

Title: The Radiographer's Multidisciplinary Team Role in Theatre Scenarios

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Abstract

Background: Radiographers work in multidisciplinary teams (MDTs) to image intraoperatively using ionising radiation. The radiographer is responsible according to IR(ME)ER (2000) and IRR(99) regulations for advocating patient and theatre personnel safety. A comprehensive literature search revealed limited studies analysing the radiographer's experiences of utilising power to influence MDTs. Therefore the aim of the study was to explore the power relationships within different MDT scenarios.

Method: A qualitative approach was adopted consisting of semi-structured interviews exploring radiographers' experiences as 1) established Cardiology team members and 2) as transient members of Orthopaedic teams. French and Raven's power bases were used as an a priori framework. Sampling was purposive in nature following gatekeeper advice and permission and subsequent participation was voluntary. Ethical approval was obtained prior to commencement and thematic content analysis was undertaken following data collection.

Findings and Discussion: Legitimate Power was more frequently perpetrated in Orthopaedics but often unsuccessfully. Accounts in Cardiology were more successful. Expert Power was reciprocated successfully in Cardiology but was context dependent in Orthopaedics. Referent power was well used across both groups although the transient nature of Orthopaedic teams in this study affected this. Job satisfaction was expressed by both groups although was more comprehensive in Cardiology. MDT Radiation awareness was better demonstrated in Cardiology due to radiographer-led training.

Conclusion: The social bases of power at play within MDTs have been examined. Radiographers working in established Cardiology teams may have greater job satisfaction and perpetrate power bases more effectively than radiographers serving in transient Orthopaedic teams.

Highlights

- This is a qualitative study using a phenomenological approach
- The social bases of power are adopted as an a priori theoretical framework
- Radiographers' experiences in the operating theatre are explored
- Both transitory and established team experiences are included
- Relationships in Cardiology and Orthopaedic settings are discussed

Introduction

Fluoroscopic imaging is rapidly expanding in surgery as it facilitates more modern, less invasive, treatments that result in better patient outcomes.¹ However, fluoroscopy utilizes ionizing radiation, which can lead to detrimental biological effects in both patients and staff if protection procedures are not adopted.^{2,3,4}

Awareness of harmful radiation effects and the skills to optimize examinations should be an essential part of any pre-registration radiography qualification and practitioners are thus informed beyond the level of other multidisciplinary team (MDT) members.⁵ This highlights a necessary leadership role for the radiographer which is further emphasised by studies identifying a lack of radiation awareness among circulating staff and surgical trainees.^{1,6,7} According to Ionizing Radiation (Medical Exposure) Regulations (2000)⁸ and Ionizing Radiation Regulations (1999)⁹ within the UK (and similar legislation across the world) a responsibility to advocate radiation protection is bestowed upon radiographers called to undertake interventional and intra-operative imaging.⁵

Under-prescription of protective measures, and lack of awareness demonstrated by trainee surgeons, has previously been attributed to insufficient formal radiation protection training.⁶ However, it is also possibly indicative of ineffectual radiographer leadership in the MDT. This could be a problem internal to the radiography profession, or one of external pressures. Professional relationships in healthcare have previously been observed to be subject to excessive "medical power"¹⁰; and this might be a case in point.

Table 1. Search terms used

Acronym	(P)articipants	(I)ntervention/indicator	(O)utcome
Concepts	Radiographer	Bases of social power	Experiences*
Synonyms	Radiolog* technician*	Social power	Perspectives*
	Radiolog* technologist*	Organizational power	Attitudes*
	Operating room radiograph*	Leadership	Perceptions*
	Theatre radiograph*	Influence	
	Theatre staff	Control	
	Theatre personnel	Legitimate power	
	Operating room personnel	Authority power	
	Operating room staff	Authority	
	Peri-operative team*	Professional expertise	
	Healthcare personnel	Expert power	
	Multidisciplinary team*	Expertise	
	Interdisciplinary team*	Knowledge	
		Referent power	
		Group power	
		Collaborative practice	
		Collaboration	
		IPP	
		Teamwork*	
		Teamrole*	

A comprehensive literature search was undertaken to investigate radiographers' experiences in the MDT using the terms outlined in table 1. The search was performed in the following databases: CINAHL, MEDLINE, PsychInfo, Psychology and Behavioral Sciences Collection, PsycARTICLES (EMBASE interface), and Science Direct. The search was limited to 2007 – 2013 and filtered further using relevant major headings. This revealed that their perception of influencing other MDT members has not been previously explored. In fact only a few papers discussed the role of the radiographer in theatre explicitly. In one paper, there was tangential reference to professional relationships, suggesting that communication barriers are a source of intra-operative conflict, especially when unfamiliar surgeons and radiographers come to work together.¹¹

Interpersonal relationships within transient surgical teams are nurtured and facilitated by introductions, briefings and room preparation prior to list commencement. The WHO Surgical Safety Checklist (WHO-SSC) was devised to implement a structure around which this could be done and

outlines a formal procedure where team members become accountable to each other by formal introductions and role definitions at the start of a surgical or interventional radiology case.¹²

In one paper, there was a suggestion that Orthopaedic cases are often delayed due to radiographer absence.¹³ This implies that radiographers may not always be present for the WHO-SSC and may therefore struggle to integrate within the team. It may well prove more difficult to influence and lead on radiation protection if not fully part of the MDT. Influence is defined as “the capacity to have an effect on the character, development, or behaviour of someone or something, or the effect itself”.¹⁴ Benfari et al. (1986) consider it a part of the notion of power and state that using power is essential to any teams success.¹⁵

The lack of previous research motivated a question around an analysis of the MDT and relationships within it. This research therefore focusses on an analysis of power within a MDT context, with the specific aim of investigating how an analysis of power within two differently constituted MDT scenarios, one transitory and one established, can inform us of the radiographers’ team role.

Using power as a concept for MDT analysis

Power as a concept can be difficult to define, and one needs to be mindful that the use of the term is almost always contextual.¹⁶ Some researchers assert that the different definitions of power can become repetitive and typological.¹⁷ Research using negotiated order^{10, 18} and Goffman’s theory of impression management,^{19, 20} have been conducted previously to explore power and teamwork within the healthcare setting. This research adopts a modified framework developed from power theories in the literature^{14, 21, 22}. Table 2 describes each power base considered.

Table 2. Definition of social bases of power used (P = Perpetrator of power base R = Recipient of power base perpetration)

Power Concept	Description
Reward	- P offers verbal or non-verbal payment, award or gesture received as compliment by R (Benfari et al., 1986; Raven, 2008).
Coercive	- P damages R physically or mentally through criticism, condescension or withholding resources (Benfari et al., 1986).
Authority	- P has authority power over R who is obliged to submit due to social structures (Benfari et al., 1986; Raven, 2008)
Legitimate	- R is obligated to change behaviour by request of P (<i>synonymous to Authority Power, Benfari et al., (1986)</i>) (Raven, 2008). - There is a social obligation on P to help R who depends upon the influence (Raven, 2008).
Referent	- Reciprocal identification (friendship/familiarity) leading to sharing information and social reciprocity - repaying favours (<i>encompassing reward and information power</i>)
Expert	- P possesses specialised knowledge but to be effective R must trust in P having superior knowledge (Benfari et al. 1986; Raven, 2008). - If solicited it is well-received - If unsolicited it is received as an imposition (Benfari et al., 1986).
Information	- P has information which is unknown to R (Benfari et al., 1986). - R's comprehension and expectation of P's power perpetration differentiates information and expert power (Raven, 2008).
Affiliation	- Borrowed authority power from a figure with whom P is associated (Benfari et al., 1986).
Group	- Number of individuals interacting in a problem solving, conflict resolution or brainstorming scenario (Benfari et al., 1986).

The framework benefits from some face validity; several of the identified powerbases in the literature seem to provide the radiographer with a means of influence, for example: "Legitimate power", as IR(ME)ER (2000) and IRR(99) regulations legitimise the radiographer's responsibility for the protection of both patient and staff from ionising radiation within theatre environment; "Expert power" because the radiographer's knowledge of radiation protection, optimisation, and radiographic technique (e.g., manipulating source image distance, collimation and contouring) make them experts within the field;^{23,24} and "Referent power" used in cases where reciprocal identification occurs; thus meaning that perceived status differences can be relaxed and friendships develop.¹⁴

This investigation aims to elucidate the power relationships with the radiographer within two different MDT scenarios:

1. As a transient member of the orthopaedic theatre MDT;
2. As a permanent member of the cardiac catheter laboratory MDT.

Further aims are to discuss the various differences and similarities between these two MDT memberships.

Method

A qualitative research design was employed providing an opportunity to probe further than structured questions.^{25,26} To investigate potential differences in MDTs participants were radiographers either serving in an established Cardiology MDT (referred to as cardiology radiographers) or as more transient members of Orthopaedic MDTs (referred to as orthopaedic radiographers). As part of a purposive sampling strategy, gatekeepers were approached for permission to interview staff.²⁷ Participants could volunteer to take part and were subsequently asked to pass information sheets to eligible co-workers. Five Orthopaedic radiographers were recruited on a voluntary basis but due perhaps to a smaller sample population only three Cardiology radiographers volunteered.

Participant scrutiny of transcript material and interpreted results to ascertain whether intended meanings are transparent in research findings, so called “member checking” is a common practice in qualitative research,²⁸⁻³² Nevertheless, a number of authors discredit “member checking” as they state that it assumes the existence of a single truth against which subjective accounts can be tested.³³ This could create confusion rather than corroboration due to participants changing their minds about an issue following the interview process.^{34,35} With time consideration, ethical implications and inconsistent support for “member checking” in the literature this was considered to add little value and was not undertaken.

Thematic content analysis was used to extrapolate transferable meanings from key themes in transcribed data.²⁶ Transcripts and field notes were studied as soon as they were written to inform subsequent interviews. The process of open coding was undertaken initially on each transcript to describe the data. Categorisation followed to combine and reduce initial codes until a manageable number of categories emerged. Transcripts were then recoded and manually organised by category, facilitating deep immersion and theme synthesis.^{27,36,37}

Transcripts were secondarily coded by another researcher so that any ambiguous transcript material was highlighted. Debriefings between primary researcher and principal investigator throughout the project also enhanced credibility and trustworthiness by challenging and probing internal biases.^{28,31} Progressive subjectivity was monitored by recording a reflective commentary immediately following each interview. The primary researcher’s previous employment as a theatre assistant inevitably influenced the interpretation of findings. Constant reflexivity throughout data collection and analysis however made this bias potential more transparent and arguably strengthened credibility³⁰ due them having experienced more than one role in the orthopaedic MDT (i.e. as a radiographer and theatre assistant). Both the other authors had significant radiographer work experience in cardiac and orthopaedic theatres.

The School of Health and Social Care Research Governance and Ethics Committee approved the proposal, and clearance from the Research and Development department of the participating trust

was obtained prior study commencement. Data was collected, processed, stored and disposed of in accordance with the Data Protection and Human Rights Acts (1998).

Findings and Discussion

Themes presented will be discussed and where “power bases” are identifiable, the perpetrators and recipients will be mentioned (Orthopaedic radiographers – O1-O5; Cardiology radiographers – C1-C3).

Legitimate Power

Legitimate power according to IR(ME)R (2000) and IRR(99) is bestowed upon the radiographer as radiation gatekeeper within both Cardiology and Orthopaedics. Cardiology radiographers demonstrated its perpetration whilst training inexperienced registrars.

C2: “...There’s never an argument...If you can justify why you’ve said it then they generally listen”

A majority of Orthopaedic radiographers also showed an awareness of their legitimate right to demand certain behaviours from MDT members but there were consistent reports of thwarted influence attempts. One participant even attributes this to a self-perceived, inconsequential professional identity.

O4: “If they don’t have an apron on you don’t screen...It doesn’t matter who it is. I’ve said it to consultants ...I had a nurse who once told me that the consultant didn’t need to wear a Lead apron and I pointed, I just went “Yes he does””

O5: “I have in the past told people ‘please put a Lead gown on’ or you know ‘Close the door over’...and you tend to get ignored because you’re only the ‘x-ray girl’”

O5: “...I had been asking the staff members over and over again. Now I just ask the Consultant to tell his staff to get gowns on, I don’t fuff about anymore...I go to the one guy that they will listen to.”

All five Orthopaedic participants indicated at some stage a lack of influence over the MDT resulting in forced reliance on surgical authority power. In cases where legitimate and referent power were insufficient, coercive power was perpetrated by withholding screening. This was often necessary before indirect MDT influence followed, through affiliation with the surgeon who was able to perpetrate authority power effectively; this is illustrated in Figure 1. Conflict resulted when participants tried perpetrating legitimate power excessively without success, prior to relying on the surgeon’s influence. Although radiographers carry the responsibility associated with radiation protection, asserting this often results in experiences they later recall in expressing job dissatisfaction.

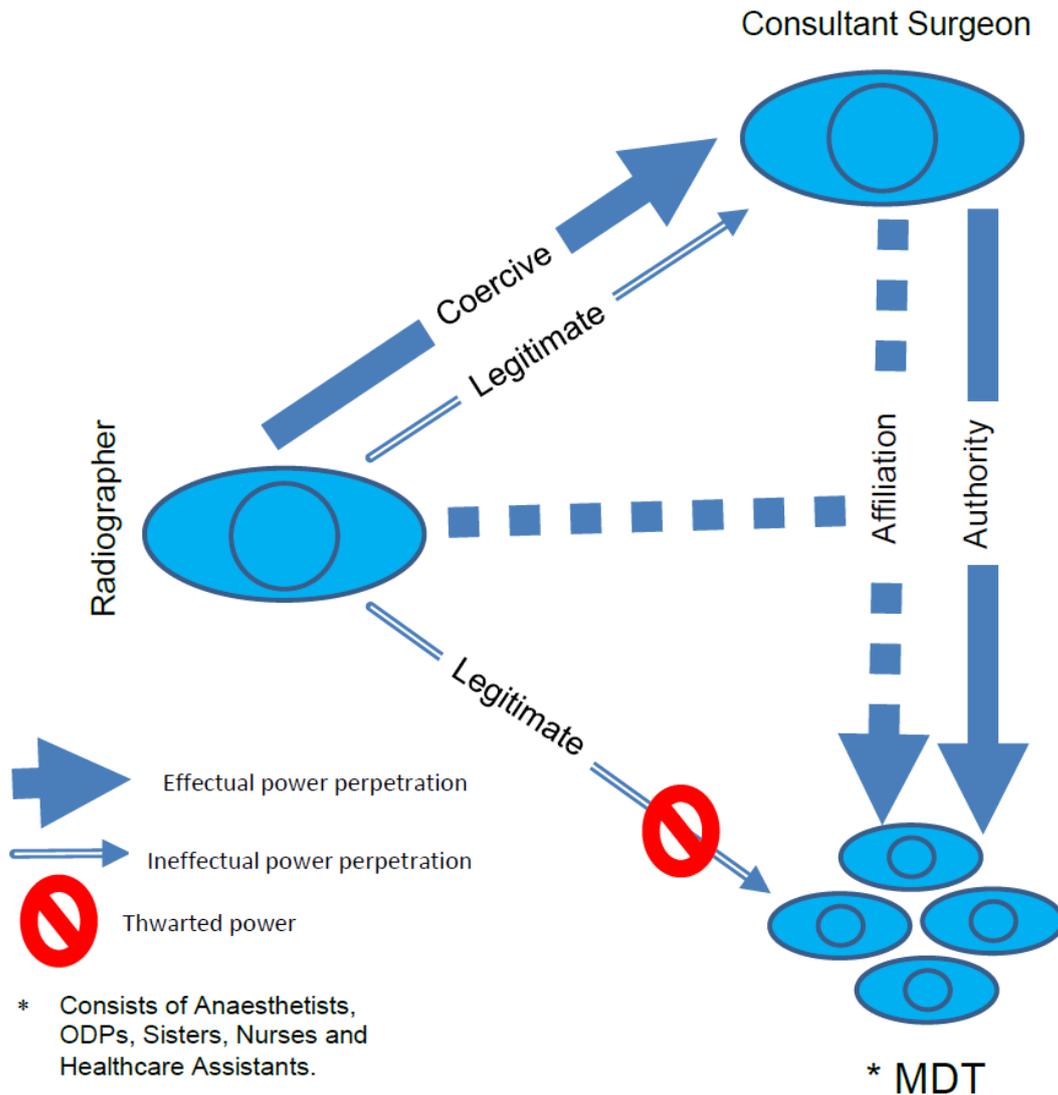


Figure. 1. Power transactions in an Orthopaedic scenario where an in-compliant MDT member refuses to adopt correct radiation protection measures

Expert Power

Expert power perpetration with regards to radiation protection and radiographic technique was consistently positive in Cardiology due to radiographer-led training. Furthermore it was shown to be reciprocal, establishing symbiotic relationships. Radiographers also perpetrated “information” power by keeping the Cardiologist aware of patient dose and contrast given:

C2 “...the very junior Reg’s do take advice from us because they usually ask us”

C3 “...the consultant can’t keep an eye on absolutely everything...so you’re just giving him bits of information that...he needs to know but...obviously wouldn’t know if you didn’t tell him”

Knowledge and expertise were also deemed valuable in orthopaedics with radiographers offering technical advice to inexperienced doctors and MDT radiation protection advice. Its appreciation however was dependent on the team regarding the radiographer as expert. One participant

acknowledged expert power explicitly, stressing the importance of sharing knowledge with an otherwise vulnerable team.

O5 "...knowledge is power, if you don't tell them then they don't know"

O2 "Some surgeons will see you as the expert and will make you feel like... 'I know what I'm doing' ...They give you the time and space to get positioned correctly"

Radiographers sometimes acknowledged themselves as recipients of expert power. The surgeon perpetrated this notably when inexperienced radiographers appeared unaccustomed to a procedure. In some instances this power dynamic was actively pursued by the radiographer self-disclosing insufficient expertise. Although this relinquished potential for later perpetrating expert power, it simultaneously obtained more subtle but effective referent power.

O2 "...I would introduce myself to whoever it was and explain that I'm a newly qualified member of staff...if they could...give me any advice...that would be really appreciated"

Findings correlate with the description of expert power in the adopted framework (Table 2). It was well received in solicited situations but less so when unsolicited despite being necessary in some cases. Although radiographic expertise was perpetrated successfully on many occasions with inexperienced registrars it seemed dependent upon Consultant reassurance. Positive feedback depended on resultant outcomes following a change in approach. The emergent feeling was that radiographic expertise was underused in Orthopaedics relative to Cardiology:

O4 "You quickly learn...especially with doctors because they're so much more knowledgeable than us...they can wipe the floor with you if you...start being funny with them about something you haven't got much knowledge about"

Referent Power

Cardiology radiographers perpetrated referent power extensively with individual recipients and in groups with decisions being made as a single unit. Role sharing was extremely pronounced appearing a necessity due to the critical nature of work. Mutual "reward" power interactions in the form of positive verbal and documented feedback were evident.²² Orthopaedic radiographers also expressed gratification for positive feedback delivered by some MDTs but this was team dependent.

C2 "...we tend to overlap a little bit with the physiologists role and nursing role..."

C1 "...when they came to the decision of stopping resuscitation they then have to ask everybody if they agree with it. If someone says 'No, I don't agree with it' you're back on to resuscitation"

C1 "...we do...360° assessments of the reg's and it's part of their e-portfolio"

Although roles were not said to be shared as such, Orthopaedic radiographers reported consistently positive examples of reciprocated gestures of help with the MDT. Radiographer involvement in environment related tasks such as pat sliding patients, opening doors or sterile equipment however were often carried out with the agenda of attaining MDT acceptance. Senior radiographers appeared especially comfortable and confident doing this, sometimes even relieving boredom. Junior radiographers were keen to help but indicated potential difficulties such as "doing things wrong" or "getting in the way". Self-disclosure as a novice seeking advice, which has previously been mentioned, alleviated this significantly. Although power relinquishment is not defined in the powerbase framework, it initiates a referent power relationship. This seemed unnecessary for

radiographers who had previous MDT experience in smaller hospitals or other specialities in which case they already possessed potential referent power.

O5 "...there are things that you can do that will help them...they will start depending on you...it gives you that sense of feeling accepted into their team"

The WHO-SSC,¹¹ designed originally to reduce surgical errors also plays a part in establishing interpersonal relationships within transient teams. It was only mentioned by one Orthopaedic participant suggesting that transient team membership demands a social effort to obtain familiarity. This is supported by numerous examples of forced introductions. Radiographers may not be present during the WHO-SSC which would explain its infrequent acknowledgment. Its utilisation in Cardiology departments is unknown as it was not mentioned organically and was not included in the interview guide due to ethical implications associated with testing participant knowledge. Unfamiliarity in Orthopaedics was exacerbated by irregular shift patterns and large staff numbers in both theatre and radiology. Lack of familiarity may not be an issue transferable to smaller hospitals as it was not a major concern in Cardiology, a smaller department.

O2: "...they don't really mind who they have as long as they've got a radiographer and that's it"

Two further themes emerged from the data: Job Satisfaction and MDT awareness of radiation protection. These appeared dependent upon those previously discussed: Whether or not the radiographer is regarded as an expert, whether they are able to perpetrate legitimate power and also establish referent power effectively.

Job satisfaction

Cardiology radiographers did not easily recall negative experiences whilst influencing the MDT whereas Orthopaedic radiographers struggled to find positive examples. Radiographer led training in Cardiology is apparently held in great esteem by both perpetrators and recipients with positive feedback from consultants.

C2: "One of the Consultants...said to me 'Oh you taught me everything I know'...it's nice to know that they...appreciate what you do"

When influence attempts are successful in Orthopaedics, radiographers take pleasure in technical aspect such as obtaining "perfect" distal locking holes during femoral nailing procedures.

O6: "...he called me his 'locking hole angel'...so that was nice [laughs] ...It does make you feel a bit good yeah, it gives you a lot of confidence in your work...and it makes you think that yeah I am actually doing something right."

(This is important as the 'perfect circles' enables the orthopaedic surgeon to correctly place the distal locking screws of the femoral nail, through drilling perpendicular to the image intensifier. This is due to the image produced being a 2-dimensional representation of a 3 dimensional subject. For further reading see Grewal, I., Carter P. Focus On: Distal locking of intramedullary nails. Journal of Bone and Joint Surgery. 2012; available at <http://www.boneandjoint.org.uk/content/focus/distal-locking-intramedullary-nails>)

Less experienced radiographers however report anxiousness, using adjectives such as "scary" and "daunting" whilst also describing the loneliness of being an "outsider". Satisfaction seemed team dependent, implying drawbacks to being a transient team member.

O2: "There's a particular team in theatre [coughs] that every time I've worked with, I've had a positive experience with ...it's because they see you as the expert in what you do. ...it makes such a difference because if you walk in to that theatre and you see that team's working there you think great, I'm going to have a good day, you know?"

Participants reported improved job satisfaction with experience and offered subjective time-scales for reaching sufficient confidence levels. Self-reliance seemed imperative, regardless of good preceptorship support. Anxiety was normalised by senior radiographers perhaps due to having experienced similar initiations. One participant perceived some seniors' as reluctant to attend theatre but the confidence expressed by more experienced participants suggests this may be part of an informal structure by which newly qualified radiographers gain experience in MDTs and competence with image intensifiers.

O2: "I'm starting to feel more confident in my role but...this has taken me 4 months and I'm still not quite there yet"

O5 "...I have a lot of confidence in...what I know and how to put things across but for someone that's...three, six month qualified...it can be very intimidating"

"Conflict" arose more frequently in Orthopaedics reportedly due to: task pressures, language barriers,¹⁰ and managerial level disagreements. Thwarted attempts at perpetrating power were also prominent. According to Benfari et al. (1986) a power perpetrator's self-regard depends upon their ability to influence a recipient¹⁴ which may further elucidate the comparatively low job satisfaction in Orthopaedics. Surgical authority power and coercive power perpetration by shouting demands and issuing "sarcastic remarks" were also evident in conflict situations:

O2 "...you want to...make sure you're positioned properly, yet you've got somebody becoming impatient and shouting 'Take the image!'"

O3 "... if a surgeon isn't particularly clear...it can be difficult to do what they want...somebody said to me this week... just bring it 'round this way'...well what does that mean?"

O1 "...the only time I've had negative experiences in theatre is when there's been tension between the two departments"

Multidisciplinary Team Radiation Awareness

Results demonstrate consistent reports of inadequately understood radiation protection in orthopaedic theatres:

O1 "I think if it was left to them they wouldn't wear Lead aprons...they don't realise everything else that goes with radiation not just the risks to a developing foetus"

In contrast, significantly fewer negative accounts emerged from Cardiology transcripts and in fact other MDT disciplines autonomously advocate radiation protection principles for visitors. This may be due to the structured training led by radiographers.

C1: "...As radiographers we do actually...hold talks for the nurses... and physiologists...so that they understand the radiation problems"

Orthopaedic teams however only receive unstructured advice, from radiographers who may or may not feel they can offer it thus highlighting a training issue in the area.

O4: "...it's just that they're not taught are they I don't think about radiation? So how are they supposed to know?"

Tables 3 and 4 are representative transcript extracts demonstrating and summarising the different categories:

Summary of Findings

French and Raven described the effectiveness of power from the recipient's impression of the influence attempt²¹ but this study has only explored the effectiveness of power from a radiographic frame of reference. Future research could explore other MDT members' perceptions regarding the radiographer's use of power and also the perspectives of limited-license practitioners, trained with operators' rights as established members of the MDT.³⁸

Leadership is more effective when a perpetrator of power has an awareness of the social bases of power.²² This study should highlight power frameworks operative in MDT scenarios to the radiographic profession. The findings indicate a need for more structured initiations into Orthopaedic theatres for newly qualified radiographers and recommends formal MDT radiation training, preferentially led by radiographers. One long term solution is to professionalise theatre radiography thus formalising an established MDT role with potential to improve power perpetration. Conversely, perhaps radiographers no longer have a role in Orthopaedic theatre. In the past decade there have been movements towards issuing medical and surgical referrers some radiographic competence and limited licences. Theoretical IR(ME)ER training introduces basic radiation protection principles to cardiologists and trauma surgeons.³⁹ In response to economic convenience, often a driver of change, nurses and general practitioners in remote parts of Australia have also been taking on operator and practitioner rights in diagnostic imaging.^{38,40} More recently, it has been proposed that training theatre staff to operate radiographic equipment might improve spinal theatre efficiency by avoiding the need to call an external operator.¹²

Conclusion

The current experience of radiographers and the MDT in Orthopaedic theatre seems suboptimal when compared to Cardiology. Fewer accounts of conflict and thwarted power perpetration suggest those serving as established members of established teams have greater job satisfaction than those serving as transient members. This study will make social bases of power within MDTs transparent to radiographers in MDT scenarios so they may be utilised more effectively, building relationships between radiology and theatre departments. Future research should obtain a more objective perspective by interviewing other MDT members regarding the radiographer's team role. Where radiographers are transient members of MDTs long term professionalization of theatre radiography may facilitate power perpetration with regards to radiographic expertise and professional responsibility – leading to the situation exhibited in Cardiology.

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