs/day <i>n</i>	Distance between tube focus and X-ray film† cm	Tube voltage† kV	Tube current† mA	Exposure time† s	Film processor
1	Quezon	Private clinic	10–19	122	40	20	0.20	Manual
2	Quezon	NGO	≥20	180	90	100	0.02	Automatic
3	Quezon	NGO	≥20	180	107	100	0.01	Automatic
4	Quezon	Public hospital	≥40	180	105	120	0.01	Automatic
5	Quezon	Public hospital	≥80	180	110	300	0.01	Automatic
6	Quezon	Public hospital	≥100	180	88	320	0.01	Automatic
7	Quezon	Public hospital	≥20	180	58	100	0.05	Automatic
9	Quezon	Public hospital	≥20	180	110	200	0.10	Automatic
10	Manila	Private clinic	10–19	180	68	100	0.05	Manual
11	Manila	NGO	≥20	180	74	100	0.10	Manual
12	Manila	NGO	<10	180	80	100	0.06	Manual
14	Manila	Public clinic	10–19	180	102	150	0.025	Automatic
15	Manila	Public hospital	≥20	180	108	100	0.03	Automatic
16	Manila	Public hospital	≥20	180	110	300	0.01	Automatic
17	Manila	Public hospital	≥20	180	70	125	0.06	Automatic
18	Manila	Public hospital	≥20	180	110	200	0.01	Automatic
19	Manila	Public hospital	≥20	180	75	100	0.12	Automatic

*Serial number designated in the previous study.¹⁷ Numbers 8 and 13 were excluded from the present study due to failure to cooperate.

†Value(s) recommended in the Tuberculosis Coalition for Technical Assistance Handbook:¹⁸ distance between tube focus and X-ray film: 140–200 cm; tube voltage: 100–120 kV; tube current: ≥100 mA; exposure time: <0.05 s.

CXR = chest radiography; NGO = non-government organisation.

FIGURE 1 Assessment of chest radiography in the Philippines: sum of scores of pre- and post-training, and pre- and post-monitoring: identification mark and patient positioning. 1 = assessment point before training course; 2 = assessment point after training course; 3 = assessment point before post-training follow-up monitoring field visit; 4 = assessment point after post-training follow-up monitoring field visit. Vertical line indicates the interquartile range of the sum of scores; ♦ = median of the sum of scores.

assessed the X-ray facility settings as external assessors using a checklist, assessed 4–6 CXR films onsite using computer software to evaluate six assessment factors and discussed technical issues with RTs to determine possible solutions.

Unexpectedly, however, the data indicated no significant impact by the monitoring field visit in terms of improvement in any of the CXR assessment factors. The three assessment factors: identification mark ($P = 0.35$), contrast ($P = 0.49$) and artefacts ($P = 0.82$), showed

slight improvement in the sum of scores after the monitoring visits compared with those before the visits; however, this was not statistically significant. Post-training monitoring field visits to X-ray facilities were not yet institutionalised within the NTP framework in the Philippines. The frequency of monitoring was therefore limited to once or twice in the present study. It might have been possible to obtain further low (i.e., better) scores after the monitoring visits if the monitoring team had visited the X-ray facilities more often.

FIGURE 2 Assessment of chest radiography in the Philippines: sum of scores of pre- and post-training, and pre- and post-monitoring: density and contrast. *P* values by Wilcoxon matched pairs test; **P* < 0.05; †*P* < 0.01. 1 = assessment point before the training course; 2 = assessment point after the training course; 3 = assessment point before post-training follow-up monitoring field visit; 4 = assessment point after post-training follow-up monitoring field visit. Vertical line indicates the interquartile range of the sum of scores; ♦ = median of the sum of scores.

FIGURE 3 Assessment of chest radiography in the Philippines: sum of scores of pre- and post-training, and pre- and post-monitoring: sharpness, artefacts and total assessment. *P* values by Wilcoxon matched pairs test; **P* < 0.05; †*P* < 0.01; ‡*P* < 0.001. 1 = assessment point before the training course; 2 = assessment point after the training course; 3 = assessment point before post-training follow-up monitoring field visit; 4 = assessment point after post-training follow-up monitoring field visit. Vertical line indicates the interquartile range of the sum of scores; ♦ = median of the sum of scores.

To ensure complete participation in the monitoring and evaluation of RT competence in the X-ray facilities, there should be strict implementation guidelines, including 1) the frequency of monitoring field visits and 2) the composition of the monitoring team, endorsed by a concerned authority, such as PART and the Bureau of Health Devices and Technology (BHDT), the Department of Health regulatory arm for health devices, Manila, The

Philippines. In addition, PART and BHDT will need to come up with a standardised procedure requirement for the use of X-ray equipment to ensure the quality of CXRs onsite.

The sum of the scores of both identification mark and patient positioning were persistently low (i.e., good) throughout the assessment points. This implies that RTs have a general awareness about these factors, unrelated to either having attended the train-

ing course or to the monitoring field visits by personnel from outside their facilities. These two assessment factors are basic components and relatively easy to adhere to, while the other four assessment factors require advanced understanding and appropriate use of the X-ray equipment and film developer. All of these four assessment factors (density, contrast, sharpness, artefacts) and total assessment showed significant improvement before the monitoring field visits compared with those before the training course conducted 3 years previously. This suggests that the training course had a relatively long-term positive impact in terms of maintaining CXR quality.

There were neither additional nor continuous educational activities for the RTs in the sites during the period between the training course and the current assessment. Attending this type of training course and practising the skills learned in the field after training may have been sufficient to maintain improved CXR performance for at least 3 years after attending the course.

Of the 36 RTs who attended the course in 2009 or 2010, 23 participated in the present study. It is possible that only those who performed well participated disproportionately in the present study; however, we included 17 of the 19 X-ray facilities that had previously been involved in the course, which was considered adequate.

As in other CXR quality assessment studies, CXR quality assessment in the present study relied upon subjective scoring by multiple film assessors.^{19,20} In this study, two senior experts blinded to the dates and the names of the facilities evaluated the CXR films independently, and the final scores were determined after free discussion between the two; there is therefore unlikely to have been systemic bias.

The findings of the present study show that the training course had a positive and relatively long-term impact on maintaining quality in CXR performance in terms of density, contrast, sharpness and artefacts. We therefore recommend the Philippines NTP to expand this training course nationwide to RTs using analogue type X-ray equipment. As a handbook and applicable training materials are already available, we also recommend that NTPs in other countries include this training course to improve CXR quality.

An RT who has a sufficient understanding of the digital radiography system and can properly utilise X-ray equipment, place identification marks, ensure appropriate patient positioning and take films without artefacts will be able to obtain quality digital radiography CXRs with sufficient density, contrast and sharpness by adopting its parameters. Digital radiography has relatively low patient exposure dose^{21–25} and eliminates the film development process, which drastically reduces the workload of the RTs and reduces the cost of CXR imaging. However, it also requires that radiographic parameters for digital radiography are adopted to ensure CXR quality.^{26–29}

In conclusion, the training course on CXR quality assurance conducted for RTs appears to have had a long-term effect in maintaining overall CXR quality. Post-training monitoring field visits by senior RTs did not have a significant impact in further improving CXR quality.

References

- 1 International Commission on Radiation Units and Measurements. ICRU report 70: image quality in chest radiography. Ashford, UK: Nuclear Technology Publishing, 2003: p 21.
- 2 Shandorf C, Tetteh G K. Analysis of the status of X-ray diagnosis in Ghana. *Br J Radiol* 1998; 71: 1040–1048.
- 3 World Health Organization. Systematic screening for active tuberculosis: principles and recommendations. WHO/HTM/TB/2013.04. Geneva, Switzerland: WHO, 2013: pp 44–47.
- 4 World Health Organization. Toman's Tuberculosis case detection, treatment, and monitoring. 2nd ed. WHO/HTM/TB/2004.334. Geneva, Switzerland: WHO, 2004: pp 51–65.
- 5 Tuberculosis Coalition for Technical Assistance. International standards for tuberculosis care. The Hague, The Netherlands: TBCTA, 2006.
- 6 Lam P H, Catanzaro A, Perry S. Diagnosis of pulmonary and extra-pulmonary tuberculosis. In: Raviglione M C, ed. Lung biology in health and disease. Vol 237. Tuberculosis, 4th ed, The Essentials. New York, NY, USA: Informa Health Care, 2010: pp 81–112.
- 7 Harries A D, Kamenya A, Subramanyam V R, et al. Screening pulmonary tuberculosis suspects in Malawi: testing different strategies. *Trans R Soc Trop Med Hyg* 1997; 91: 416–419.
- 8 Boisselle P M, Tocino I, Hooley R J, et al. Chest radiograph interpretation of *Pneumocystis carinii* pneumonia, bacterial pneumonia, and pulmonary tuberculosis in HIV-positive patients: accuracy, distinguishing features, and mimics. *J Thorac Imag* 1997; 12: 47–53.
- 9 Harries A D, Maher D, Nunn P. An approach to the problems of diagnosing and treating adult smear-negative pulmonary tuberculosis in high-HIV-prevalence settings in sub-Saharan Africa. *Bull World Health Organ* 1998; 76: 651–662.
- 10 Menzies D. Screening immigrants to Canada for tuberculosis: chest radiography or tuberculin skin testing? *CMAJ* 2003; 169: 1035–1036.
- 11 Mor Z, Leventhal A, Weiler-Ravell D, et al. Chest radiography validity in screening pulmonary tuberculosis in immigrants from a high-burden country. *Respir Care* 2012; 57: 1137–1144.
- 12 Mosimaneosile B, Talbot E A, Moeti T L, et al. Value of chest radiography in a tuberculosis prevention programme for HIV-infected people, Botswana. *Lancet* 2003; 362: 1551–1552.
- 13 Getahun H, Harrington M, O'Brien R, et al. Diagnosis of smear-negative pulmonary tuberculosis in people with HIV infection or AIDS in resource-constrained settings: informing urgent policy changes. *Lancet* 2007; 369: 2042–2049.
- 14 Dawson R, Masuka P, Edwards D J, et al. Chest radiograph reading and recording system: evaluation for tuberculosis screening in patients with advanced HIV. *Int J Tuberc Lung Dis* 2010; 14: 52–58.
- 15 Department of Health. Manual of procedures for the national tuberculosis control program, Philippines. 4th ed. Chapter II: Case finding. Manila, The Philippines: DOH, 2005: pp18–27.
- 16 Querri A, Ohkado A, Poblete R, et al. Tuberculosis diagnostic committees' contribution to the national TB program in Manila and Quezon cities. *Public Health Action* 2012; 2: 82–86.
- 17 Ohkado A, Poblete R, Mercader M, et al. Effectiveness of a training course on the quality assurance of chest radiography in the Philippines. *Int J Tuberc Lung Dis* 2012; 16: 379–383.
- 18 Chen-Yuan C, van Cleeff M, Daley C, et al. Handbook for district hospitals in resource constrained settings on quality assurance of chest radiography: for better TB control and health system strengthening. The Hague, The Netherlands: The Tuberculosis Coalition for Technical Assistance, 2008.
- 19 Warren-Forward H M, Millar J S. Assessment of image quality for chest radiography in the West Midlands. *Radiat Prot Dosimetry* 1995; 57: 171–174.
- 20 Gonzalez L, Vano E, Oliete S, et al. Report of an image quality and dose audit according to Directive 97/43/Euratom at Spanish private radiodiagnostics facilities. *Br J Radiol* 1999; 72: 186–192.
- 21 Rimkus D, Bailey N A. Patient exposure requirements for high contrast resolution in digital radiographic systems. *Am J Roentgen* 1984; 142: 603–608.
- 22 Dobbins J T, Rice J J, Beam C A, et al. Threshold perception performance with computed and screen-film radiography: implications for chest radiography. *Radiology* 1992; 183: 179–187.
- 23 Chotas H G, Dobbins J T, Ravin C E. Principles of digital radiography with large-area, electronically readable detectors: a review of the basics. *Radiology* 1999; 210: 595–599.
- 24 Van Heesewijk H P M, Casparie H W B M, De Valois J C, et al. Effect of dose levels on the diagnostic performance of a selenium-based digital chest system. *Invest Radiol* 2001; 36: 455–459.
- 25 Bacher K, Smeets P, Bonnarens K, et al. Dose reduction in patients undergoing chest imaging: digital amorphous silicon flat-panel detector radiography versus conventional film-screen radiography and phosphor-based computed radiography. *Am J Roentgen* 2003; 181: 923–929.
- 26 McEntee M F, Brennan P C, Connor G O. Image quality analysis in digital chest radiography: which diagnostic performance test should be used? *Radiography Ireland* 2005; 9: 51–58.
- 27 De Hauwere A, Bacher K, Smeets P, et al. Analysis of image quality in digital chest imaging. *Radiat Prot Dosimetry* 2005; 117: 174–177.
- 28 Sun Z, Lin C, Tian Y, et al. Optimization of chest radiographic imaging parameters: a comparison of image quality and entrance skin dose for digital chest radiography systems. *Clin Imaging* 2012; 36: 279–286.
- 29 Schaefer-Prokop C, Neitzel U, Venema H W, et al. Digital chest radiography: an update on modern technology, dose containment and control of image quality. *Eur Radiol* 2008; 18: 1818–1830.

Contexte : Zones urbaines de bas niveau socio-économique aux Philippines.

Objectif : Evaluer la performance des manipulateurs radio (RT) dans les 3 années suivant leur participation à un cours de formation destiné à améliorer la qualité des radiographies pulmonaires (CXR) ainsi que l'effet d'une visite de suivi après le cours.

Schéma : Etude transversale et d'observation incluant le suivi sur place des structures de radiographie à Manille et Quezon et l'évaluation des clichés de CXR pris par 23 RT qui avaient assisté au cours de formation en 2009 ou 2010. Les sommes des scores d'évaluation de chacun des six facteurs d'évaluation à quatre moments, c'est-à-dire avant et après le cours de formation qui avaient été évalués précédemment et avant et après les visites de suivi qui étaient en cours d'analyse, ont été comparées.

Résultats : Deux sommes de scores d'évaluation—identification du cliché ou positionnement du patient—n'ont pas mis en évidence de différence significative. Cependant, en ce qui concerne la densité, le contraste, la définition et les artefacts, une amélioration significative a été constatée après le cours de formation et avant et après la visite de suivi, par comparaison avec les résultats préalables à la formation. Par contre, il n'y a eu de différence significative dans aucun des facteurs d'évaluation avant et après les visites de suivi.

Conclusion : Le cours de formation a démontré un effet à long terme en termes de maintien de la qualité des RP. Par contre, la visite de suivi après la formation n'a pas significativement amélioré la qualité des RP.

Marco de referencia: Zonas urbanas en situación socioeconómica desfavorable en las Filipinas.

Objetivo: Evaluar el desempeño de los auxiliares técnicos de radiología (RT) 3 años después de haber participado en un curso de capacitación destinado a mejorar la calidad de la radiografía de tórax (CXR) y la utilidad de una visita de supervisión después del curso.

Métodos: Se llevó a cabo un estudio transversal y de observación, en el cual se realizó una supervisión directa de las instalaciones de radiología en Manila y Ciudad Quezón y se evaluaron las CXR realizadas por 23 auxiliares RT que habían atendido a un curso de capacitación en el 2009 o el 2010. Se calificaron seis criterios de calidad de las CXR y la suma de las puntuaciones de cada criterio se categorizó en cuatro niveles; se compararon las sumatorias de las puntuaciones en cada momento de evaluación antes y después de la capacitación y antes y después de las visitas de supervisión realizadas durante el estudio.

Resultados: Las sumatorias de las puntuaciones de dos criterios—la marca de identificación y el posicionamiento del paciente—no exhibieron diferencias significativas en los diferentes momentos de evaluación. Sin embargo, las puntuaciones sobre la densidad, el contraste, la nitidez y la presencia de artefactos revelaron una mejoría significativa después de la capacitación y también antes y después de la visita de supervisión, comparadas con las calificaciones obtenidas antes del curso de capacitación. No se observaron diferencias significativas en los criterios de calidad evaluados antes y después de las visitas de supervisión.

Conclusión: El curso de capacitación ofrece un efecto a largo plazo sobre el mantenimiento de la calidad de las CXR. Las visitas de supervisión posteriores al entrenamiento no tuvieron una repercusión importante sobre la calidad.