Optimising mammographic radiography interpretation by Radiography Advanced Practitioner's through novel evaluation of performance levels and reader characteristics.

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This is a doctoral thesis which is ongoing.

Research question/area

Identifying criteria that impacts upon image interpretation for all readers have been achieved with programmes such as Breast Screen Reader Assessment Strategy (BREAST) in Australia and Personal Performance in Mammographic Screening (PERFORMS) in the UK. However, the focus of both programmes and current literature have been based on radiologists data, with analyses demonstrating an array of factors determining high diagnostic efficacy such as annual reading volume (Hoff, 2019; Gandomkar, 2020),sleeping patterns (Ganeshan, 2020), time of day (Alshabibi, 2020), training programs (Ganesan, 2018; Alakhras 2020), types of lesions (Trieu, 2020) social networking (Tavakoli Taba 2016) and even gender (Trieu, 2020). No such data are available for Radiography Advanced Practitioner's (RAP) impacting upon the establishment of recommended previous activities or benchmarks for optimal performances. In the United Kingdom, training of Radiographer's to reach advanced practice status for image reporting are well-reported and includes rigorous programmes of training and academic supervision to develop these skills (SCoR, 2020). Continuous professional development and regular auditing of Radiography Advanced Practitioner interpreting breast images mirror Radiologists but until a tailored method of performance assessment is available coupled with a rigorous collation and analysis of data, we cannot streamline and optimise radiography-led reporting activity within breast cancer services. This study will address this paucity of data, the need for further research and for the first time primarily analyse the characteristics that impact on the image interpretation technique of Radiography Advanced Practitioners.

Aim

The aim of this study is to optimise radiography interpretation by Radiography Advanced Practitioners(RAP) through an advanced novel assessment platform to evaluate performance levels and reader characteristics.

Objectives

The objectives of this study are to:
  i.   Identify factors that promote optimal image interpretation with Radiography Advanced Practitioners
  ii. Identify factors that hinder optimal image Interpretation with Radiography Advanced Practitioners
  iii. Create an evidence-base project from which standards for interpretation and reporting of breast images by radiographers can be instigated

This study will transform the current paradigm, by for the first time implementing a system of assessment and feedback that is instantly available to all readers specifically Radiography Advanced Practitioners which will allow the paucity of research to be filled.

Data analysis

Data will be analyzed and Image accuracy will be identified using the DetectED-X software and Statistical Packages for the Social Science (SPSS). A detailed reading from the DetectED-X interaction can be instantly analysed using behind the scenes algorithms. These include the following, performance values including sensitivity, location sensitivity, specificity, receiver operating characteristic (ROC) and jacknife alternate free response receiver operating characteristics (JAFROC) figures of merit, true positives, true negatives, false positives and false negatives are presented to scientists and the participant(Puslednik 2020).This data that would give rise to a variety of analyses, specifically in this case the image interpretation style of the Advanced Practitioner. Receiver operating characteristics (ROC) will be used to analyse variables associated with sensitivity, specificity, and the combination of the two. Descriptive statistics (SPSS) such as frequencies and correlations will be used to explore associations between participant characteristics and image interpretation accuracy.