

Do Nigerian Radiographers have potential to interpret chest radiographs?

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Rationale

The high population to radiologist ratio (1:700,000) in Nigeria has negatively impacted radiology service delivery. The dearth of radiologists, increasing demand for radiological services, and pressure from patients for their X-ray reports has led to an all-comers situation where Nigerian radiographers perform X-ray interpretation in private settings. However, their ability to report X-ray has not been explored and requires consideration. This work aims to assess the performance of Nigerian radiographers in chest X-ray interpretation and parameters associated with performance.

Methods

A test-set containing 50 posteroanterior (PA) was used for the study. Fifty-eight (58) self-selected radiographers read the test-set; 23 of these had no pathology (normal) and 27 had features of chest pathology (abnormal). Each abnormal radiograph had one abnormality, and the case mix was a combination of pulmonary and cardiac pathologies. All participants self-reported their age, gender, academic qualification, number of years since qualification, sector of practice (public or private) and employment status and previous training (formal or informal) in X-ray interpretation. The 50 radiographs were presented in a random order, and readers independently reviewed and reported them. No information about the number of normal and abnormal cases and the types of abnormalities in the test-set was disclosed. Receiver operating characteristic (ROC) analysis was used to assess reader performance. Participants were grouped according to the sector of practice (public vs private), age (>32 vs. <32 years), years qualified (>5 vs.<.5

years), and previous training in X-ray reporting, and Mann–Whitney U-test was used to compare reader groupings.

Results

A total 51 radiographers completed the reading, and 2,550 readings were made. Readers were aged 26 to 60 years (mean- 534.7 years), with 46% being 32 years or younger. Years of experience ranged from 3 to 20 years (mean-59.4 years), with 29 (56.9%) working in the private setting and 22 in public hospitals. Radiographers' sensitivity ranged from 63.6 [95% CI: 0.522–0.828] to 100 [95% CI: 0.929–1.000] (Mean- 76.9 [95% CI: 0.658–0.864]). Their specificity ranged from 64.3 [95% CI: 0.483–0.796] to 95.7 [95% CI: 0.929–1.000] (Mean- 79.8 (95% CI: 0.658–0.864)). The mean false positive rate was 20.2%. Only years of experience as radiographer ($p = 0.005$) and private practice ($p = 0.004$) were positively associated with performance.

Conclusion

Findings are encouraging and demonstrate that even without formal training, this self-selected cohort of Nigerian radiographers can appreciably report chest radiographs. Formal training of radiographers in image interpretation should help in improving radiological service delivery in this region.