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Diagnostic and therapeutic radiography MSc dissertations:

A rich source of clinically relevant
research and development

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Conflicts of Interest

- We have no conflicts of interest to declare for this work

This paper....

- The accomplishments of small-scale dissertation research projects are often underestimated.
- Here we present two recent projects;
 - highlighting their clinical content and worth to inform and encourage both diagnostic and therapeutic radiographers in future studies and careers.
- As this is presented as a pre-recording, please feel free to pause the video in order to read more of the detail on the slides

Background - MSc Dissertation module structure

- Conducted over approximately 12 months
- Part-time study
 - All students are in clinical or other fulltime professional practice whilst undertaking the MSc dissertation module
- Initial design and production of a short proposal (within first two months approx.)
- Research studies (for these two examples); design, permissions, data collection, analysis, write-up of full dissertation (within 8-10 months)
- Two students' examples presented here.....

Anthony's research and results

- Anthony examined preferences and perceptions of final-year UG diagnostic radiographers regarding advanced practice
 - Paper format questionnaire (incl closed and open questions)
 - Also as a link to a Survey Monkey version, disseminated using Social Media (Twitter)
 - Full ethical approval obtained, together with informed consent from participants

Quantitative findings

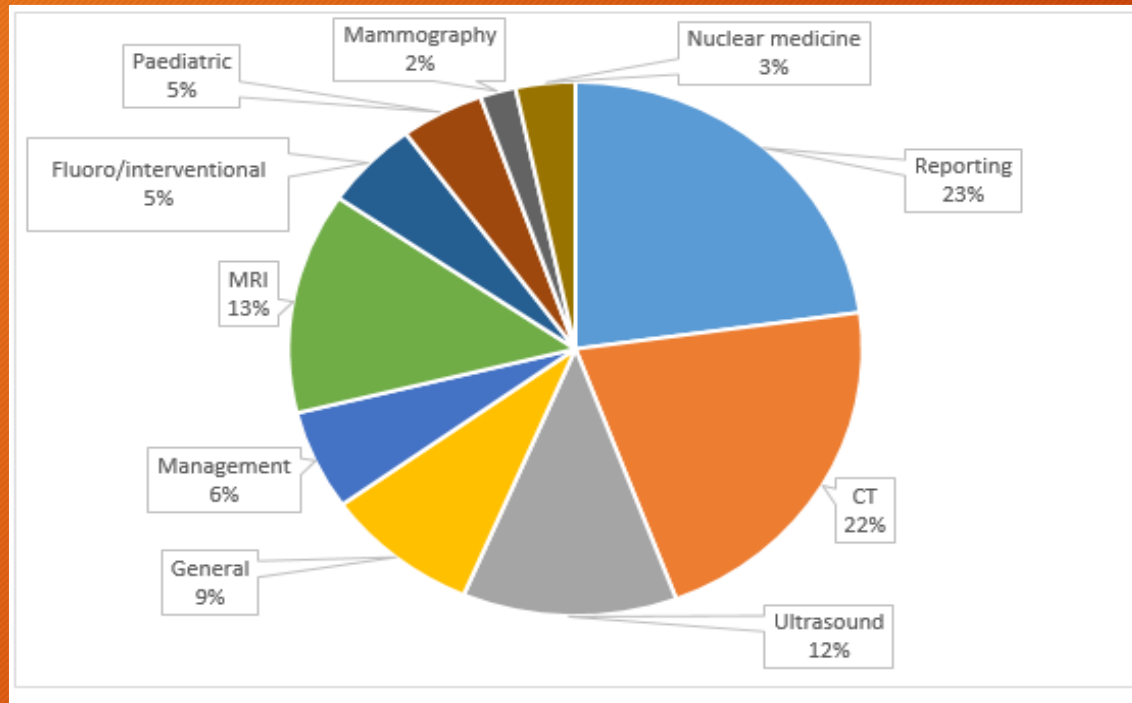


Figure 1. Combined modality preferences (% of total).

- Response rates were 100% (n=34) and (estimated) 2.4% (n=18) for the university-based and Twitter surveys respectively, with no statistically significant difference in participant demographics.
- Combined, the respondents were:
 - predominantly female (65%);
 - had A-level as their highest qualification (71%);
 - of 'school-leaver' age (69%) at the start of the degree.
- The overall combined preference was for reporting (22.8%), CT (21.5%) and MRI (13.4%) [Figure 1].

Quantitative findings

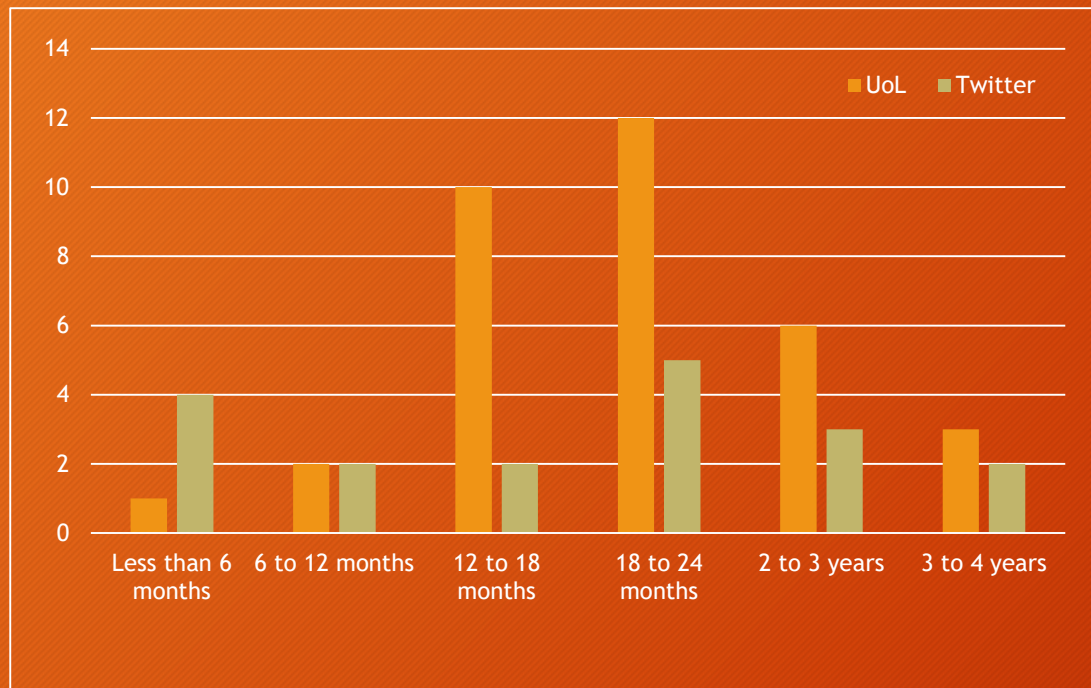


Figure 2. Anticipated time to achieve specialisation.

- 73.5% anticipating specialising in less than 2 years; no respondents anticipated specialising in over 4 years [Figure 2]. (more ambitious than previous research)(see ePoster, UKIO 2020)
- The correlation (Spearman rank) between modality preference and clinical/university experience of the modality was higher for the Twitter cohort (clinical: $r_s = 0.589$; university: $r_s = 0.592$) compared to the university cohort (clinical: $r_s = 0.327$; university: $r_s = 0.371$ respectively). (suggests factors other than experience shape preferences)
- Respondents with A-Levels were significantly more likely ($p=0.039$) to anticipate specialising in less than 2 years for the university cohort;
- Those that had included reporting as a preference were significantly more likely ($p=0.036$) to anticipate qualifying in less than 2 years for the Twitter cohort.

Qualitative findings

Barriers:

- Main perceived barriers to achieving specialisation were **availability** of a position or opportunity in the modality, and the participants **perceived skills**.
- Smaller number of respondents identified training, lack of funding, lack of experience, life events and having to give up other skills as barriers.

Facilitators:

- The main facilitator in achieving specialisation was identified as **experience**;
- A smaller number of respondents identified training opportunities; support and mentorship; the benefits of the role; financial incentives; perceived skills and research into the role as facilitators.

Lauren's research and results

- Study conducted within a single Cancer Centre
- Involved Band 4-6 Therapeutic Radiographers (27, working in treatment delivery)
 - Full ethical approval obtained, together with informed consent from participants

Development of the novel, interactive e-learning package on pelvic RT late effects

- Developed using Articulate 360 software with support from the hospital's blended learning team
- In order to remain engaging for users, interactive material was incorporated including **sliding scales** and **click-to-reveal boxes**
- To demonstrate the impact of late effects on patient QOL, **video clips of patient interviews** were incorporated
- **MCQs** were provided in different formats to stimulate learners and **encourage information retention**, for example Venn diagrams with drag-and-drop answers
- Tips to **encourage staff to discuss late effects** with patients were included, for example the '3 Rs: Remind, Reassure, Reinforce'
- **Asynchronous access** accounted for time constraints within the busy clinical setting

Late Effects of Pelvic Radiotherapy

Patient Experience: Late Effects of Pelvic Radiotherapy

"Information on pelvic radiation disease is out there but as patients we do not have access to it"

"One woman had not left the house for 6 years due to her symptoms – she had withdrawn from her family and social life"

"Difficult for people to talk about pelvic symptoms even to their doctors – we want the medical community to address this, not the patient"

"Symptoms affect every level of your life – social, emotional, financial – withdrawing from social events, quitting jobs"

"Radiation saves lives but radiation also causes physical consequences"

Source = <https://www.youtube.com/watch?v=ZHT1S88Wkg>

Late Effects of Pelvic Radiotherapy

Information Giving: The Role of Radiotherapy Staff

Click the 3 Rs for details of **Things to consider for last day chats**:

- Remind** Remind patients that whilst symptoms usually improve within 4-6 weeks, there is a possibility to experience symptoms again years down the line.
- Reassure** Reassure patients that these symptoms CAN BE MANAGED, and encourage patients to inform their GP or self-refer back to their consultant oncologist if they experience any symptoms.
- Reinforce** Reinforce contact details for the department and follow up clinics, as well as the Late Effects Clinic at RCC when it opens in the future.

The way in which this information is delivered is crucial to ensuring patients are made aware of late effects without inducing fear or anxiety. This knowledge can empower patients to challenge GPs if they are not being given appropriate aftercare/referrals, and enable patients to recognise symptoms and self-refer if necessary.

Late Effects of Pelvic Radiotherapy

Late Effect Symptoms

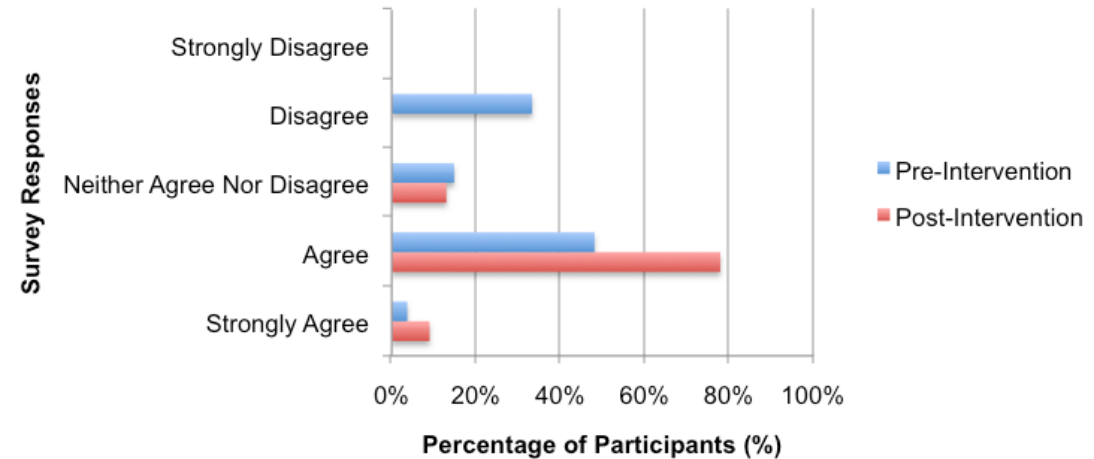
Drag the labels to the correct areas of the Venn diagram and then click 'Submit'

Correct
That's right!
You selected the correct response.
Continue

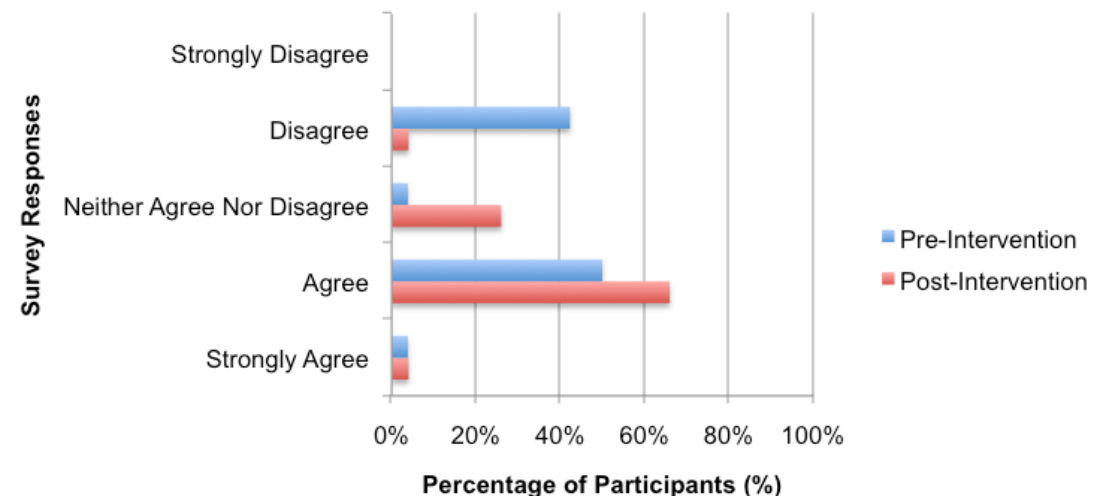
Quantitative Results

- Pre- and post-intervention online questionnaires were created using SurveyMonkey software
- The questionnaires consisted of 9 statements on pelvic RT late effects to determine participants' knowledge, confidence and views on responsibility in delivering such information
- A Wilcoxon signed-rank test was conducted on paired pre and post data (n=23) with a value of $p < 0.05$ considered significant
- **Statistically significant** improvements were observed in **knowledge, confidence and responsibility** surrounding pelvic RT late effects ($p < 0.05$)

Q1. 'I have a good knowledge of the impact of late effects of pelvic radiotherapy including symptoms, onset, incidence, etc'.



Q2. 'I feel confident about discussing late effects of pelvic radiotherapy with patients receiving this treatment'.



Qualitative Results

- Ten staff were interviewed in focus groups pre- and post-intervention
- Five key themes were derived from transcribed interview responses:
 - Knowledge/Confidence
 - Consent
 - Professional Responsibility
 - Gaps within Practice
 - Time & Space
- Following e-learning, there was a clear transition in staff perceptions of their **responsibility as radiographers** to inform patients of late effects of pelvic RT
- Staff reported **increased knowledge and confidence** surrounding late effects post-intervention, however additional face-to-face sessions may be required to further increase confidence.

"I've now found myself on the last day going through the side effects with the patients in more detail"


"I have been more aware of it and I feel that I mention it more at the end of treatment now. The e-learning has definitely made me more aware about telling patients."

"I previously thought 'oh, they should have been told by the doctor'. Now, I think as I feel more confident, there's no reason we can't tell patients too".


"I still think it's the doctor's job at consent...but I think it's our responsibility as we're the last point of contact before they go, to just refresh them."

Conclusions and Wider Impact

- The novel, interactive e-learning intervention proved effective in **increasing knowledge and awareness** of pelvic RT late effects amongst therapeutic radiographers.
- The e-learning also led to improvements in staff perceptions of their **professional responsibility** in providing such information to patients, with self-reported changes to information giving practice by staff.
- Whilst many staff gained **confidence** in discussing late effects following the e-learning, further face-to-face sessions to compliment the e-learning may be required to achieve longstanding improvements.
- Participants evaluated the e-learning and praised its **ease of use, flexibility and effectiveness in improving their skills**.



The e-learning has now been disseminated to all hospitals in the regional 'Cancer Alliance', improving knowledge and awareness of pelvic RT late effects across a range of professions, including at a new 'Radiotherapy Late Effects Clinic'



Recommendations from the project have also led to the introduction of dedicated modules on the late effects of radiotherapy within a novel MSc programme at a UK University, providing further post-registration education for the radiotherapy workforce.

Overall Results and Conclusions

- Outputs

- Anthony

- Poster at UKIO 2020
 - Four publications: two papers outlining the qualitative (submitted) and quantitative analyses of responses; two technical notes examining mathematical stress-testing of the statistical results for such cohort sizes and the elements of Social Media Responses

- Lauren

- Poster Presentation - University of Liverpool Healthcare Professionals Virtual Research Festival
 - Video presentation at BIR Annual RT and Oncol Meeting 2021
 - Reported in Journal Article by HealthManagement.Org, Mar 2021
 - Paper submitted for ESTRO 2021 Conference
 - Three publications: two papers will highlight the qualitative (submitted) and quantitative analyses; a technical note will demonstrate the eLearning pedagogic background, design and value for other disciplines.

- Influence

- Anthony's work is helping inform curriculum development for future student diagnostic radiographers
 - Lauren's eLearning tool is now used in clinic, enabling change in staff perceptions and quality of care for patients' late effects following pelvic radiotherapy. The local Cancer Alliance are now using the package in a newly-established 'Late Effects Clinic' for nurses and other healthcare professionals.

- These two, small-scale MSc dissertation projects demonstrate achievements of both clinical and academic worth and should provide encouragement for future diagnostic and therapeutic radiographers

Thank you for your attention...contacts

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- Many thanks to...
 - Liam Kind, Lancashire Teaching Hospitals NHS Trust
- Links
 - Anthony - UKIO 2020 ePoster (p136)
 - <https://edition.pagesuite.com/html5/reader/production/default.aspx?pubname=&pubid=86b914f4-de3a-4670-99f7-cf5f0c90c5f6>
 - Lauren - #BIRTO21 Video presentation
 - <https://www.mybir.org.uk/s/poster-details?recordId=a3x3Y000000NXiJQAW>



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