

Evolving technique in orthopaedic radiography: understanding variation and drivers for change

Field LJ, Lewis EF, Snaith B, Flintham K & Harris M

Introduction and Background: Scant research exists to support positioning techniques in orthopaedic radiography, with textbooks reflecting the practices of the pioneers of the profession. Anecdotal evidence suggests variation in current practice exists. To establish consistent evidence based approaches to radiographic practice any variations should be understood in terms of benefit to the patient or impact on radiation dose. This study explores current techniques used in orthopaedic radiography across the UK, as well as reasons for changes in practice, using 4 common examinations (foot, knee, pelvis and lumbar-spine).

Method: This mixed methods study involved a national electronic survey of adult X-ray departments to identify techniques used for routine non-trauma referrals for the 4 anatomical areas. This was followed by semi-structured telephone interviews with a purposive sample of radiographer key informants identified from the survey. A theoretical sampling frame was used to achieve maximum diversity in the sample in terms of research related characteristics. Qualitative data was analysed using the framework method.

Results: A 39.7% (n= 69/174) survey response rate was achieved, no pattern in non-response was evident in terms of geographical location or hospital type.

Wide variation in the standard projections performed were identified in terms of routine referrals for foot, lumbar spine and knee (Figure 1,2&3). There was also variation identified in the use of angles on dorsiplantar (DP) foot views, weight-bearing (WB) technique for lateral knees and the centring points used for all views, but in particular for the anteroposterior (AP) pelvis.

15 semi-structured interviews were undertaken with radiographers from 6 NHS Trusts (Table 1&2). Two overarching themes of *variation* and *drivers for change* were identified, with a number of sub-themes (Figure 4). Pseudonyms have been used for the radiographers involved in the interviews to maintain anonymity.

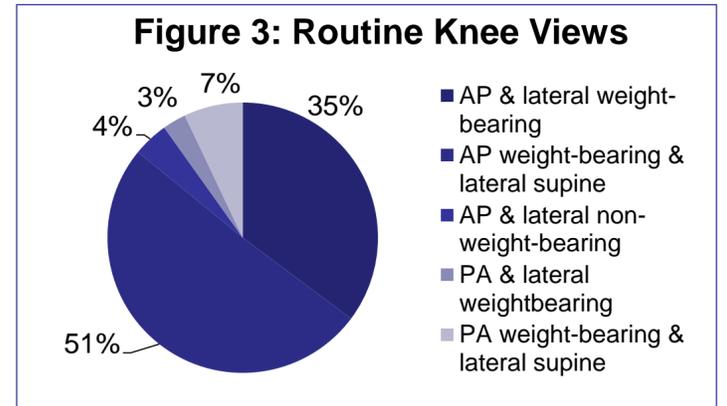
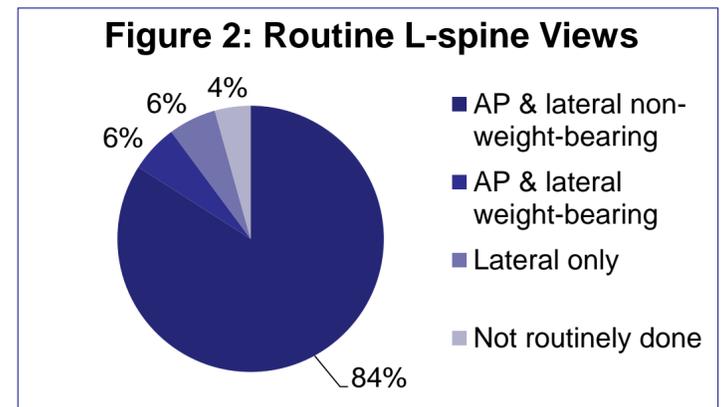
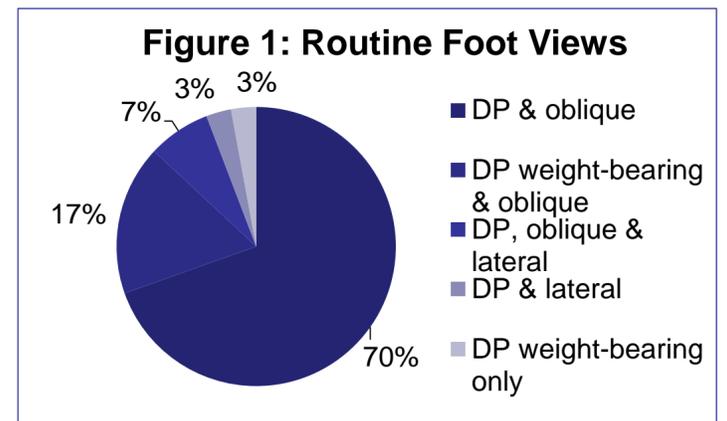


Table 1: Sampling Frame for Participating Sites

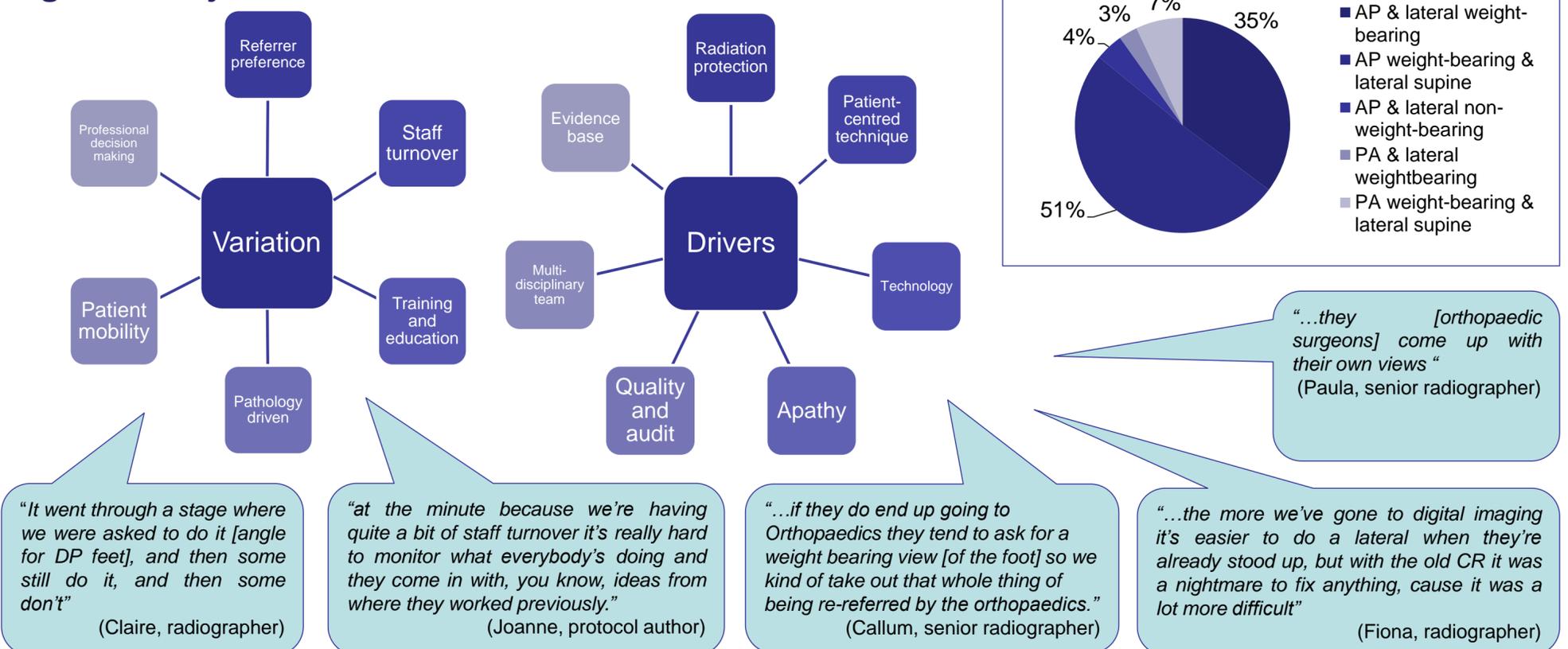
Technique variant	DP foot angle	WB DP foot	WB lateral knee	PA knee	WB pelvis	WB L-spine
Participating sites	2	1	3	1	1	2

Table 2: Sampling Frame for Participants

Characteristic	Radiographer	Senior Radiographer	Protocol Author	Reporting Radiographer
Participants	4	3	4*	5*

*1 participant met multiple criteria

Figure 4: Major themes and sub-themes from interviews



Conclusion: This study has demonstrated a lack of standardisation of projections undertaken and techniques adopted across the UK. The results suggest that the evidence base is neither established nor embedded and appears not to be the prime consideration.