

# Are UK pharmacists ready for consultant-level practice? A cross-sectional survey of self-assessed development needs

Paul Forsyth<sup>1, </sup>, Andrew Radley<sup>2, </sup>, Fiona Marra<sup>1,3, </sup>, Debra Roberts<sup>4</sup>, Michele Sehrawat<sup>4</sup>, Matthew Aiello<sup>5</sup>, Jane Brown<sup>6</sup>, Petra Rauchhaus<sup>7</sup>, Stephen Doherty<sup>8</sup>, Rachael Parsons<sup>8</sup>, Joseph Oakley<sup>8</sup>, Christine Bond<sup>9, </sup>, Susan Roberts<sup>10</sup>

<sup>1</sup>Pharmacy Services, NHS Greater Glasgow & Clyde, Glasgow, UK

<sup>2</sup>Department of Public Health Pharmacy, NHS Tayside, Dundee, UK

<sup>3</sup>Scottish Infection and Immunology Network (SPAIIN), NHS Scotland, Glasgow, UK

<sup>4</sup>Programme Development and Advanced Practice, NHS Wales Health Education and Improvement Wales (HEIW), Nantgarw, UK

<sup>5</sup>National Programme for Pharmacy, Health Education England (HEE), London, UK

<sup>6</sup>School of Pharmacy and Medicines Optimisation, Health Education England North West, Manchester, UK

<sup>7</sup>Tayside Clinical Trials Unit, University of Dundee, Dundee, UK

<sup>8</sup>Royal Pharmaceutical Society (RPS), London, UK

<sup>9</sup>The Institute of Applied Health Sciences, Centre of Academic Primary Care, University of Aberdeen, Aberdeen, UK

<sup>10</sup>NHS Education for Scotland, Glasgow, UK

\*Correspondence: Paul Forsyth, Pharmacy Services, NHS Greater Glasgow & Clyde, Clarkston Court, 56 Busby Road, Glasgow G76 7AT, UK.

Tel: +0141-201-6021; Email: [paul.forsyth@ggc.scot.nhs.uk](mailto:paul.forsyth@ggc.scot.nhs.uk)

## Abstract

**Objectives** The four nations of the United Kingdom (UK) have endorsed a new curriculum and credentialing process for consultant pharmacists. This study aimed to measure the self-reported consultant-level practice development needs of pharmacists across the UK.

**Methods** The study was a cross-sectional electronic survey. Inclusion criteria were: pharmacists registered to practice with the General Pharmaceutical Council; working in any professional sector across the UK; and self-identifying as already working at an advanced level of practice or in an advanced pharmacist role. Participants were asked to rate their confidence that their current practice aligns to the level described in the Royal Pharmaceutical Society Consultant Pharmacist curriculum on a 5-point Likert scale. Predictors of overall confidence with the whole curriculum were analysed using binomial regression.

**Key findings** Nine hundred and forty-four pharmacists participated. Median age was 42 years; 72.6% were female. Research skills and strategic leadership skills had low self-reported confidence. Patient-Centred Care and Collaboration was the domain with the highest reported confidence. 10.2% (96/944) of participants self-reported confidence across the whole curriculum. The strongest predictors of overall confidence across the curriculum were advanced clinical practitioner qualification, research qualifications and self-identifying as a specialist. Increasing age and male gender also predicted confidence. White ethnicity and having an independent prescribing qualification negatively predicted confidence.

**Conclusion** A small minority of pharmacists self-reported confidence across the whole curriculum. A planned approach to develop research skills across the career spectrum, coupled with better identification of workplace-based experiential strategic leadership opportunities, may help deliver a larger cohort of 'consultant-ready' pharmacists.

**Keywords:** pharmacists; consultant practice; advanced practice; workforce development; competence; cross-sectional survey

## Introduction

The concept of the 'consultant' pharmacist role was first proposed in the United Kingdom (UK) in 2003<sup>[1]</sup> and subsequently formally recognised by England in 2005.<sup>[2]</sup> The main purpose of the consultant role was outlined as the delivery of high-level professional expertise and service development, focusing on the direct improvement of patient care.<sup>[2]</sup> Consultant pharmacists were envisaged to drive system-wide professional development within their specialist area of expertise, with a high degree of professional autonomy.<sup>[2]</sup> Posts were anchored around four main functions: expert practice; research/service development; education; and professional leadership.<sup>[2]</sup>

In 2020, the government Chief Pharmaceutical Officers of England, Wales and Northern Ireland produced new updated national guidance on the need and processes for developing and credentialing consultant pharmacists.<sup>[3]</sup> Scotland subsequently also formally recommended endorsing consultant pharmacist roles through the publication of the Scottish Pharmacist Career Framework Review.<sup>[4]</sup>

The Royal Pharmaceutical Society (RPS) formed a task-and-finish group to develop the underlying curriculum and assessment programme to support consultant credentialing.<sup>[5]</sup> A final curriculum and assessment process was launched in October 2020.<sup>[6]</sup> This outcomes-based

curriculum, which built upon the previous RPS Advanced Pharmacy Framework,<sup>[7]</sup> was comprised of five broad domains: person-centred care and collaboration; professional practice; leadership and management, education; and research.<sup>[6]</sup>

In order for a new job to carry the title ‘consultant pharmacist’ the employer must make an application, to the RPS, for recognition of the post. This post approval process considers: the level of practice expected of the post holder, the proposed impact across the healthcare system, succession planning and arrangements for management, supervision and job planning.<sup>[8]</sup> Individual pharmacists who wish to apply for such a role and then use the title also need to be credentialed by the RPS following assessment of a portfolio of evidence, linked to 20 outcomes described in this new curriculum.

The implementation of the consultant pharmacist vision has been limited to date. As of May 2021, there were 127 consultant pharmacist posts on the RPS directory out of a total UK workforce of approximately 57 000 pharmacists.<sup>[9]</sup> The reasons for this are not well understood, but a survey of chief pharmacists across the UK suggests that it may include a lack of quality applicants.<sup>[10]</sup> Another factor includes the separate UK countries being at different stages in the adoption of the vision, for example, Scotland is still working on the delivery details of its national policy.

No pharmacist-level data exist to describe the development needs of the workforce and to indicate potential barriers which may be inhibiting progression towards consultant-level practice. Concern has been raised about fragility of historic consultant pharmacist posts, due to a lack of a standardised training pathway to these roles and resultant worries about succession planning.<sup>[11]</sup>

The aim of this study was to understand the self-reported consultant-level practice development needs of UK pharmacists. The objectives of the study were, to describe the self-reported confidence of pharmacists in currently practicing at the level described in the outcomes of the RPS Consultant Pharmacist curriculum, and to analyse the predictors of overall self-reported confidence with the whole curriculum.

The rationale for the study was to perform a UK-wide baseline assessment of the advanced pharmacist workforce, and to inform regional and national discussions on the support structures required to deliver sustainable numbers of pharmacists practicing at consultant level.

## Methods

### Study design

This study was a cross-sectional electronic survey.

### Setting

United Kingdom (England, Scotland, Wales and Northern Ireland).

### Participants

Inclusion criteria were: pharmacists registered to practice with the General Pharmaceutical Council (GPhC); working in any professional sector across the UK; and self-identifying as already working at an advanced level of practice or in an advanced pharmacist role. Exclusion criteria were pharmacists already formally credentialed and/or already in-post as a consultant pharmacist.

## Survey structure/content

The survey was developed by the lead author (P.F.) and then refined by the other co-authors at pre-study meetings. The survey contained three sections:

- Section 1: Demographic data collection, including basic demography, postgraduate qualifications and job characteristics.
- Section 2: One question on whether participants were interested in working towards becoming a consultant pharmacist (yes/no, with a qualitative free-text box explaining their response). Answering the yes/no question was mandated, although the free-text field was not. Data from the free-text question are not described in this manuscript and will be published separately.
- Section 3: The 20 outcomes from the RPS Consultant Pharmacist Curriculum were displayed along with a statement beginning ‘you are asked to consider how well your current practice aligns to that outcome and whether you would be able to robustly demonstrate that you are practising at that level’ before each outcome. Participants were then asked to rate their self-identified confidence using a simple 5-point Likert scale: Really Confident, Confident, Neutral, Unconfident, Really Unconfident.

## Survey technology

The survey was developed using Microsoft Office forms (Edition Windows 10 Enterprise). Upper and lower numerical limits were also set in numerical data fields to reduce the chance of key-stroke errors. Within Section 3, the technology only allowed the submission of fully completed fields, to eliminate missing data.

## Survey pilot

The survey was piloted on 14 participants, identified through personal networks, who met the relevant inclusion criteria. This included a ‘think aloud’ process to check question clarity (P.F., A.R., D.R., M.S., S.D.). Question wording was adapted based on pilot feedback. Data from this stage were not collected. Pilot participants were re-invited to undertake the final survey when it was launched. Piloting confirmed that survey completion was expected to take approximately 10–15 min.

## Recruitment

A webpage with an electronic link to the survey went live on the RPS website on 13 May 2021. An email was disseminated by the RPS to key contacts in NHS England, NHS Scotland, NHS Wales, NHS Northern Ireland, community pharmacy bodies, primary care networks, other affiliated pharmacy partners and specialist-interest groups, pharmacy academia and all RPS members. Links to the survey were publicised on social media. These key contacts were asked to cascade the survey email to all pharmacists in their teams/organisations or networks. The email and webpage included a participant information leaflet, explaining the reasons for the study and information on data governance. One reminder email was sent to key contacts on 3 June 2021. The survey (see [Supplementary File](#)) remained open for 1 month closing at midnight on 13 June 2021. No incentives were offered.

The survey was also translated into the Welsh language, this was done by the Health Education and Improvement Wales (HEIW) translation team, any survey responses were

translated back into English by HEIW translation team and then manually added to the dataset by the lead author.

### Sample size

An a-priori sample size was not calculated for this workforce-wide survey, as the funding organisations were keen to obtain as high a participation rate as possible to inform future commissioning activity.

### Data governance

No individual participant-identifiable data were collected. RPS led data collection and owned the data. A data-sharing agreement was in place between RPS and Health Education England (HEE), HEIW and NHS Education for Scotland (NES) for co-ownership of their individual country's data.

After completion of the survey, the raw data were checked by nominated authors (P.F., A.R., S.D., R.P.) to ensure validity.

### Data analysis/endpoints

An a-priori analysis plan was written and finalised before the dataset was locked and passed to the statistician (P.R.) for analysis.

For the descriptive characterisation, continuous numerical variables were analysed for distribution of data and are displayed using the appropriate descriptors of central tendency and spread. Binary, categorical and Likert data are displayed as numbers and proportions. The number of participants who self-reported being 'really confident' or 'confident' in all the outcomes across each curricula domain was displayed as a proportion.

A binomial logistic regression tested the predictors of answering 'really confident' or 'confident' to all of the 20 outcomes from the RPS Consultant Pharmacist curriculum (i.e. predictors of self-confidence in currently practicing at correct level across whole curriculum). The following variables were hypothesised *a priori* to predict confidence and were tested in the regression; age, gender, ethnicity, country of residence, disability status, primary sector of employment, postgraduate research qualifications (including Postgraduate Research Module without Full Masters, Postgraduate Masters and Postgraduate PhD/Doctorate), postgraduate diploma, independent prescribing, advanced clinical practitioner (ACP) qualification, self-identifying as a generalist or specialist, hours worked per week, years practiced, years in current post, RPS membership and interest in consultant roles. The predictors of each individual curriculum outcome were also analysed, but are not reported here. Regression analysis was performed on all available data. As the amount of missing data was low (see Table 1), no sensitivity analysis for missing data was performed.

### Ethics

The NHS West of Scotland Ethics Officer confirmed that NHS ethical approval was not required, as the study did not involve patients, was anonymously delivered, and the aims were directly related to government policy and the directly employed roles of the authors.

**Table 1** Participants' characteristics (*n* = 944)

Characteristics	<i>n</i> = 944	
Age (years) <sup>1</sup>		
Median (IQR 1 and 3)	42	(36 and 50)
Gender, <i>n</i> (%)		
Female	685	(72.6%)
Male	248	(26.3%)
Prefer not to say	10	(1.1%)
Other	1	(0.1%)
Ethnicity, <i>n</i> (%)		
White – British	664	(70.3%)
White – Other	54	(5.7%)
White – Irish	32	(3.4%)
Black – British (African)	27	(2.9%)
Black – British (Caribbean)	1	(0.1%)
Black – Other	1	(0.1%)
Asian – British (Indian)	73	(7.7%)
Asian – British (Pakistani)	23	(2.4%)
Asian – British (Chinese)	17	(1.8%)
Asian – British (Bangladeshi)	2	(0.2%)
Asian – Other	8	(0.8%)
Arab – Other	10	(1.1%)
Mixed/multiple ethnic groups	10	(1.1%)
Other	7	(0.7%)
Prefer not to say	15	(1.6%)
Country of residence		
England	600	(63.6%)
Scotland	200	(21.2%)
Wales	115	(12.2%)
North Ireland	29	(3.1%)
Primary sector of employment		
Secondary care	528	(55.9%)
Primary care	205	(21.7%)
Community pharmacy	74	(7.8%)
Multi-sector	73	(7.7%)
Academia/education	27	(2.9%)
Other	37	(3.9%)
Postgraduate research qualifications	Completed	Undertaking
Research module	139 (14.7%)	23 (2.4%)
Masters	334 (35.4%)	46 (4.9%)
PhD/Doctorate	57 (6.0%)	28 (3.0%)
Other academic or professional qualifications	Completed	Undertaking
Diploma	745 (78.9%)	19 (2.0%)
Independent prescriber	672 (71.2%)	31 (3.3%)
Advanced clinical practitioner	57 (6.0%)	22 (2.3%)
RPS member <sup>2</sup>	624	(66.1%)
Hours worked per week (hrs)		
Median (IQR 1 and 3)	37.5	(30.0 and 37.5)
Years practicing as registered pharmacist (yrs) <sup>2</sup>		
Median (IQR 1 and 3)	18	(12 and 27)
Years in current post (yrs) <sup>2</sup>		
Median (IQR 1 and 3)	4	(2 and 10)
Self-identified job type <sup>2</sup>		
Generalist	392	(41.5%)
Specialist	550	(58.3%)
Self-reported as interested in working towards consultant pharmacist level		
Yes	729	(77.2%)
No	215	(22.8%)

<sup>1</sup>Six participants with missing data.

<sup>2</sup>Two participants with missing data.

## Results

Nine hundred and forty-four pharmacists participated in the study. Three of these participants completed the Welsh language version.

Table 1 shows the participants' full characteristics. The median age was 42 years old; 685 (72.6%) were female; 528 (55.9%) worked in secondary care, 205 (21.7%) in primary care and 74 (7.8%) in community pharmacy; 672 (71.2%) were registered as an independent prescriber; 334 (35.4%) had a postgraduate masters; and 57 (6.0%) had a postgraduate doctorate. Five hundred and fifty (58.3%) self-identified as a specialist. Seven hundred and twenty-nine (77.2%) of participants in the survey were interested in working towards consultant-level practice.

Self-reporting as being 'really confident' or 'confident' was lowest in the outcomes described in the research domain: 241 participants (25.5%) in research supervision (Outcome 5.4); 259 (27.4%) in formulating research questions and rigorous protocols (Outcome 5.2); 263 (27.9%) in generating new evidence which influences care beyond their organisation (Outcome 5.3); 317 (33.6%) in multidisciplinary research collaboration (Outcome 5.5); and 496 (52.5%) in using critical evaluation skills to influence care at organisational level and beyond (Outcome 5.1) – see Table 2.

Self-reporting as being 'really confident' or 'confident' was also low in the following curriculum outcomes: 416 participants (44.1%) in translating expertise into the creation of new policy influencing practice beyond their organisation (Outcome 2.5); 432 (45.8%) in creating strategic approaches to local workforce education, planning and development (Outcome 4.3); and 477 (50.5%) in creating a strategic vision for service delivery within their organisation and beyond (Outcome 3.1).

The proportion of participants who self-reported being 'really confident' or 'confident' in all the outcomes within a single curriculum domain varied: 638 (67.6%) in domain 1 (Patient-Centred Care and Collaboration); 309 (32.7%) in domain 2 (Professional Practice); 287 (30.4%) in domain 3 (Leadership and Management); 356 (37.7%) in domain 4 (Education); and 148 (15.7%) in domain 5 (Research); 96 (10.2%) participants self-reported being 'really confident' or 'confident' in all 20 outcomes across the curriculum.

The strongest predictors of confidence across the whole curriculum were ACP qualification or equivalent (OR 5.637;  $P < 0.0001$ ), highest level of postgraduate research qualification (Research module OR 3.158, Masters OR 3.039 and PhD/Doctorate OR 3.893;  $P = 0.0002$ ), and self-identification as a specialist (OR 3.667;  $P < 0.0001$ ). Male gender (OR 1.690;  $P = 0.0352$ ) and increasing age (OR 1.027;  $P = 0.0487$ ) also positively predicted overall confidence with the curriculum. White ethnicity (OR 0.449;  $P = 0.0032$ ), and having an independent prescribing qualification (OR 0.542;  $P = 0.0193$ ) negatively predicted overall confidence (Table 3).

## Discussion

The majority (77.2%) of participants were interested in pursuing consultant pharmacist roles. Research was the domain with the highest proportion of consultant-level practice development needs. The three curriculum outcomes that described the creation of new strategies or policies also scored low, again suggesting common developmental needs. A

minority of pharmacists who took part in this study (10.2%) self-reported confidence across the whole curriculum. The strongest predictors of confidence were having an ACP qualification, having high levels of research qualifications, and self-identifying as a specialist.

## Strengths

This survey is the largest study ever undertaken on the consultant-level practice development needs of the UK pharmacist workforce. The study enrolled participants from across the four UK countries and was led by an expert panel of national education leads and consultant-level pharmacists. The sample size was large and this manuscript has been reported in accordance with the STROBE guidance.<sup>[12]</sup>

## Limitations

This survey was cross-sectional in design and this limits interpretation. Cross-sectional studies can only determine association and not causation. They evaluate one point in time and cannot assess temporal effects between predictors and outcomes.

The size of the population of pharmacists practising at an advanced level (i.e. recruitment denominator) is unknown, out of the 57 000 registered UK pharmacists. It was theoretically possible for individual participants to complete the survey more than once. The limitations of self-reported competence are well characterised and can manifest in both over-estimation and under-estimation of true competence.<sup>[13]</sup>

The participants represented a self-selecting cohort. The results only describe the participating population and findings may not be applicable to the wider workforce. For example, a disproportionately low number of community pharmacists completed the survey. Self-selection bias is expected to have influenced some findings. White ethnicity was negatively associated with confidence, however, ethnic minority sub-groups were substantially under-represented in our self-selecting study participants compared with the proportions seen on national registers.<sup>[14]</sup> Ethnic sub-groups were also grouped within one BAME group to enable a viable analysis, which may have biased the result. Independent prescribing was closely correlated to a number of the other significant predictors and also may have affected the findings.

UK-level profession-wide characteristics are unknown for certain variables (e.g. postgraduate qualifications), so it is unknown how representative the cohort is in certain fields. The self-identification of being a 'generalist' compared with a 'specialist' is also subjective. For example, some participants may identify generalism (e.g. general practice) as their 'specialism'. This may introduce bias. Due to the small-scale nature of certain specialisms, the individual specialisms of each participant were not collected due to the risk of making participants identifiable by proxy.

## Context and next steps

Ischaemia in the development of research skills occurs early in the career of UK pharmacists.<sup>[15]</sup> The barriers to research skills development include the lack of necessity for career progression and the lack of protected time.<sup>[16,17]</sup> This study confirms that a deficit in research skills is a key barrier in progression to consultant-level practice. Underdeveloped research skills are common in pharmacists across the world.<sup>[17–19]</sup> The need for better research skills features heavily in the

**Table 2** Likert results for each individual outcome from the curriculum (*n* = 944)

Curriculum domain	Curriculum outcome	Really confident <i>n</i> (%)	Confident <i>n</i> (%)	Neutral <i>n</i> (%)	Unconfident <i>n</i> (%)	Really unconfident <i>n</i> (%)
1. Patient-Centred Care and Collaboration	1.1. Effectively communicates with patients and colleagues in highly challenging and/or hostile environments; manages the situation collaboratively to resolution	343 (36.3%)	506 (53.6%)	76 (8.1%)	17 (1.8%)	2 (0.2%)
	1.2. Communicates highly complex, sensitive or contentious information to inform and influence senior pharmacy and non-pharmacy stakeholders from across the healthcare system; promotes a collaborative approach working across boundaries	247 (26.2%)	423 (44.8%)	189 (20.0%)	74 (7.8%)	11 (1.2%)
2. Professional Practice	2.1. Possesses in-depth pharmaceutical knowledge and skills in defined clinical area(s); can apply these to manage individual patients and/or patient populations requiring the most complex pharmaceutical care	329 (34.9%)	411 (43.5%)	155 (16.4%)	42 (4.4%)	7 (0.7%)
	2.2. Influences the delivery and quality assurance of clinical services across boundaries	239 (25.3%)	429 (45.4%)	197 (20.9%)	66 (7.0%)	13 (1.4%)
	2.3. Demonstrates effective critical thinking, clinical reasoning and decision making where there is uncertainty, competing and/or complex clinical issues	237 (25.1%)	433 (45.9%)	200 (21.2%)	65 (6.9%)	9 (1.0%)
	2.4. Implements regional and national policy and/or strategy at their level of influence within their area of clinical practice	230 (24.4%)	408 (43.2%)	193 (20.4%)	95 (10.1%)	18 (1.9%)
	2.5. Translates expertise and research into the creation of new policy influencing practice beyond their organisation demonstrably improving patient care	131 (13.9%)	285 (30.2%)	292 (30.9%)	193 (20.4%)	43 (4.6%)
3. Leadership and Management	3.1. Creates and embeds a shared strategic vision for service delivery within their organisation and beyond; relates goals and actions to wider strategic aims of the organisation, profession and healthcare system	136 (14.4%)	341 (36.1%)	277 (29.3%)	168 (17.8%)	22 (2.3%)
	3.2. Leads on innovation and improvement to service delivery at organisational level and beyond; manages change effectively to achieve demonstrable improvement(s) to patient care	167 (17.7%)	360 (38.1%)	251 (26.6%)	144 (15.3%)	22 (2.3%)
	3.3. Motivates and effectively manages individuals and/or team performance at an organisational level	196 (20.8%)	434 (46.0%)	207 (21.9%)	90 (9.5%)	17 (1.8%)
	3.4. Manages resources effectively to maximise impact on patient care at an organisational level	182 (19.3%)	418 (44.3%)	226 (23.9%)	100 (10.6%)	18 (1.9%)
	3.5. Shapes and contributes to the governance agenda at a senior level within their organisation and beyond; develops and monitors standards of practice and risk management policies/protocols at a team and/or service level	167 (17.7%)	366 (38.8%)	240 (25.4%)	144 (15.3%)	27 (2.9%)
4. Education	4.1. Manages the professional development of individuals within a team and/or service	274 (29.0%)	453 (48.0%)	160 (16.9%)	52 (5.5%)	5 (0.5%)
	4.2. Shapes and contributes to educational provision for patients and healthcare professionals in their area of expertise within and beyond their organisation	202 (21.4%)	408 (43.2%)	226 (23.9%)	93 (9.9%)	15 (1.6%)
	4.3. Interprets national policy to create strategic approaches to local workforce education, planning and development	143 (15.1%)	289 (30.6%)	286 (30.3%)	188 (19.9%)	38 (4.0%)
5. Research	5.1. Applies critical evaluation skills in the context of their working practice; uses research and evidence-base to inform and develop practice and services at organisational level and beyond	166 (17.6%)	330 (35.0%)	283 (30.0%)	139 (14.7%)	26 (2.8%)
	5.2. Formulates research questions based on gaps in the evidence base; designs rigorous research protocols to address these and improve service delivery at organisational level and beyond	88 (9.3%)	171 (18.1%)	254 (26.9%)	314 (33.3%)	117 (12.4%)
	5.3. Generates new evidence through research; communicates findings to influence practice and improve patient care beyond their organisation	90 (9.5%)	173 (18.3%)	260 (27.5%)	301 (31.9%)	120 (12.7%)
	5.4. Contributes to research supervision in collaboration with research experts	87 (9.2%)	154 (16.3%)	219 (23.2%)	314 (33.3%)	170 (18.0%)
	5.5. Collaborates with the wider multidisciplinary team to conduct research projects	103 (10.9%)	214 (22.7%)	260 (27.5%)	242 (25.6%)	125 (13.2%)

**Table 3** Predictors of answering either 'really confident' or 'confident' to all 20 outcomes across the whole curriculum

Variable	Odds ratio	C/I Lower	C/I Upper	P-value
Advanced Clinical Practitioners Qualification (or Equivalent) <sup>1</sup>	5.637	2.785	11.409	<0.0001
Highest Postgraduate Research Qualification				
No award (or currently in training)	1	N/A	N/A	
Research Module without Full Masters	3.158	1.309	7.618	0.0002
Postgraduate Masters	3.039	1.767	5.228	
Postgraduate PhD/Doctorate	3.893	1.692	8.955	
Self-identifies as Specialist <sup>2</sup>	3.667	2.081	6.464	<0.0001
Male Gender <sup>3</sup>	1.690	1.037	2.755	0.0352
Increasing Age (years)	1.027	1.000	1.055	0.0487
Independent Prescribing Qualification <sup>1</sup>	0.542	0.325	0.905	0.0193
White Ethnicity <sup>4</sup>	0.449	0.265	0.764	0.0032

<sup>1</sup>Compared to not having qualification.

<sup>2</sup>Compared to self-identifying as a generalist.

<sup>3</sup>Compared to female gender.

<sup>4</sup>Includes all White ethnic groups and compared to all Black, Asian and Ethnic minority groups.

International Pharmaceutical Federation (FIP) development goals.<sup>[20]</sup> A formal research qualification was one of the strongest predictors of confidence across the curriculum, suggesting that these skills are most effectively acquired through formal research training. Producing a pipeline of consultant pharmacists will require that research competencies are nurtured in professional portfolios at preceding early and middle career stages, and research opportunities and/or experiential learning are incorporated into routine job plans at such stages in all sectors. Pharmacy needs to value such skills, as ways to innovate and provide evidence for practice development.

Participants self-reported lower levels of confidence with the outcomes requiring strategic leadership skills. These results confirm previous findings of leadership and management skills gaps in early-career pharmacists.<sup>[15]</sup> Such leadership skill deficits in the workforce are also known to limit the implementation of advanced practice pharmacist services.<sup>[21]</sup> Previous leadership training or experience was not characterised in the study and it is therefore not possible to know whether this would have significantly predicted confidence. Strategic leadership skills are vital in delivering new innovations and services in pharmacy.<sup>[22]</sup> A structured experiential training programme based on a coherent leadership framework is needed for organisations to adequately prepare leaders in pharmacy.<sup>[23]</sup> Such an approach is forecast to provide the strategic roadmap needed to help develop safe, effective and patient-centred pharmacy services.<sup>[24]</sup> The publication of the consultant-curriculum and the preceding foundation and advanced stage curricula in the UK now gives organisations a defined structure for skills development and career progression.<sup>[6,25,26]</sup>

An ACP qualification, a post-registration qualification designed to develop professional competence in delivering high levels of clinical autonomy and complex decision making,<sup>[27]</sup> was a strong predictor of confidence across the whole curriculum. Given the cross-sectional study design, it is not possible to tell whether pharmacists with more confidence undertake ACP qualifications or whether the qualifications lead to increased confidence levels. However, ACP training is structured with longitudinal competence-based assessments

and mentorship similar to those contained in the consultant pharmacist curriculum.<sup>[28]</sup> The English framework, on which ACP qualifications are based, also includes leadership/education/research competencies which may also explain why those who complete this pathway are more confident.<sup>[29]</sup> The use of similar curricula or competency frameworks at earlier career stages has been shown to improve pharmacist's professional behaviours and attitudes, skills and overall performance.<sup>[30,31]</sup>

There are currently few consultant pharmacists working in generalist roles (such as general practice or community pharmacy).<sup>[32]</sup> Self-identification as a specialist rather than a generalist, was a strong predictor of confidence. Similar to medicine in the UK, multi-domain career opportunities in generalist fields are limited and need more focus and investment.<sup>[33]</sup> Thought will be needed to ensure how we support research and strategic leadership opportunities in such fields moving forward, to foster an equitable career pathway.

The association between increasing age and increasing levels of self-confidence seems logical, as this curriculum requires a wide range of strategic and system-wide influence, which ultimately takes time to develop. The finding that female gender is associated with lack of confidence fits with the existing evidence base from other healthcare professionals.<sup>[34–36]</sup> A significant gender pay gap exists, women are known to be under-represented in pharmacy leadership roles and a gender gap is evident in pharmacy research publications.<sup>[37–41]</sup> Whether self-confidence plays a role in these outcomes is uncertain. However, this confidence gap represents a major strategic workforce problem in a profession with such a high proportion of females.<sup>[14]</sup>

It is likely that formal education will be a small part of the solution to fostering more consultant pharmacists. Many barriers to career development are cultural and environmental.<sup>[42]</sup> Workplaces and employers now need to shift the locus of control towards the individual,<sup>[21]</sup> providing the range of experiential learning opportunities that allow autonomous strategic consultant-level skills to be iteratively developed and evidenced over earlier career stages. The vision of consultant pharmacists is unlikely to succeed without this.

Currently, only a small number of pharmacists have credentialed at consultant pharmacist level, and this study further highlights that only a small minority of motivated pharmacists are self-confident to do so in the near future. For the potential benefits of consultant-level practice to be delivered, future mentorship schemes could be piloted. Given the dearth of existing generalist consultant pharmacists and a disproportionately skewed mix of existing specialist consultant pharmacist posts, a targeted and planned approach to such schemes may be warranted.

The planned secondary analysis of the survey, looking at the qualitative data, will attempt to evaluate why pharmacists are or are not interested in consultant-pharmacist roles. New prospective research is also needed to better understand the gender-related issues illustrated in this study.

The overall findings of this study may have applicability to pharmacy in many other countries. The use of competency frameworks is increasing across the globe.<sup>[30]</sup> The principles of consultant pharmacist practice also align well with many of the FIP Development Goals about system-wide transformation.<sup>[20]</sup> Advancement of the pharmacy workforce, in terms of both skills and scope of influence, is accelerating in many countries across the globe, as we work towards universal health coverage.<sup>[43]</sup>

## Conclusion

Only a small minority of pharmacists self-reported confidence across the whole consultant pharmacist curriculum, in a self-selecting motivated cohort. Research and strategic leadership skills development are common areas of self-identified skills deficit. A planned approach to develop research skills across the career spectrum, coupled with better identification of workplace-based experiential strategic leadership opportunities, may help deliver a larger sustainable cohort of 'consultant-ready' pharmacists.

## Supplementary Material

Supplementary data are available at *International Journal of Pharmacy Practice* online.

## Acknowledgements

We thank all the participants and all the organisations who distributed the survey.

## Author Contributions

P.F.: lead author, concept/design of study, content of survey, analysis plan, lead manuscript production and had full access to data; A.R.: concept/design of study, content of survey and analysis plan, key manuscript revision and had full access to data; F.M.: concept/design of study, content of survey and key manuscript revision; D.R., M.S., M.A. and J.B. design of study, content of survey, funder and key manuscript revision; P.R.: statistical analysis, key manuscript revision and had full access to data; S.D. and J.O.: design of study, content of survey, key manuscript revision and had full access to data; R.P.: design of electronic survey, data collection, key manuscript revision and had full access to data; C.B.: design of study, content of survey and key manuscript revision; S.R.: supervising

author, concept/design of study, content of survey, funder, key manuscript revision and had full access to data.

## Funding

This study was collaboratively funded by Health Education England, NHS Health Education and Improvement Wales and NHS Education for Scotland.

## Conflict of Interest

P.F., A.R., F.M., D.R., M.S., J.B., S.D., C.B. and S.R. are members of the RPS, and J.O., S.D. and R.P. are direct RPS employees or secondees. P.F., A.R. and F.M. have credentialed through the consultant pharmacist process. The RPS are the custodians of the consultant pharmacist credentialing process and any pharmacist wishing to partake needs to pay an assessment fee. M.A. and P.R. have no conflicts of interest.

## Data availability

Contact the Royal Pharmaceutical Society for any data requests.

## References

1. Department of Health. A Vision for Pharmacy in the New NHS. 2003. <http://data.parliament.uk/DepositedPapers/Files/DEP2009-0485/DEP2009-0485.pdf> (17 March 2022, date last accessed).
2. Department of Health. Guidance for the Development of Consultant Pharmacist Posts. 2005. [http://www.codeg.org/fileadmin/codeg/pdf/DH\\_cons\\_pharm.pdf](http://www.codeg.org/fileadmin/codeg/pdf/DH_cons_pharm.pdf) (31 May 2021, date last accessed).
3. NHS Health Education England. Consultant Pharmacist Guidance. Consultant Pharmacists Short Life Working Group. 2020. <https://www.hee.nhs.uk/our-work/pharmacy/consultant-pharmacist-guidance> (17 March 2022, date last accessed).
4. NHS Education for Scotland. Pharmacist Career Framework Review, Report of the Review Advisory Group. 2020. <https://www.nes.scot.nhs.uk/news/pharmacy-career-review-published/> (17 March 2022, date last accessed).
5. Royal Pharmaceutical Society. RPS Consultant Pharmacist Curriculum Consultation. 2020. <https://www.rpharms.com/development/credentialing/consultant/consultant-pharmacist-curriculum-consultation> (17 March 2022, date last accessed).
6. Royal Pharmaceutical Society. RPS Consultant Pharmacist Curriculum. 2020. <https://www.rpharms.com/development/credentialing/consultant/consultant-pharmacist-credentialing> (17 March 2022, date last accessed).
7. Royal Pharmaceutical Society. RPS Advanced Pharmacy Framework. 2013. <https://www.rpharms.com/resources/frameworks/advanced-pharmacy-framework-apf> (17 March 2022, date last accessed).
8. Royal Pharmaceutical Society. RPS Consultant Pharmacist Post Approval. 2020. <https://www.rpharms.com/development/credentialing/consultant/post-approval#:~:text=Applications%20for%20recognition%20of%20a,impact%20across%20the%20healthcare%20system> (26 July 2022, date last accessed).
9. Royal Pharmaceutical Society. RPS Directory of Approved Consultant Pharmacist Posts. <https://www.rpharms.com/development/credentialing/consultant/directory-of-approved-consultant-pharmacist-posts> (31 May 2021, date last accessed).
10. Howard PA. Survey of national, regional and hospital chief pharmacists on consultant pharmacist appointment strategy and performance in the United Kingdom. *Eur J Hosp Pharm Sci Pract* 2012; 19: 253. <https://doi.org/10.1136/ejpharm-2012-000074.441>

11. Malson G. The role of the consultant pharmacist in the NHS. *Clin Pharm* 2015; 7. <https://doi.org/10.1211/PJ.2015.20069457>
12. Elm EV, Altman DG, Egger M et al. Strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. *BMJ* 2007; 335: 806. <https://doi.org/10.1136/bmj.39335.541782.AD>
13. Kruger J, Dunning D. Unskilled and unaware of it: how difficulties in recognizing one's own incompetence lead to inflated self-assessments. *J Pers Soc Psychol* 1999; 77: 1121–34. <https://doi.org/10.1037/0022-3514.77.6.1121>
14. General Pharmaceutical Council (GPhC). Survey of Registered Pharmacy Professionals 2019: Main Report. 2019. <https://www.pharmacyregulation.org/sites/default/files/document/gphc-2019-survey-pharmacy-professionals-main-report-2019.pdf> (28 March 2022, date last accessed).
15. Rueben A, Forsyth P, Thomson AH. Professional development beyond foundation training: a study of pharmacists working in Scotland. *Int J Pharm Pract* 2020; 28: 165–72. <https://doi.org/10.1111/ijpp.12585>
16. Lowrie R, Morrison G, Lees R et al. Research is 'a step into the unknown': an exploration of pharmacists' perceptions of factors impacting on research participation in the NHS. *BMJ Open* 2015; 5: e009180. <https://doi.org/10.1136/bmjopen-2015-009180>
17. Awaisu A, Alsalmiy N. Pharmacists' involvement in and attitudes toward pharmacy practice research: a systematic review of the literature. *Res Social Adm Pharm* 2015; 11: 725–48. <https://doi.org/10.1016/j.sapharm.2014.12.008>
18. Abubakar U, Sulaiman SA, Usman MN et al. Nigerian pharmacists' self-perceived competence and confidence to plan and conduct pharmacy practice research. *Pharm Pract* 2018; 16: 1152. <https://doi.org/10.18549/PharmPract.2018.01.1152>
19. Sultana K, Al Jeraisy M, Al Ammari M et al. Attitude, barriers and facilitators to practice-based research: cross-sectional survey of hospital pharmacists in Saudi Arabia. *J Pharm Policy Pract* 2016; 9: 4. <https://doi.org/10.1186/s40545-016-0052-z>
20. International Pharmaceutical Federation. FIP Development Goals. 2021. <https://developmentgoals.fip.org/> (17 March 2022, date last accessed).
21. Bailey G, Dunlop E, Forsyth P. A qualitative exploration of the enablers and barriers to the provision of outpatient clinics by hospital pharmacists. *Int J Clin Pharm* 2022. <https://doi.org/10.1007/s11096-022-01435-2>
22. Crespo-Gonzalez C, Benrimoj SI, Scerri M et al. Sustainability of innovations in healthcare: a systematic review and conceptual framework for professional pharmacy services. *Res Social Adm Pharm* 2020; 16: 1331–43. <https://doi.org/10.1016/j.sapharm.2020.01.015>
23. Reed BN, Klutts AM, Joseph Mattingly T. A systematic review of leadership definitions, competencies, and assessment methods in pharmacy education. *Am J Pharm Educ* 2019; 83: 7520. <https://doi.org/10.5688/ajpe7520>
24. Rough S, Shane R, Armitstead JA et al. The high-value pharmacy enterprise framework: advancing pharmacy practice in health systems through a consensus-based, strategic approach. *Am J Health Syst Pharm* 2021; 78: 498–510. <https://doi.org/10.1093/ajhp/zxaa431>
25. Royal Pharmaceutical Society. Post-registration Foundation Pharmacist Curriculum. 2020. <https://www.rpharms.com/development/credentialing/post-registration-foundation/post-registration-foundation-curriculum> (17 March 2022, date last accessed).
26. Royal Pharmaceutical Society. Core Advanced Practice Curriculum. 2022. <https://www.rpharms.com/development/credentialing/core-advanced-pharmacist-curriculum> (28 March 2022, date last accessed).
27. NHS Health Education England. What Is Advanced Clinical Practice? <https://www.hee.nhs.uk/our-work/advanced-clinical-practice/what-advanced-clinical-practice> (17 March 2022, date last accessed).
28. Terry D, Ganasan S, Aiello M et al. Pharmacists in advanced clinical practice roles in emergency departments (PARED). *Int J Clin Pharm* 2021; 43: 1523–32. <https://doi.org/10.1007/s11096-021-01275-6>
29. Health Education England (HEE). Multi-professional Framework for Advanced Clinical Practice in England. 2017. <https://www.hee.nhs.uk/sites/default/files/documents/multi-professionalframeworkforadvancedclinicalpracticeinengland.pdf> (28 March 2022, date last accessed).
30. Udoh A, Bruno-Tomé A, Ernowati DK et al. The effectiveness and impact on performance of pharmacy-related competency development frameworks: a systematic review and meta-analysis. *Res Social Adm Pharm* 2021; 17: 1685–96. <https://doi.org/10.1016/j.sapharm.2021.02.008>
31. Forrester CA, Lee DS, Hon E et al. Preceptor perceptions of pharmacy student performance before and after a curriculum transformation. *Am J Pharm Educ* 2021; 8575. <https://doi.org/10.5688/ajpe8575>
32. NHS Health Education England. Advancing Pharmacy Education and Training: A Review. <https://www.hee.nhs.uk/sites/default/files/documents/Advancing%20Pharmacy%20Education%20and%20Training%20Review.pdf> (17 March 2022, date last accessed).
33. The Health Foundation. Guiding Patients through Complexity: Modern Medical Generalism. 2011. <https://www.health.org.uk/publications/guiding-patients-through-complexity-modern-medical-generalism> (17 March 2022, date last accessed).
34. Karaharju-Suvanto T, Näpänkangas R, Koivumäki J et al. Gender differences in self-assessed clinical competence – a survey of young dentists in Finland. *Eur J Dent Educ* 2014; 18: 234–40. <https://doi.org/10.1111/eje.12092>
35. Kuku K, Korukcu O, Ozdemir Y et al. Self-confidence, gender and academic achievement of undergraduate nursing students. *J Psychiatr Ment Health Nurs* 2013; 20: 330–5. <https://doi.org/10.1111/j.1365-2850.2012.01924.x>
36. Vajapey SP, Weber KL, Julie B. Confidence gap between men and women in medicine: a systematic review. *Curr Orthop Pract* 2020; 31: 494–502. <https://doi.org/10.1097/BCO.0000000000000906>
37. Kam A. Tackling the gender pay gap: how female pharmacists can take action. *Pharm J* 2018; 301. <https://doi.org/10.1211/PJ.2018.20205762>
38. Batchelor H. Women underrepresented in senior pharmacy and NHS roles. *Pharm J* 2018; 300. <https://doi.org/10.1211/PJ.2018.20204515>
39. Alicia Martin MN, Peterson GM. Gender balance in pharmacy leadership: are we making progress? *Res Social Adm Pharm* 2021; 17: 694–700. <https://doi.org/10.1016/j.sapharm.2020.05.031>
40. Brittany DB, Johnston JP, Smith RR. Gender inequity and sexual harassment in the pharmacy profession: evidence and call to action. *Am J Health Syst Pharm* 2021; 78: 2059–76. <https://doi.org/10.1093/ajhp/zxab275>
41. Dotson B. Women as authors in the pharmacy literature: 1989–2009. *Am J Health Syst Pharm* 2011; 68: 1736–9. <https://doi.org/10.2146/ajhp100597>
42. Rosenthal M, Austin Z, Tsuyuki RT. Are pharmacists the ultimate barrier to pharmacy practice change? *Can Pharm J* 2010; 143: 37–42. <https://doi.org/10.3821/1913-701X-143.1.37>
43. Bates I, Meilanti S, Bader L et al. Strengthening primary healthcare through accelerated advancement of the global pharmacy workforce: a cross-sectional survey of 88 countries. *BMJ Open* 2022; 12: e061860. <https://doi.org/10.1136/bmjopen-2022-061860>