

Evidence-based practice in radiology: the radiographer perspective

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Purpose

Main Goal:

- Analyse the application of the Evidence-Based Practice (EBP) in Radiology by the radiographers' in their daily practice in CT departments.

Specific Objectives:

- Evaluate if the concepts of EBP are applied during the radiographers academic training;
- To measure the degree of comprehension of the EBP concepts in Radiology by the radiographers;
- To determine the means or methods used for the training and updating of the EPB in by the radiographers;
- To identify the conditioning factors for the application of EBP in Radiology;
- To verify the correlation between the years of experience of radiographers and the use of EBP in Computed Tomography.

Methods and materials

This study is included in the exploratory-descriptive type, since it aims to analyze the applicability of knowledge and evidence based radiology by radiographers during their daily work and their academic education.

A self-applied questionnaire made by Abrantes, Silva & Fernandes to assess EBP was addressed to 97 radiographers working in 5 public hospitals. A total of 65 valid questionnaires (including 3 main sections (Section A, Section B and Section C)) with a total of 103 items and a 7 point Likert scale format, ranging from "totally disagree" to "strongly agree" for the content dimension, and from "not important" to "extremely important" for the context dimension.

The collected sample is non-probabilistic and it was divided as follows:

Hospital A - 14 questionnaires for a population of 15.

Hospital B - 11 questionnaires in a population of 12.

Hospital C- 4 questionnaires in a population of 21.

Hospital D - 19 questionnaires in a population of 25.

Hospital E- 17 questionnaires in a population of 24.

Data were interpreted and statistically analyzed through descriptive statistics. T-student and ANOVA tests were used for groups' comparison.

Results

Regarding the **academic qualifications** of the respondents, it was observed that 48 radiographers had a Bachelor degree, corresponding to a percentage of 73.8%. Only 10 radiographers have post-graduate studies (Master's, PhD) corresponding to a percentage of (15.4%).

In terms of **professional experience**, the average is approximately 10 years, ranging from 1 year to 38 years of experience. Regarding the professional experience in Computed Tomography, the average was approximately 7 years, ranging from 1 year to 22 years of experience.

Internal Instrument Reliability:

Factor 1 (Understanding of the EBP concepts) = Cronbach Alpha of 0.910

Factor 2 (General aspects of EBP development in the radiology department) = Cronbach Alpha of 0.910

Factor 3 (EBP in the Work Context) = Cronbach Alpha of 0.920

Factor 4 (EBP: Training and Updating of Knowledge) = Cronbach Alpha of 0.884

Factor 5 (EBP and Clinical Governance in CT) = Cronbach Alpha of 0.794

Factor 6 (Conditioning Factors for the Application of EBP) = Cronbach Alpha of 0.937

Factor 7 (Direct and/or indirect Eeffects of EBP) = Cronbach Alpha of 0.927

Analysis of the weight and importance of the items of Factor 1 - Understanding of the EBP concepts are available in [Fig. 1](#) on page 4.

Analysis of the weight and importance of the items of Factor 2 - General aspects of EBP development in the radiology department are available in [Fig. 2](#) on page 4 .

The results of factor 3 to 7 are available in the full version of this paper.

Othe Main Results:

80% of radiographers applied the principles of EBP in their daily practice. However, the major limiting factors highlighted by the radiographers for the application of EBP were: "Knowledge to transfer the results of literature/scientific articles in their daily practice" (18,5%), "Existence of legislation and regulation about practices" (18,5%), "Knowledge of EBP concepts" (15,4%) and "Professional motivation" (15,4%). Regarding the training and updating of knowledge, the item "Specific training to be able to apply an EBP model in professional activity" had the highest mean score (5,25) and the item "Regular attendance in courses about EBP and research topics" had the lowest (3,49).

Images for this section:

Items	Mean	Mode	Standard deviation
A1.1- Relative Risk	2,94	3	0,609
A1.2- Absolute Risk	2,94	3	0,659
A1.3- Systematic review	3,02	3	0,673
A1.4- <i>Odds_ratio</i>	2,80	3	0,689
A1.5- Meta Analysis	2,60	2	0,725
A1.6- Clinical Efficacy	3,02	3	0,673
A1.7- Confidence Intervals	3,00	3	0,729
A1.8- Bias of publication results	3,00	3	0,750
A1.9- Heterogeneity	3,22	3	0,673
A1.10- Scientific Evidence	3,26	3	0,735

Fig. 1: Results for Factor 1 - Understanding of the EBP concepts

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Items	Mean	Mode	Standard deviation
A3.1- The assumptions of EBPs are essential for improving the quality of service and practices in CT	5,12	5	1,442
A3.2- The EBP contributes to the improvement of the decision making about the technical procedures and other practices in CT	5,42	5	1,130
A3.3- EBP promotes the participation of patients, taking into account their informed consent on technical procedures and other practices in CT	4,72	4	1,398
A3.4- The EBP reinforces the guarantee of patient safety	5,05	5	1,230
A3.5- The EBP promotes the confidence of the users about myself, my technical procedures and other practices	4,91	5	1,355
A3.6- Scientific reading and research results, specially directed to CT, contribute to enhancing the effectiveness and efficiency of the procedures	5,66	5	1,122

Fig. 2: Results for Factor 2 - General aspects of EBP development in the radiology department

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Conclusion

Despite the general application of EBP by radiographers, thanks to regular consultation of CT guidelines and decision-making processes based on literature review and scientific articles, this group of professionals would benefit from further training. Such approach would be well received and help the radiographers to enhance their knowledge and technical skills, which would ultimately result in an increase of the department's quality.

The main conditioning factors for the application of the Evidence Based Practice in Radiology, standing out in descending order were:

1. The knowledge to transfer the results of the literature/scientific articles in daily practice of radiographers;
2. Existence of legislation and regulations on practices;
3. Knowledge about the concepts of EBP;
4. Professional motivation;
5. Knowledge of to analysis of data;
6. Knowledge to elaborate a critical analysis of the literature/scientific articles and the capacity to apply the EBP in examinations for patients with specific clinical cases.

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Fig. 3

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References

A, Chalazonitis. G, Tsimitselis. J, Tzovara., A, Mariolis. A, Alevizos. E, Pavi. (2007). *Evidence-Based Medicine and Radiology*. JBR. Epub 2007.

Agwu, K. Ogbu, S. Okpara, E. (2007). *Evaluation of critical thinking application in medical ultrasound practice among sonographers in south-eastern Nigeria*. Radiography: p.13276-282. Epub 2007 Mar 1.

Ahonen, S. Liikanen, E. (2010). *Radiographers' Preconditions for Evidence-Based Radiography*. Radiography. Epub, 2010 Jan.

Akobeng A. (2005). *Principles of evidence based medicine*. Arch Dis Child. Epub 2005.

ATARP (2004). *A Formação em Radiologia, Radioterapia e Medicina Nuclear face à Implementação do Processo de Bolonha em Portugal. Relatório Final*. Recuperado em Novembro, 2009 em <http://www.atarp.pt/pdf/radiologia-relfinal.pdf>

Beek, E. Van, Malone. (2007). *Evidence-based practice in radiology education: why and how should we teach it?* Radiology. Epub 2007.

Bjorg, Hafslund. Judith, Clare. Birgitte, Graverholt. Monica, Nortvedt. (2008). *Evidence-based radiography*. Radiography. Epub 2008.

Blackmore, C. (2004). *Critically Assessing the Radiology Literature*. AUR: p.11:134-140. Epub 2004.

Brealey, S. Guest, Editorial. (2001). *What is evidence based medicine? An emerging science not fashionable rhetoric*. Radiography: 7:7-10. Epub 2001.

Bui, A. Taira, R. Dionisio, J. Aberle, D. El-Saden, S. Kangaroo, H. (2002). *Evidence-based radiology: requirements for electronic access*. Acad Radiology. Epub 2002.

[Dermot, E. Malone](#), M. (2006). *Evidence-based Practice in Radiology: An Introduction to the Series*. Radiology. Epub Jan 5, 2006.

Domenico, E. Ide, C. (2003). *Enfermagem baseada em evidências: princípios e aplicabilidades*. Rev Latino-am Enfermagem: p. 11(1):115-8. Pub Janeiro, 2003.

Erturk, Sukru. Parra, Silvia. Otero, Hansel. Ros, Pablo. (2006). *Evidence-Based Radiology*. *Journal of the American College of Radiology/ Vol. 3 No. 7*. Epub 2006 July.

Evidence-Based Medicine Working Group. (1992). *Evidence-based medicine: a new approach to teaching the practice of medicine*. JAMA 1992.

Evidence-Based Radiology Working Group. (2001). *Evidence-based radiology: a new approach to the practice of radiology*. Radiology. Epub 2001.

Hollingworth, W. Jarvik, G. (2007). *Technology Assessment in Radiology: Putting the Evidence in Evidence-based Radiology¹*. RSNA. Epub 2007.

Sackett, D. Rosenberg, W. Gray, J. Haynes, R. Richardson, W. (1996). *Evidence based medicine: what it is and what it isn't*. BMJ: p..312:71-72. Epub Jan 13, 1996.

Zou K, Fielding J, Ondategui-Parra S. (2004). *What is evidence-based medicine?* Acad Radiol 2004.