



Paediatric trainee experience of multi-site audit and research (PEAR), a cross sectional London REACH network study

Dore R¹, D'Souza M¹, Ghosh N¹, Carr D¹ & Loucaides E¹

1. The London Research, Evaluation and Audit for Child Health (REACH) Network

Corresponding Author:

Full Name: Eva Loucaides

Email Address: reachnetworkldn@gmail.com

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Abstract

Objectives

To evaluate the existing experiences and perceived access to research and QI (quality improvement) projects for paediatric trainees in London.

Methods

A cross-sectional survey was designed by a subgroup of the London REACH (Research, Evaluation and Audit in Child Health) Network central committee and disseminated to paediatric trainees in London (including those Out of Programme) between July-September 2022. Descriptive comparative analysis between trainee subgroups was undertaken for quantitative data. A thematic analysis was undertaken for qualitative data.

Results

142 responses were received and categorised by demographic (age, gender, ethnicity, primary medical qualification country) and training data (integrated academic training, subspecialty training, less than full time). Strikingly, 89% of trainees wanted more access to research during training. Despite this, 23% reported having capacity for research and only 16% of research activity was undertaken during paid time. 35% had difficulty in identifying research opportunities and supervisors. 99% had experience in local QI projects compared to 37% for multi-site QI projects. Subgroups with more protected time demonstrated greater attainment and access.

Qualitative analysis identified three key themes: recognising the importance of paediatric research, barriers to research within training, and wanting integrated research during training. Notable barriers included variable research culture and limitations in time and commitment.

Conclusions

Trainees desired greater involvement in research related activities yet demonstrated difficulty in accessing opportunities. Therefore, the provision of equitable access to research will require expansion of integrated protected time for all trainees and commitment to developing a positive culture for research and quality improvement.

Introduction

Research and QI (quality improvement) are important aspects of paediatric training. Research activities enhance critical thinking, the ability to analyse information, trends, and patterns and encourages doctors to identify and answer relevant unanswered clinical questions. Involvement in QI improves the likelihood of meeting and surpassing the expected standards of care – either at a local or multi-site level. Paediatric trainees work at the forefront of clinical care and are exposed to variations in clinical practice during their rotational placements across different trusts and departments. They are thus uniquely placed to identify relevant unanswered questions that matter to our patients and might be addressed through research or QI projects, to improve the discovery and implementation of evidence-based healthcare.

A comprehensive paediatric training programme must equip trainees with research skills to practise evidence-based medicine and actively contribute to child health research to drive forward improvements for the children and young people we look after. The new paediatric postgraduate training pathway, Progress+, active from September 2023, aligns with the GMC's Generic Professional Capabilities (GPC) framework including a dedicated domain for capabilities in research and scholarship.^{1,2} However, barriers to opportunities and exposure to research and multi-site QI projects include time constraints exacerbated by workforce shortages, limited guidance on how to get involved in research and frequent workplace rotations.³⁻⁵ In run-through training with rotational clinical placements, there are no mandatory periods of research experience.

One attempt to improve access to academic pursuits within paediatric training has been via the IAT (integrated academic training) scheme; this NIHR-funded joint academic and clinical training pathway provides trainees with protected time for research and funding for conferences and postgraduate degrees. Whilst there is no additional IAT curriculum, local requirements and monitoring vary and there is an expectation for progression into a PhD.⁶ However, these posts are extremely competitive and current solutions are only able to support a small number of paediatric trainees. Some trainees acquire research skills by taking time Out of Programme (OOP) or by undertaking a postgraduate degree.

Many UK regions have endeavoured to provide research skills training or opportunities. This has taken many formats within paediatrics which include the provision of journal clubs, workshops, networking events, engagement activities, and basic research skills training.^{4,7,8} Increasingly this is being conducted as part of regional, trainee-led collaboratives. The feasibility of these collaboratives has been clearly demonstrated within the field of surgery with resulting high-quality outputs, and this approach is increasingly being adopted in paediatrics.^{3,9-11} The London REACH (Research, Evaluation and Audit in Child Health) Network was established in 2021 by paediatric trainees to provide support and opportunities for collaborative engagement in research and QI.¹²

The PEAR (Paediatric Trainee Experience of Multi-site Audit and Research) study aimed to gather cross-sectional data on London School of Paediatrics (LSP) trainees' existing experience and perceived access to research (both during time in training and during OOP) and quality improvement projects (both single and multi-centre).

Methods

A cross-sectional survey was designed by a subgroup of the London REACH (Research, Evaluation and Audit in Child Health) Network central committee and disseminated to paediatric trainees in London (including those Out of Programme). Clinical fellows, foundation doctors and other specialty

doctors were excluded. The online survey was disseminated between July-September 2022 both centrally via Health Education England (HEE) to reach trainees Out of Programme (OOP) and through REACH local leads at each London NHS trust. This survey (Supplementary Material 1) asked about experiences and perceived exposures relating to research and quality improvement and provided white-space answers for further elaboration and commentary.

Trainee demographic and training data was collected and included gender, ethnicity, age, location, IAT status, location of primary medical qualification (UK or non-UK), training percentage (full time versus less than full time (LTFT)), and training specialty (subspecialty trainee, general trainee planning to apply for subspecialty training, or general trainee not applying for nor in subspecialty training). Quantitative data was analysed via Excel and R. Qualitative data was reviewed using thematic analysis by three researchers with collation of pertinent themes.

The Health Research Authority decision tool confirmed that this study is not considered research and thus no Research and Ethic Committee review was required. All participants provided consent for inclusion of their anonymised data.

Results

142 individual responses were received (from 538 contacted paediatric trainees, response rate 26%). Subcategory data is presented in Table 1.

Quantitative Results

Results related to academic achievement are demonstrated in table 2. One of the commonest achievements amongst trainees was a poster presentation, yet

Table 1. Participant Demographics. Participant data was categorised by IAT (integrated academic training) status, gender, PMQ (primary medical qualification), ethnicity, training %, subspecialty status, training grade, age, and location in London. Subcategory abbreviations include IMG (international medical graduate), LTFT (less than full time), FT (full time), App. (future subspecialty applicant, not yet in subspecialty training).

Category	Sub-category	No.	Percent
IAT	Yes	20	14.10%
	No	122	85.90%
Gender	Male	39	27.70%
	Female	102	72.30%
PMQ	IMG	17	12.00%
	UK	125	88.00%
Ethnicity	White	87	62.60%
	Asian	29	20.90%
	Black	5	3.60%
	Mixed	13	9.40%
	Other	5	3.60%
Training %	F	82	57.70%
	LTFT	60	42.30%
Subspecialty trainee	Yes	29	20.60%
	App.	47	33.30%
	No	65	46.10%
Grade	ST1-3	59	41.50%
	ST4-5	46	32.40%
	ST6-8	37	26.10%
Age (years)	25-34	106	75.20%
	35-44	34	24.10%
	45-54	1	0.70%
Location (in London)	North West	21	14.80%
	South	60	42.30%
	North East & Central	60	42.30%
	Pan-London	1	0.70%

this was particularly high for IAT and subspecialist trainees. IAT, LTFT, and subspecialty trainees reported more involvement with oral presentation. Men and trainees of white ethnicity were also more likely to be involved in oral presentation. 69% of trainees held (or were undertaking) an additional qualification. IAT trainees demonstrated multiple additional qualifications, compared to trainees with non-UK PMQs (primary medical qualification) who were the least likely to undertake them. Whilst 65% of trainees reported one or more peer-reviewed publications, the rates of involvement were higher for IAT, LTFT, and subspecialty trainees. Senior registrars (ST6-8) and older participants demonstrated the broadest experience of publishing different article types, followed by subspecialty trainees. Whilst there was variability between subgroups in the areas of academic achievement, those on IAT pathways consistently reported more, and more varied academic achievements.

Table 2: Academic Achievements. Survey findings related to academic achievements. Participant data is categorised by IAT (integrated academic training) gender, PMQ (primary medical qualification), ethnicity, training %, and subspecialty status. The percentage of participants for each subcategory is presented as a heatmap with deeper colours corresponding to a higher percentage. Responses are coloured red (negative academic output/experience), amber (neutral), or green (positive academic output/experience). Subcategory abbreviations include IMG (international medical graduate), LTFT (less than full time), FT (full time), App. (future subspecialty applicant, not yet in subspecialty training).

	IAT		Gender		PMQ		Ethnicity					Training %		Subspecialty Trainee			Total	
	Yes	No	Male	Female	IMG	UK	White	Asian	Black	Mixed	Other	LTFT	FT	Yes	App.	No		
No. additional qualifications																		
0	0.0%	36.1%	20.5%	34.3%	52.9%	28.0%	29.9%	31.0%	60.0%	15.4%	40.0%	28.3%	32.9%	17.2%	31.9%	36.9%	31.0%	
1-2	75.0%	61.5%	76.9%	58.8%	47.1%	65.6%	63.2%	62.1%	40.0%	84.6%	60.0%	60.0%	65.9%	72.4%	59.6%	61.5%	63.4%	
3-4	25.0%	2.5%	2.6%	6.9%	0.0%	6.4%	6.9%	6.9%	0.0%	0.0%	0.0%	11.7%	1.2%	10.3%	8.5%	1.5%	5.6%	
Poster presentations (no. activities)																		
0	0.0%	13.1%	7.7%	12.7%	23.5%	9.6%	9.2%	13.8%	40.0%	0.0%	20.0%	6.7%	14.6%	0.0%	8.5%	18.5%	11.3%	
1-3	60.0%	69.7%	74.4%	65.7%	58.8%	69.6%	69.0%	69.0%	60.0%	76.9%	40.0%	68.3%	68.3%	69.0%	66.0%	69.2%	68.3%	
4-6	40.0%	17.2%	17.9%	21.6%	17.6%	20.8%	21.8%	17.2%	0.0%	23.1%	40.0%	25.0%	17.1%	31.0%	25.5%	12.3%	20.4%	
Oral presentations (no. activities)																		
0	0.0%	54.1%	38.5%	49.0%	47.1%	46.4%	40.2%	55.2%	60.0%	61.5%	40.0%	41.7%	50.0%	31.0%	36.2%	61.5%	46.5%	
1-2	80.0%	39.3%	59.0%	40.2%	47.1%	44.8%	48.3%	37.9%	40.0%	38.5%	60.0%	41.7%	47.6%	51.7%	53.2%	35.4%	45.1%	
3	20.0%	6.6%	2.6%	10.8%	5.9%	8.8%	11.5%	6.9%	0.0%	0.0%	0.0%	16.7%	2.4%	17.2%	10.6%	3.1%	8.5%	
Publications (no. types)																		
0	10.0%	39.3%	28.2%	32.4%	29.4%	36.0%	32.2%	31.0%	80.0%	53.8%	0.0%	25.0%	42.7%	20.7%	31.9%	44.6%	35.2%	
1-2	50.0%	50.8%	53.8%	54.9%	64.7%	48.8%	48.3%	65.5%	20.0%	46.2%	80.0%	55.0%	47.6%	48.3%	55.3%	49.2%	50.7%	
3-4	35.0%	7.4%	15.4%	9.8%	0.0%	12.8%	16.1%	0.0%	0.0%	0.0%	20.0%	16.7%	7.3%	24.1%	10.6%	6.2%	11.3%	
5	5.0%	2.5%	2.6%	2.9%	5.9%	2.4%	3.4%	3.4%	0.0%	0.0%	0.0%	3.3%	2.4%	6.9%	2.1%	0.0%	2.8%	
No. respondents	20	122	39	102	17	125	87	29	5	13	5	60	82	29	47	65	142	

Results relating to research involvement are demonstrated in table 3. IAT trainees reported on average involvement in almost double the number of research activities than non IAT trainees and 17% of the latter reported no involvement at all. Women and trainees with non-UK PMQs were less likely to report research involvement. On average, trainees reported that they only conducted 16% of their research during paid working hours. IAT trainees reported the highest amount of paid research activity (27%). Men, senior registrars, subspecialty trainees, and trainees of Asian ethnicity also reported more paid research activity. Only 23% of trainees felt like they had the capacity to conduct research alongside their training. IAT trainees were the most likely to feel that they had such capacity whilst senior trainees felt particularly unlikely to have capacity.

Table 3. Research experience. Survey findings related to research experience. Participant data is categorised by IAT (integrated academic training) gender, PMQ (primary medical qualification), ethnicity, training %, and subspecialty status. The percentage of participants for each subcategory is presented as a heatmap with deeper colours corresponding to a higher percentage. Responses are coloured red (negative academic output/experience), amber (neutral), or green (positive academic output/experience). Subcategory

abbreviations include IMG (international medical graduate), LTFT (less than full time), FT (full time), App. (future subspecialty applicant, not yet in subspecialty training).

	IAT		Gender		PMQ		Ethnicity					Training %		Subspecialty Trainee			Total
	Yes	No	Male	Female	IMG	UK	White	Asian	Black	Mixed	Other	LTFT	FT	Yes	App.	No	
Good Clinical Practice course																	
Yes	65.0%	48.4%	56.4%	48.0%	58.8%	49.6%	51.7%	44.8%	20.0%	53.8%	60.0%	50.0%	51.2%	58.6%	61.7%	38.5%	50.7%
No	35.0%	51.6%	43.6%	52.0%	41.2%	50.4%	48.3%	55.2%	80.0%	46.2%	40.0%	50.0%	48.8%	41.4%	38.3%	61.5%	49.3%
No. research activities																	
0	0.0%	17.2%	5.1%	18.6%	23.5%	13.6%	10.3%	10.3%	60.0%	30.8%	20.0%	15.0%	14.6%	10.3%	14.9%	16.9%	14.8%
1-3	5.0%	44.3%	46.2%	35.3%	41.2%	38.4%	37.9%	44.8%	20.0%	38.5%	40.0%	40.0%	37.8%	34.5%	36.2%	43.1%	38.7%
4-6	55.0%	28.7%	30.8%	33.3%	23.5%	33.6%	34.5%	31.0%	20.0%	23.1%	40.0%	30.0%	34.1%	34.5%	34.0%	30.8%	32.4%
7-8	40.0%	9.8%	17.9%	12.7%	11.8%	14.4%	17.2%	13.8%	0.0%	7.7%	0.0%	15.0%	13.4%	20.7%	14.9%	9.2%	14.1%
Research % in paid hours*																	
0	20.0%	48.3%	34.2%	48.5%	43.8%	44.2%	42.5%	39.3%	40.0%	63.6%	50.0%	39.7%	47.4%	32.1%	33.3%	58.1%	44.1%
10-30	45.0%	40.5%	44.7%	39.2%	43.8%	40.8%	43.7%	39.3%	60.0%	27.3%	50.0%	50.0%	34.6%	57.1%	51.1%	27.4%	41.2%
40-60	30.0%	6.9%	15.8%	8.2%	6.3%	10.8%	10.3%	14.3%	0.0%	0.0%	0.0%	6.9%	12.8%	7.1%	11.1%	9.7%	10.3%
70-90	5.0%	0.9%	0.0%	2.1%	0.0%	1.7%	1.1%	3.6%	0.0%	0.0%	0.0%	0.0%	2.6%	0.0%	2.2%	1.6%	1.5%
100	0.0%	3.4%	5.3%	2.1%	6.3%	2.5%	2.3%	3.6%	0.0%	9.1%	0.0%	3.4%	2.6%	3.6%	2.2%	3.2%	2.9%
"I have capacity for research"																	
Agree	35.0%	21.3%	25.6%	22.5%	29.4%	22.4%	26.4%	17.2%	20.0%	15.4%	40.0%	21.7%	24.4%	24.1%	25.5%	21.5%	23.2%
Neutral	25.0%	13.9%	15.4%	15.7%	11.8%	16.0%	11.5%	27.6%	20.0%	23.1%	0.0%	10.0%	19.5%	10.3%	21.3%	13.8%	15.5%
Disagree	40.0%	64.8%	59.0%	61.8%	58.8%	61.6%	62.1%	55.2%	60.0%	61.5%	60.0%	68.3%	56.1%	65.5%	53.2%	64.6%	61.3%
No. respondents.	20	122	39	102	17	125	87	29	5	13	5	60	82	29	47	65	142

Results related to research culture are shown in table 4. Whilst 44% of trainees felt able to identify research opportunities, this was 80% for IAT trainees. Similarly, 45% of trainees felt like they could identify appropriate supervisors or mentors. More positive responses were received from IAT trainees, full time trainees, trainees with UK PMQs, and those planning to apply to subspecialty training. Overall, 89% of trainees reported wanting more access to research training and research activities during their paediatric training. This was generally a shared sentiment throughout the subgroups, although trainees with non-UK PMQs were less likely to respond positively. Notably, in the latter group 18% reported that they did not want more access to research.

Table 4. Research Culture. Participant data is categorised by IAT (integrated academic training) gender, PMQ (primary medical qualification), ethnicity, training %, and subspecialty status. The percentage of participants for each subcategory is presented as a heatmap with deeper colours corresponding to a higher percentage. Responses are coloured red (negative academic output/experience), amber (neutral), or green (positive academic output/experience). Subcategory abbreviations include IMG (international medical graduate), LTFT (less than full time), FT (full time), App. (future subspecialty applicant, not yet in subspecialty training).

	IAT		Gender		PMQ		Ethnicity					Training %		Subspecialty Trainee			Total
	Yes	No	Male	Female	IMG	UK	White	Asian	Black	Mixed	Other	LTFT	FT	Yes	App.	No	
"I can identify research opportunities"																	
Agree	80.0%	37.7%	53.8%	40.2%	47.1%	43.2%	43.7%	55.2%	20.0%	30.8%	40.0%	31.7%	52.4%	37.9%	53.2%	40.0%	43.7%
Neutral	10.0%	22.1%	17.9%	20.6%	23.5%	20.0%	21.8%	13.8%	20.0%	15.4%	40.0%	25.0%	17.1%	24.1%	17.0%	21.5%	20.4%
Disagree	10.0%	40.2%	28.2%	39.2%	29.4%	36.8%	34.5%	31.0%	60.0%	53.8%	20.0%	43.3%	30.5%	37.9%	29.8%	38.5%	35.9%
"I can identify supervisors**"																	
Agree	50.0%	41.3%	51.3%	43.6%	35.3%	46.8%	47.7%	48.3%	20.0%	38.5%	40.0%	39.0%	50.0%	34.5%	55.3%	43.8%	45.4%
Neutral	10.0%	21.5%	12.8%	21.8%	29.4%	18.5%	20.9%	17.2%	20.0%	7.7%	40.0%	22.0%	18.3%	27.6%	23.4%	20.3%	19.9%
Disagree	40.0%	37.2%	35.9%	34.7%	35.3%	34.7%	31.4%	34.5%	60.0%	53.8%	20.0%	39.0%	31.7%	37.9%	21.3%	35.9%	34.8%
"I want access to research"																	
Agree	90.0%	88.5%	87.2%	89.2%	76.5%	90.4%	90.8%	82.8%	100.0%	84.6%	100.0%	86.7%	90.2%	82.8%	93.6%	89.2%	88.7%
Neutral	10.0%	8.2%	10.3%	7.8%	5.9%	8.8%	8.0%	10.3%	0.0%	7.7%	0.0%	11.7%	6.1%	13.8%	2.1%	10.8%	8.5%
Disagree	0.0%	3.3%	2.6%	2.9%	17.6%	0.8%	1.1%	6.9%	0.0%	7.7%	0.0%	1.7%	3.7%	3.4%	4.3%	0.0%	2.8%
No. respondents.	20	122	39	102	17	125	87	29	5	13	5	60	82	29	47	65	142

Results related to quality improvement are demonstrated in Table 5. Almost all trainees have been involved in a QI project. Subspecialty trainees were most likely to report involvement in all QI-related activities whilst the least likely included IAT trainees, trainees with non-UK PMQs, and those not planning to undertake subspecialty training. 37% of trainees reported involvement in multi-site QI projects. Men and senior trainees undertook a higher number of activities relating to multi-site QI projects, whilst involvement in multiple activities was generally low for all other subgroups. 34% of trainees reported having completed a course related to audit, QI, or service improvement with examples including postgraduate certificates and educational programmes such as London School of Paediatrics’ QI Change Champion Course.¹³

Table 5. Quality Improvement. Participant data is categorised by IAT (integrated academic training) gender, PMQ (primary medical qualification), ethnicity, training %, and subspecialty status. The percentage of participants for each subcategory is presented as a heatmap with deeper colours corresponding to a higher percentage. Responses are coloured red (negative output/experience), amber (neutral), or green (positive output/experience). Subcategory abbreviations include IMG (international medical graduate), LTFT (less than full time), FT (full time), App. (future subspecialty applicant, not yet in subspecialty training).

	IAT		Gender		PMQ		Ethnicity					Training %		Subspecialty Trainee			Total	
	Yes	No	Male	Female	IMG	UK	White	Asian	Black	Mixed	Other	LTFT	FT	Yes	App.	No		
Course in audit/QI/service improvement																		
Yes	35.0%	33.6%	35.9%	33.3%	47.1%	32.0%	37.9%	27.6%	40.0%	23.1%	20.0%	36.7%	31.7%	44.8%	29.8%	32.3%	33.8%	
No	65.0%	66.4%	64.1%	66.7%	52.9%	68.0%	62.1%	72.4%	60.0%	76.9%	80.0%	63.3%	68.3%	55.2%	70.2%	67.7%	66.2%	
Type of QI involvement																		
Local	70.0%	66.4%	61.5%	68.6%	76.5%	65.6%	64.4%	72.4%	100.0%	53.8%	80.0%	56.7%	74.4%	51.7%	61.7%	76.9%	66.9%	
Multisite	5.0%	3.3%	7.7%	2.0%	5.9%	3.2%	4.6%	0.0%	0.0%	7.7%	0.0%	1.7%	4.9%	0.0%	4.3%	4.6%	3.5%	
Both	25.0%	30.3%	30.8%	29.4%	17.6%	31.2%	31.0%	27.6%	0.0%	38.5%	20.0%	41.7%	20.7%	48.3%	34.0%	18.5%	29.6%	
Local QI involvement (no. activities)																		
0	0.0%	0.8%	2.6%	0.0%	0.0%	0.8%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	2.1%	0.0%	0.7%	
1-3	15.0%	19.7%	10.3%	21.6%	47.1%	15.2%	14.9%	24.1%	80.0%	7.7%	20.0%	16.7%	20.7%	3.4%	23.4%	23.1%	19.0%	
4-6	75.0%	59.0%	66.7%	59.8%	41.2%	64.0%	63.2%	62.1%	20.0%	69.2%	40.0%	66.7%	57.3%	62.1%	57.4%	64.6%	61.3%	
7-8	10.0%	20.5%	20.5%	18.6%	11.8%	20.0%	20.7%	13.8%	0.0%	23.1%	40.0%	16.7%	20.7%	34.5%	17.0%	12.3%	19.0%	
Multisite QI involvement (no. activities)																		
0	70.0%	61.5%	56.4%	64.7%	70.6%	61.6%	59.8%	65.5%	100.0%	53.8%	80.0%	55.0%	68.3%	44.8%	59.6%	72.3%	62.7%	
1-3	20.0%	30.3%	28.2%	29.4%	23.5%	29.6%	31.0%	27.6%	0.0%	30.8%	20.0%	35.0%	24.4%	37.9%	34.0%	21.5%	28.9%	
4-6	5.0%	3.3%	7.7%	2.0%	5.9%	3.2%	4.6%	0.0%	0.0%	7.7%	0.0%	3.3%	3.7%	3.4%	2.1%	4.6%	3.5%	
7-8	5.0%	4.9%	7.7%	3.9%	0.0%	5.6%	4.6%	6.9%	0.0%	7.7%	0.0%	6.7%	3.7%	13.8%	4.3%	1.5%	4.9%	
No. respondents	20	122	39	102	17	125	87	29	5	13	5	60	82	29	47	65	142	

Qualitative Results

From qualitative results (Supplementary Material 2), three main themes emerged (Figure 1): the importance of research, barriers to research and research integration into the training programme.

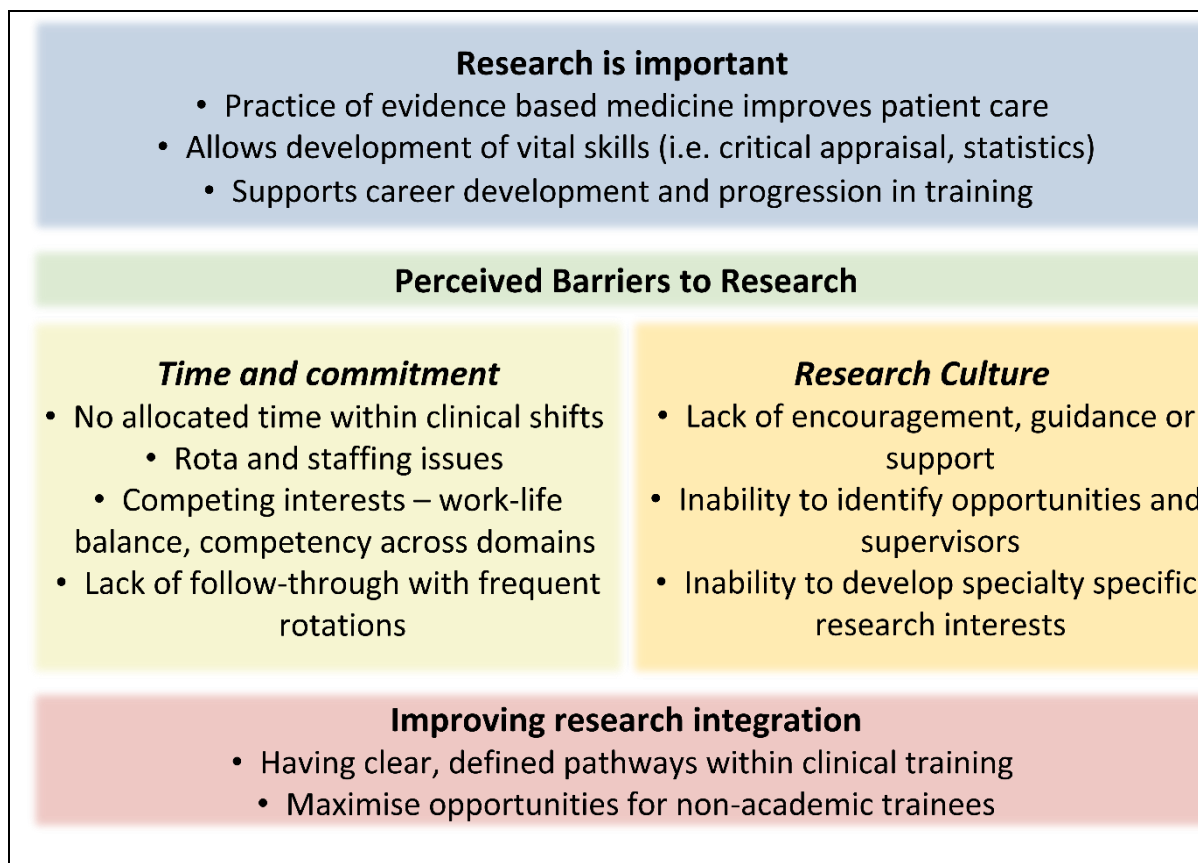


Figure 1. The key shared qualitative themes with sub-themes and descriptive notes as determined by qualitative analysis of participant open text data.

Respondents acknowledged the importance of research with regards to applying evidence-based medicine in order to provide the best possible patient care. The benefits of research skills such as critical appraisal and understanding statistics were highlighted. Participants noted that research skills and publications would be perceived favourably when applying for subspecialty posts.

Several barriers to research were identified including lack of time due to clinical work, staff shortages and rota pressures. Study participants reported that research had to be conducted outside working hours which was therefore difficult for those with families or a long commute. The financial implications of research were identified as respondents considered working LTFT or taking time out of programme to carry out research. The need for adequate remuneration for time spent conducting research was repeatedly highlighted.

Research culture was voiced as another barrier to research, with doctors reportedly struggling to find adequate support or to identify appropriate supervisors. Furthermore, survey participants reported low confidence to approach supervisors and lack of follow through once contact was made. It was noted that identification of research opportunities varied with speciality and individual departments; it was felt that these opportunities would be more accessible in a tertiary setting compared to a district general hospital.

Research integration within paediatric training was suggested as a possible solution to some of the perceived barriers. In particular, doctors were keen to see options for non-academic trainees to participate in research in a clearly defined pathway or rotation.

Discussion

This study provided insight into the achievements and experiences of London paediatric trainees regarding research and QI. We found high variability of these experiences between different trainee categories. Expectedly, IAT, senior, and subspecialty trainees demonstrated increased research exposure and output. Nonetheless, we found that trainees overwhelmingly appreciated the importance of research and QI and called for increased access. Despite this, we identified key barriers that included the time, cost and requirement for a supportive culture. Finally, we found that trainees suggested the need for increasing integration of research into the paediatric training curriculum.

Research opportunities are mostly aimed at senior and sub-speciality trainees.^{5,14} Junior trainees have reported less involvement with trainee-led research collaboratives.³ This could be explained by other commitments such as completion of membership exams. Whilst integrated academic training time has been deemed transformative for involving trainees in research, there are ongoing concerns regarding inequalities within academia.^{15,16} However, our study has clearly demonstrated that many trainees crave greater access to research and QI experiences. Some trainees called for more formal academic posts, considering the prevalence of clinical academics has fallen.¹⁷ Others highlighted the need for exposure outside of the formal IAT pathway. Regardless of format, there is a clear and prescient need for improved integration, alignment, and encouragement of research and QI within the paediatric training programme.

Our results are consistent with a previous trainee survey suggesting that men were more likely to be involved in research activity.⁵ Women are increasingly entering medicine and account for 77% of paediatric trainees in London, yet they remain under-represented in academic medicine.^{15,18–20} Potential explanations included lack of female mentors in academic positions as well as women being more likely to have familial responsibilities, maternity leave and part-time working.²¹ Facilitated peer mentorship programmes developed for women have proven successful in promoting academia.²² Fair return to work practices after maternity leave could also contribute to better opportunities for research.¹⁸ Otherwise, LTFT training is increasingly common among paediatric trainees. In 2012, 37.7% of paediatric trainees were working less than full time, a number that is expected to increase over time.²³ There is limited data on research involvement of LTFT trainees. In this aspect, our categorised trainee data is valuable in providing insight to LTFT training – with most research conducted outside of paid hours.

International Medical Graduates face unique challenges during their training, and this could potentially contribute to differential attainment within this cohort.²⁴ This gap is significant in subspecialty and consultant recruitment where research competencies contribute to shortlisting requirements.²⁵ A survey of 45 IMG trainees in West Midlands, UK, showed minimal research experience and publication attainment.²⁶ Our survey supported these findings. Lack of achievements could be accounted for by visa requirements to pursue courses and higher non-UK/EU course fees. Unfamiliarity with UK training assessments, recruitment processes, and research landscapes are an additional risk.²⁷

The cost of time dedicated to research was a key theme identified in qualitative analysis. However, it is already set out in the RCPCH Trainee Charter that ‘trainees expect to have adequate time within their work schedule to complete ‘Supporting Professional Activities’ (SPAs) which should be a minimum of eight hours a month for ST1-3 trainees and 16 hours a month for ST4 and higher trainees.²⁸ However, our responses suggest that trainees are not finding adequate time within their work schedule to undertake research. Research culture was also identified as a key barrier. Similar results have been found previously, where paediatric trainees reported difficulty identifying opportunities for research involvement, and those that were available were not properly advertised.⁵

A particular strength of this research is the integration of quantitative and qualitative data. This not only provided a comprehensive outlook of the research experiences of paediatric trainees, but also allowed understanding of the motivations, barriers, and thoughts regarding this. However, in view of the relatively small subcategory response numbers, there was limited power to provide analytical statistics. The low response rate was most identifiable for ethnicity subcategories within which there particularly few trainees selecting their ethnicity as Black or Other. Therefore, whilst we have presented quantitative data, further deep qualitative work may be required to fully understand the experiences of these trainees. This survey has depended on self-reported data which itself may invoke biases concerning achievements. However, the anonymisation provided by the survey approach reduces the likelihood of social desirability bias – as demonstrated by the honest and frequent reflections from participants in the extended space answers. Additionally, this study was limited to the paediatric trainees within London and results may be less applicable to regions of the UK less urbanised or with fewer tertiary centres.

Overall, our study has identified limitations and barriers for junior doctors to access research within their run-through training, it has also highlighted opportunities that could be explored to mitigate them. A lot of the research-protective training processes are built within the integrated academic training pathway, yet the provision of this scheme is limited. The main theme from our study was that the overwhelming majority of trainees wanted more access to research and quality improvement via increased integration of these activities within their clinical work. Hence, it seems pertinent that run-through paediatric training should have protected research-directed activities embedded in the pathway. Our recommendations of achieving this are as follows -

1. Capacity for research:

- Protected time for research and QI work/SPA time in rota as per RCPCH Trainee Charter.
- Encouragement of exception reporting when protected time is not granted.

2. Integration of research activities within clinical work:

- Integrate research with supervised learning events – mapping the curriculum domain on research during case-based discussions.
- Supervisors to support evidence-based discussions during ward rounds and case presentations.

3. Embed a culture of research through education, training, and guidance:

- Training on research skills, including Good Clinical Practice and journal clubs as part of protected regional/local teaching.
- Research opportunities (e.g., on-going projects, audit, service improvement opportunities) highlighted as part of induction.
- Trainee subspecialty and/or research interests to be considered during allocation of placements and supervisors that can support these interests.

4. Collaboration between trainees and with other stakeholders:

- Supporting trainee-led research groups (volunteering for project leads, local leads, regional coordinators) to help set up multi-centre collaborative studies and develop networking for mentorship.
- Work in partnership to identify research priorities amongst trainees with consideration of additional public and patient involvement.

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Competing Interests

None to declare.

References

1. General Medical Council UK. Generic professional capabilities framework [Internet]. 2017 [cited 2023 May 27]. Available from: https://www.gmc-uk.org/-/media/documents/generic-professional-capabilities-framework--2109_pdf-70417127.pdf.
2. RCPCH. RCPCH Progress+: Core Syllabus for Paediatric Training [Internet]. 2023 [cited 2023 May 27]. Available from: <https://www.rcpch.ac.uk/sites/default/files/2022-01/RCPCH-Progress-Plus-core-syllabus-2023-08.pdf>.
3. McDermott H, Vawda H, Harvey KC, et al. UK trainee-led paediatric governance collaboratives: improving the lives of both trainees and children. *Arch Dis Child Educ Pract Ed* 2020;105:117–21.
4. Regan C, Crossman L, Burgess-Shannon J. 475 Improving research opportunities for paediatric trainees. In: Abstracts. BMJ Publishing Group Ltd and Royal College of Paediatrics and Child Health 2021;A22–3.
5. Mustafa K, Murray CC, Nicklin E, et al. Understanding barriers for research involvement among paediatric trainees: a mixed methods study. *BMC Med Educ* 2018;18:165.
6. Brown CC, Apps JR, Davies G, et al. Making your way as an academic paediatric trainee in the UK: Table 1. *Arch Dis Child Educ Pract Ed* 2014;99:13–4.
7. Menon G, Turner MA, Ogilvy-Stuart AL, et al. Training in research competencies: a strategy for neonatology. *Arch Dis Child Educ Pract Ed* 2017;102:51–4.
8. Guram S, Kelsall W. G606(P) An analysis of research output amongst paediatric trainees from a single training deanery. In: YOUNG PERSONS HEALTH SPECIAL INTERESTS GROUP AND PAEDIATRIC EDUCATORS' SPECIAL INTERESTS GROUP. BMJ Publishing Group Ltd and Royal College of Paediatrics and Child Health 2019;A244.2-A245.
9. RCPCH. RCPCH Trainee Research Network [Internet]. 2023 [cited 2023 May 27]. Available from: <https://www.rcpch.ac.uk/resources/rcpch-trainee-research-network>.
10. Bartlett D, Pinkney TD, Futaba K, et al. Trainee led research collaboratives: pioneers in the new research landscape. *BMJ* 2012;e5084.
11. Jamjoom AAB, Phan PNH, Hutchinson PJ, et al. Surgical trainee research collaboratives in the UK: an observational study of research activity and publication productivity. *BMJ Open* 2016;6:e010374.
12. Habermann S, Hartzenberg R, Carr D, et al. An insight into developing a trainee led multi-site research project. *London Paediatrics* 2022;2.
13. QIClearn. QIClearn Courses & Programmes [Internet]. 2023 [cited 2023 May 31]. Available from: <https://qiclearn.com/courses/>.
14. Lythgoe H, Price V, Beresford M, et al. G90(P) Research exposure for UK junior paediatric trainees. *Arch Dis Child* 2016;101:A52–3.
15. Beckwith H, Selimi V, Mussad A, et al. Demographics, distribution and experiences of UK clinical academic trainees using GMC NTS Survey data. *Postgrad Med J* 2023;99:350–7.
16. Burkinshaw P, Bryant LD, Magee C, et al. Ten years of NIHR research training: perceptions of the programmes: a qualitative interview study. *BMJ Open* 2022;12:e046410.
17. Levene M, Olver R. A survey of clinical academic staffing in paediatrics and child health in the UK. *Arch Dis Child* 2005;90:450–3.
18. Davis T, Goldstein H, Hall D, et al. Women and children first? Gender equity in paediatric medicine. *Arch Dis Child* 2021;106:201–3.
19. Jagsi R, Guancial EA, Worobey CC, et al. The “Gender Gap” in Authorship of Academic Medical Literature — A 35-Year Perspective. *New England Journal of Medicine* 2006;355:281–7.

20. General Medical Council UK. GMC Data Explorer [Internet]. 2021 [cited 2023 May 27]. Available from: <https://data.gmc-uk.org/gmcdata/home/#/reports/Postgraduate%20training/Stats/report>.
21. Rexrode KM. The gender gap in first authorship of research papers. *BMJ* 2016;i1130.
22. Files JA, Blair JE, Mayer AP, et al. Facilitated Peer Mentorship: A Pilot Program for Academic Advancement of Female Medical Faculty. *J Womens Health* 2008;17:1009–15.
23. General Medical Council UK. The state of medical education and practice in the UK 2018 [Internet]. London: 2018 [cited 2023 May 28]. Available from: <https://www.gmc-uk.org/-/media/documents/somep-book-20187.pdf>.
24. Kelly L, Sankaranarayanan S. Differential attainment: how can we close the gap in paediatrics? *Arch Dis Child Educ Pract Ed* 2023;108:54–7.
25. RCPCH. CCT class of 2017: Where are they now? Follow up survey [Internet]. 2019 [cited 2023 May 28]. Available from: <https://www.rcpch.ac.uk/resources/cct-class-2017-where-are-they-now-follow-survey>.
26. Chelladurai S, Eltahir R, Gupta-Dasgupta N, et al. 1438 Survey of IMG paediatric trainees' experiences in West Midlands. In: Abstracts. *BMJ Publishing Group Ltd and Royal College of Paediatrics and Child Health* 2021;A369.2-A370.
27. Woolf K, Rich A, Viney R, et al. Fair Training Pathways for All: Understanding Experiences of Progression [Internet]. 2016 [cited 2023 May 28]. Available from: https://www.gmc-uk.org/-/media/documents/2016-04-28-fairpathwaysfinalreport_pdf-66939685_pdf-73893295.pdf.
28. RCPCH. Trainee Charter [Internet]. 2019 [cited 2023 May 29]. Available from: <https://www.rcpch.ac.uk/resources/trainee-charter>.