

## How do pharmacy students select their pre-registration training providers?

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1  
2 **Title: How do pharmacy students select their pre-registration training**  
3 **providers? A mixed methods evaluation of the national recruitment scheme in**  
4 **England and Wales**

5  
6 **Abstract**

7  
8 **Objectives**

9 A national pre-registration pharmacist recruitment scheme, which replaces the local  
10 recruitment models, was introduced in England and Wales in 2017. This study aimed to  
11 explore pharmacy students' behaviour and associated factors in their selection of pre-  
12 registration training programmes.

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14 **Methods**

15 A mixed method study using a) analysis of data from all applicants (n=2694) of the  
16 national recruitment scheme b) an online survey and c) a virtual focus group was  
17 undertaken. Survey and focus group questions were developed based on the theoretical-  
18 domains-framework (TDF). Descriptive and inferential analysis of quantitative data was  
19 undertaken using Stata software. Qualitative data from focus groups and responses  
20 from the open-ended questions were analysed using framework technique.

21  
22 **Key findings**

23 A vast majority of applicants (n=2182, 83.9%) selected a hospital training programme  
24 as their first ranked preference, with the rest opting for community pharmacy. Urban  
25 areas, particularly London, were most popular geographically. A total of 307 survey  
26 responses were returned. Long-term career aspirations, followed by geographical  
27 factors, were rated most highly in applicants' decision making. Qualitative data from  
28 survey and focus group demonstrated information about programmes/employers,  
29 perceived opportunity for skills development and aspiration towards a career path as key  
30 contributory factors in their decision-making.

31

32 **Conclusions**

33 Secondary care was the most desirable destination for pharmacy students to undertake  
34 early career training. The clinical roles and career opportunities in community pharmacy  
35 needs to be promoted as there is a risk that community pharmacy training programme  
36 places may be seen as a 'left over' opportunity for less competitive candidates to uptake.

37

38 **Keywords**

39 Professional Training, Education

40 Career Choices, Education

41 Student Attitudes

42 Other topics, Education

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## Introduction

In order to register as a pharmacist in Great Britain, the General Pharmaceutical Council (GPhC) requires a person to undertake four years of educational training, normally through Master of Pharmacy (MPharm) Course from an accredited University in the UK or through Overseas Pharmacists Assessment Programme (OSPAP), followed by successful completion of a 52-week programme of pre-registration training in Great Britain and to pass a registration assessment conducted by the GPhC.<sup>[1]</sup> Pre-registration pharmacist training in the NHS is funded by Health Education England (HEE), a non-departmental public body which aims to support the delivery of healthcare and health improvement to the patients and public of England by ensuring that the workforce has the 'right numbers, skills, values and behaviours, at the right time and in the right place'.<sup>[2]</sup> Community pharmacies can also offer pre-registration training programmes through provision of training grants from NHS England. In 2015 HEE launched a Pharmacy Education Reform Programme to improve the quality of pre-registration pharmacist training. A key project within this was the development of a national Pre-registration Pharmacist Recruitment Scheme for England and Wales.<sup>[3]</sup> The scheme was introduced for applicants graduating in 2017; mandated for all HEE funded places on training programmes in the NHS sector and optional for other sectors. In year one, 77% (n=2161) of available pre-registration training places were advertised via this route. Of these, the majority (n=1427) were in a community pharmacy setting<sup>[4]</sup> representing 70% of available places on training programmes in this sector.

The centralised system of recruitment uses an electronic platform similar to those used for medicine, dentistry and healthcare science and replaces the previous localised and employer-led recruitment. The new system allows students in year 3 of MPharm to apply

through a single application for all pre-registration training programmes across the secondary care (i.e. hospital) and community sectors throughout England and Wales. In the application system, students can categorise training programmes into three categories namely a) Ranked preferences: Students can rank their order of their preferred programmes (e.g. rank 1 for the most desirable employer, rank 2 for the second most desired programme etc.); b) No preference: Students can list programmes in the second column and will get allocated to one of the training programmes in 'no preference' category if none of their ranked preferences from category a are available; c) not wanted: students can deselect programmes that they do not want to accept, e.g. from a geographical area where they do not wish to train [supplementary material 1].

Students undergo situational judgement tests; multiple mini interviews including a scenario-based exercises reflection on past experiences and problem solving; and numeracy test [supplementary material 2].<sup>[4]</sup> Students are offered a place based on their test performances, matched with how they categorised the available training programmes during the application stage.

In HEE's own internal evaluation<sup>[4]</sup>, an overall fill rate of 75% of pharmacy pre-registration training places was achieved in the first national recruitment cycle. This was despite the total number of applicants outnumbering the available programme places and the presence of applicants who could not be appointed despite passing the assessment. Such lack of appointments could be linked to how students selected the programmes during their application process. For example, if a student listed only 10 preferred training programmes (including 'ranked' and 'no preference') and listed all other programmes under 'not wanted' in the application system, this could result in a student not getting any offer if all of the 10 preferred programmes were ranked by other students who performed better in the assessments than the concerned individual.

Factors associated with early career choices of pharmacy students have been under-researched. It is known from the published literature that healthcare students including

pharmacy students are often attracted towards secondary care settings for their early career training and this often negatively impacts on the recruitment and retention in primary care and particularly in the rural settings.<sup>[5-10]</sup> Those students who opt to choose hospital pharmacy programmes placed more emphasis on the importance of patient and multi-disciplinary working, opportunities for career progression, further education and professional development. Other motivators for secondary care training programmes include perceived higher professional status, research opportunities and academic environment.<sup>[5,6]</sup> By contrast, those opting for primary care including community pharmacy often regard financial rewards, the spectrum of patients and diseases encountered in community as the motivators.<sup>[5,6]</sup> National health systems and health care models of a country can also impact upon training and career choices of healthcare professional students.<sup>[5]</sup> Analysis of the applicant data from the national recruitment scheme, and investigation of factors associated with applicants' decisions can be valuable to employers, educators and wider stakeholders associated with pharmacist pre-registration training. Student perspectives on the new national recruitment system has been recently published which showed that respondents were generally satisfied with the application process and commended the fairness of the selection methodology and convenience in allowing them to apply to multiple training providers.<sup>[11]</sup> This paper aims to address the dearth of literature on how and why pharmacy students select their pre-registration training programme placements.

This study aimed to investigate pharmacy students' selection of pre-registration training programmes and factors influencing their decision-making process.

## Methods

A mixed-method approach was used. This included: Phase 1: analysis of all applicant (n=2694) data from the HEE pre-registration recruitment scheme in 2017/18, Phase 2: A web-based survey of all students undertaking Master of Pharmacy Year 4 or the

Overseas Pharmacist Assessment Programme (OSPAP) who were eligible to apply to the 2017/18 scheme, followed by Phase 3: a focus group with students.

For phase 1, anonymised data about individual applications was obtained from the HEE Pharmacy National Recruitment Office. These data included applicant demographic information, i.e. ethnicity, gender, school of pharmacy, along with their pre-registration training programme preferences including ranked, no-'preference' and 'not wanted' categories. Data were analysed by a statistician (MJP) using Stata version 15 software. Descriptive statistics was used to identify those who exclusively selected either community or hospital sector programmes, or both. Trends in the top ranked (including first, top 10 and top 30) practice sector preferences (i.e. hospital or community training programmes) were extracted based on the total number of times each sector featured in applicants' selections of training programmes. Top ranked preferences were cross tabulated with gender and ethnicity variables. The total number of times each geographical area featured was also reported. Exact Binomial 95% Confidence intervals were calculated for all data using the Clopper-Pearson method.<sup>[12]</sup>

For phases 2 and 3, a whole population sampling method was used. The survey questionnaire consisted of 27 questions; a mix of closed and open-ended questions, including the use of Likert-type agree/disagree statements, with three sections exploring a) applicant views, experiences and factors affecting their preferencing of prospective employers b) applicants perceptions of their offer outcome in the context of their preferencing decisions and c) what factors influenced non-participation in the scheme [supplementary material 3]. Respondents were asked about the factors influencing their decisions at each stage of the process and to rate the importance of these factors on a scale of 0 (no influence at all) to 5 (a lot of influence). All survey respondents were given the option to express interest in participation in focus group via a specific question in the survey. This data was removed prior to review and analysis, so that survey responses remained anonymous.

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159 The survey and the topic guide for the qualitative study were designed using existing  
160 literature, research team input and discussion amongst the national evaluation steering  
161 group members which consisted of study researchers (LMS, VP, GF, TS), student,  
162 employer, academic, assessor and HEE representatives. The Theoretical domains  
163 framework (TDF) was used to construct the questions around factors associated with  
164 decisions in both the questionnaire and the focus group topic guide. TDF is a validated  
165 theoretical framework of determinants of behaviour which combines 33 theories of  
166 behaviours into 14 domains.<sup>[13]</sup> The domains can be used to explain the factors that are  
167 associated with a particular behaviour and these include knowledge, skills,  
168 environmental context and resources, capabilities, belief about consequences and social  
169 influences. TDF has been widely adopted in health care and education research in  
170 understanding and changing behaviours and investigating implementation problems.<sup>[14]</sup>

171

172 In April 2018, Heads of Schools and pre-registration training recruitment leads in all  
173 Schools of Pharmacy in the UK (n=32) were requested to circulate a letter and link to an  
174 online questionnaire to all 4<sup>th</sup> Year MPharm and OSPAP students that were eligible to  
175 apply for a pre-registration training position through Oriel (n=approx.2800). The survey  
176 was open for five weeks, with reminder emails sent at two- and four-week intervals  
177 using the same distribution method. Data were analysed using descriptive and inferential  
178 statistics using STATA version 15 (College Station, Texas, USA). Comparisons were  
179 made across gender and ethnicity variables.

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181 One focus group was held online, utilising WebEx, with discussion lasting 60 minutes.  
182 Participants were sent an information sheet and asked to return a signed consent form  
183 prior to the event. Focus group proceedings were transcribed verbatim. Qualitative data  
184 from focus group and responses from the open-ended questions from the questionnaire  
185 were analysed together using the framework technique.<sup>[15]</sup> A thematic coding  
186 framework was developed based on the research aims and objectives, topic guide and



TDF, following familiarisation with the data. A final coding framework was agreed after analysis of few quotes from the questionnaire and the focus group transcript. Any new emergent themes were added during the analysis. Duplicate independent coding and analysis of the qualitative data was undertaken by VP and LMS.

Ethical approval for the study was obtained from \*\*\* (anonymised). The work was carried out in accordance with the Declaration of Helsinki, including, but not limited to the anonymity of participants being guaranteed and the informed consent of participants being obtained.

## **Results**

### **Phase 1: Analysis of applicant data**

Data from all applicants (n=2694) to the 2017 pre-registration training recruitment scheme were available. Of these 1,746 (64.8%) applicants were female and 890 (33.0%) were male. A total of 234 hospital programmes (734 places NB: one programme may include more than one training place) and 1082 Community Pharmacy programmes (1427 places) were available for selection and ranking by the applicants. Most (n=2325, 86%) applicants selected pre-registration programmes across both hospital and community pharmacy sectors. Two hundred and eighty-three (283, 11%) and 86 (3%) applicants selected pre-registration programmes in hospital or community pharmacy sectors only respectively (table 1).

Table 1 to be inserted here

A large majority, 2182 (83.9%) of applicants ranked a hospital programme as their first choice for a pre-registration place representing 85% (n=735) of male applicants and 83.5% (1401) of female applicants (table 1). In contrast, 16.1% (418) applicants ranked community pharmacy programmes as their first choice (table 1). Preferences across

male and female applicants were similar, however ethnic variations in patterns were observed (table 1).

Top 10 and 30 ranked preferences were also dominated by hospital pre-registration programmes. A total of 25,252 top 10 ranked preferences (or all preferences where any applicant ranked fewer than 10 programmes) from all applicants (n=2694) were analysed. A total of 80.6% and 19.4% of the total top 10 ranked preferences related to pre-registration programmes within hospital and community pharmacy sector respectively. A similar pattern was observed during the analysis of top 30 ranked preferences (n=65,151).

Geographically, urban areas, particularly London, was most popular with approximately 4 in 5 applicants (80.6%) selecting at least one London-based programme (table 2). Applicants also sought training programmes in the same HEE region as their schools of pharmacy. For example, a large majority of applicants (98.1% and 89.1% respectively) from the two universities located in West Midlands region of England selected at least one programme from within the region, outnumbering their preferences in other regions.

Table 2 to be inserted here

Phase 2 (Survey): Factors associated with decision making

Three hundred and seven survey responses were received (approximate response rate: 11%). Long-term career aspirations for working in a particular sector was the factor rated most highly by the respondents, followed by proximity to respondents' permanent home or where they would like to live long-term (table 3). Information provided by the employer about their organisation and training programme was also important for many with over 57% of the respondents rating this factor 4 or 5 out of 5.

Table 3 to be inserted here

244

245 Respondent age, gender or ethnicity influenced ranking of three factors. Male  
246 respondents ranked the importance (5 out of 5) of salary higher than female  
247 respondents (26% vs 16%  $p=0.017$ ). Those aged 25 or over rated long-term career  
248 aspirations more highly (5 out of 5) than younger respondents (68% vs 64%  $p=0.041$ ).  
249 Tier 2 sponsorship availability through the employers, i.e. work permit requirements for  
250 immigration purpose, was important for respondents of 'any other ethnicity' 43% ( $n=16$ )  
251 compared to, for example, only 3% ( $n=4$ ) of the respondents of any white ethnicity  
252 ( $p<0.001$ ).

253

254 Qualitative data from survey and focus group

255 A rich, in-depth data set from 200 respondents from the open-ended questions  
256 contained in the questionnaire was obtained. One focus group was held with four  
257 participants. Two focus groups were intended; however, the second focus group had no  
258 attendance by any scheduled participant. Further recruitment effort was not deemed  
259 necessary as the preliminary analysis of the responses to open ended comments from  
260 over 200 respondents and one focus group data provided assumption that data  
261 saturation was achieved. The datasets were analysed together. A total of eight factors  
262 linked to TDF were identified and these are summarised in table 4. They are described  
263 below with further illustrative narratives and quotes.

264

265 Table 4 to be inserted here

266

267 a) Knowledge about the training programmes and prospective employers

268 Participants alluded to the importance of the information provided by employers in the  
269 online application system in informing their decisions. Participants described reading the  
270 information sources carefully before making a selection. While participants did speak  
271 highly of information from some employers, in particular from hospitals, they felt that

other employers did not give key information they were looking for. These included working pattern, availability of accommodation and detailed breakdown of pay rates.

'With the hospitals, they (information provided) were a lot more different, like one hospital trust would offer something, the other one would offer something else whereas with the community, especially the big chains they were all just copy, like they all sound the same...' [Focus Group P2]

#### b) Environmental context and resources: programme type, resources, locality

Size of the employing organisation was a key factor in selecting a community pharmacy pre-registration programme, with most participants preferring large chain multiple pharmacies to smaller, independent community pharmacies. Such preference was linked to perceived higher quality of training programmes in large chain pharmacies.

'I did preference the large chain over the independents cause I think when it comes to the quality of the teaching you get it, because you know the large chains have a structured programme, unless you've, like you've had a chance to say go for a week, or a few day in an independent, it's quite difficult to know how, like, how good the quality of teaching you'd get would be.' [Focus Group P4]

**Participants described the importance of locality when selecting a community pharmacy pre-registration programme because of the local patient/customer base.**

Some participants described a reluctance to undertake pre-registration training in remote and rural locations. They preferred living in an urban environment and perceived better opportunities available in urban areas. However, some participants expressed willingness to go to rural areas if no hospital training programmes were available in urban areas.

#### c) Belief about consequences

Participants described that selecting the right employer would enable them to be 'the best' pharmacist as a consequence.

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'I can become the best pharmacist that I can become as a result of that (selecting the 'best' employer).' [Focus Group P4]

d) Social influences

The importance of family and peer opinion were described and they also mentioned seeking advice from the trainees who had trained with their preferred employers and programmes. Some participants also described that speaking with acquaintances compensated for a lack of information from employers.

'I think for me it's because I know a lot of people who have been through like \*\*\* (a large multiple)'s pre-regs or \*\*\* (a large multiple)'s pre-regs and they've all spoke quite highly of them so I think I trusted them a bit more than like an independent that I'd never really heard of.' [Focus Group P1]

e) Memory, attention and decision process

Hospital training programmes were deemed to be more competitive and many applicants deemed it was important for applicants to select 'back ups'. Participants described various strategies to inform their decisions. One participant mentioned making their own spreadsheet and weighing the 'pros and cons' of the programmes against factors that were important to them.

'I kind of had like a table I'd mocked up myself in word with specific columns like wages, distance from home, things like that so, I went through each position one by one and kind of wrote down those key facts so then later when it came to your preferencing process opening up it was quite quick to just drag and drop into the columns that I wanted in the order that I wanted.' [Focus Group P2]

'I had gone for the ones near home for the community [programmes in my preferences], because I knew I wanted hospital more than community, I made the choice that if I got community I'd want one near home. Purely because I think I was more willing to make a sacrifice on where I was living for a hospital place rather than a community place.' [Focus Group P4]

f) Social, professional role and identity

Most participants had aspired to become 'hospital' pharmacist and they perceived pre-registration training to be a stepping stone to fulfil their aims.

'I preferenced over 200 hospital places and put some community in the no preference section just in case although I strongly believed 200 hospitals would be enough (to get me a place), however I was offered one of the community places that I actually didn't want. I had to accept with upgrades and hope for a hospital upgrade however I was not offered an upgrade and I later rejected my original offer as I didn't want to work in a community pharmacy.' [Survey P142]

'I am lucky that I got my preferred hospital, but I would have been extremely dissatisfied if I ended up in community as this was never my wish.' [Survey P43]

g) Skills/ Opportunity for skills development

Perceptions around skills development was often informed by the information provided by the employers in the application system.

'...the main things (informing my decision making) was like the practical experience that I could get from them.' [Focus Group P3]

'(I wished there was) more information about each training place offered for example providing a sample timetable for the year so that candidates can understand better about how the year at that place would be.' [Survey P103]

h) Motivation and goals

Participants described high motivation in securing the programmes and employers they ranked highly. Some were willing to sacrifice their geographical preference if it meant obtaining an offer from a highly ranked programme.

'Even though it wasn't anywhere near where I lived it was just because I thought, this has been recommended as a really good teaching programme that I might as well go out there and try my best to get that programme...' [Focus Group P4]

362

## 363 **Discussion**

### 364 **Summary of key findings**

365 Pharmacy students showed a high affinity towards hospital pre-registration programmes.  
366 The workforce census of the General Pharmaceutical Council suggests approximately  
367 71% and 21% of UK registered pharmacists work in the community and hospital sectors  
368 respectively.<sup>[16]</sup> However, this study has shown that most applicants preferred to train in  
369 a hospital. Although a further 25% of community pharmacy pre-registration places are  
370 available outside the national recruitment scheme, the results show that hospital pre-  
371 registration programmes were highly oversubscribed.

372

### 373 **Strengths and limitations**

374 This is the first large scale evaluation of applicant behaviour in relation to their  
375 programme selection for a pharmacist pre-registration training programme in the UK. A  
376 complete dataset from the applicants of the 2017/18 recruitment cycle was available  
377 followed by a large-scale survey. Use of TDF allowed a systematic data collection and  
378 interpretation in relation to factors associated with decision making. The responses to  
379 the survey and focus group were low. This can be explained by the survey and focus  
380 group being conducted during Master of Pharmacy final year exam period. Also, there  
381 may have been differences in the level of engagement with the invitation from different  
382 Schools of Pharmacy as the response rate varied across Schools. The low response rate  
383 of the survey limits the external validity of the findings. We compared the survey  
384 respondents with the demography of the national applicant data which suggested that  
385 respondents were comparable with regards to the sex distribution (total females  
386 amongst 2,694 national applicants were 64.8% vs 76.0% in our survey).

387

### 388 **Discussion in the context of available literature**

389 Greater affinity of students towards hospital training programmes is a phenomenon  
390 reported in the limited literature from other (non-pharmacy) healthcare professional

disciplines.<sup>[5]</sup> Medical students' attraction towards secondary care settings for a training place may negatively impact on the recruitment and retention in primary care.<sup>[5,6]</sup> Pharmacy students who opted to choose a hospital-based career placed more emphasis on the importance of patient and multi-disciplinary working, opportunities for career progression, further education and professional development.<sup>[5,6]</sup> In addition, perceived higher professional status, research opportunities and academic environment in hospital settings have also been described. A different perspective is demonstrated by those opting for primary care, including community pharmacy, who often regard financial rewards, the spectrum of patients and diseases encountered in community as the motivators.<sup>[5,6]</sup> While pharmacy students regard higher earning potential in community pharmacy, literature suggests that factors such as opportunities for career progression, interaction with patients, further education and professional development are perceived to be better in hospitals than in a community pharmacy environment.<sup>[5,6]</sup>

More extensive clinical roles and diversification of the pharmacy workforce have begun in the UK in relation to recent policy initiatives. This includes recruitment of pharmacists and pre-registration opportunities in general practices.<sup>[16,17]</sup> Long-term evaluations are needed to investigate how career aspirations of pharmacy students change over time.

There was a strong geographical variation in the selection of pre-registration programmes with programmes in London highly preferred. Qualitative data suggested applicants' desire to live in an urban environment and further career opportunities were key factors associated with such decisions. Social isolation and lack of family support are amongst key barriers to uptake of the rural training programmes by pharmacy graduates as reported in the literature.<sup>[7,8]</sup> It has been shown that rural placements during undergraduate degrees can change such perceptions.

The disregard of salary as an influencing factor may be down to subtle differences in the salaries across training programmes.<sup>[9]</sup> However, in countries where such pre-



registration training programmes do not constitute a pre-requisite for professional registration as a pharmacist, the comparatively low salary of the trainees against early career positions are known to dissuade students from up taking such training positions.<sup>[10]</sup> Salaries can however, influence long term career aspiration.<sup>[6]</sup> A review of international literature that aimed to identify facilitators to primary care training environment related to exposure to rural location, role models, working conditions; while barriers included low income and prestige.<sup>5</sup> Often these factors were setting specific. For example factors specific to middle- and low-income countries were: understanding of rural needs and intellectual challenge and those specific to high-income countries included attitude towards social problems, voluntary work, influence of family, and length of residency.<sup>[5]</sup>

## Conclusion

Similar to the phenomenon observed with other clinical disciplines, most pharmacy students aspire to undertake pre-registration training in hospitals and consider long-term career aspirations very important when selecting their pre-registration training. Urban areas were preferred over rural ones. The evaluation necessitates promotion of the clinical roles and career opportunities available in community pharmacy by educators, employers and wider stakeholders, as published literature suggest perceived lack of clinical roles is a key reason for low attraction towards community pharmacy training places. Therefore there is a risk that community pharmacy may be seen as a 'left over' role for less competitive candidates. Recruitment in remote and rural areas may benefit from widening awareness of the job opportunities available for pharmacists.

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495 Table 1: Applicants' (n=2694) first ranked preferences: number of applicants by gender and ethnicity who ranked NHS Acute Hospital or Community  
496 Pharmacy sector as their first choice

	Hospital programmes as first ranked preference*				Community Pharmacy programmes as first ranked preference*			
	Number of applicants	%	lower 95% CI	Upper 95% CI	Number of applicants	%	lower 95% CI	Upper 95% CI
All	2182	83.9	82.5	85.3	418	16.1	14.7	17.5
Female	1401	83.5	81.7	85.3	276	16.5	14.7	18.3
Male	735	85.0	82.4	87.3	130	15.0	12.7	17.6
<b>Ethnicity</b>								
White – British	483	90.3	87.4	92.7	52	9.7	7.3	12.6
White – Irish	18	85.7	63.7	97.0	3	14.3	3.0	36.3
Any other white background	65	82.3	72.1	90.0	14	17.7	10.0	27.9
Mixed White and black Caribbean	4	66.7	22.3	95.7	2	33.3	4.3	77.7
Mixed White and black African	6	85.7	42.1	99.6	1	14.3	0.4	57.9
Mixed White and Asian	11	52.4	29.8	74.3	10	47.6	25.7	70.2
Any other mixed background	14	93.3	68.1	99.8	1	6.7	0.2	31.9
Asian or Asian British – Indian	344	79.1	75.0	82.8	91	20.9	17.2	25.0
Asian or Asian British – Pakistani	270	82.3	77.7	86.3	58	17.7	13.7	22.3
Asian or Asian British – Bangladeshi	79	78.2	68.9	85.8	22	21.8	14.2	31.1
Any other Asian background	184	83.6	78.1	88.3	36	16.4	11.7	21.9
Black or Black British – Caribbean	11	84.6	54.6	98.1	2	15.4	1.9	45.4
Black or Black British – African	280	87.8	83.7	91.2	39	12.2	8.8	16.3
Any other black background	12	100.0	100.0	100.0	0	0.0	0.0	0.0
Chinese	194	81.9	76.3	86.5	43	18.1	13.5	23.7
Any other ethnic group	126	84.6	77.7	90.0	23	15.4	10.0	22.3
Not stated	56	81.2	69.9	89.6	13	18.8	10.4	30.1

497 \*reflects percent within category for gender and ethnicity data; missing data not included in the table  
498

499 Table 2: Distribution of student preferences of programmes across HEE local areas by all  
500 applicants (n=2694)\*  
501

Geographical areas	Number of available programmes/ places (a)	Number of applicants (b)	Proportion	lower 95% CI	Upper 95% CI
London	283/521	2171	80.6	79.0	82.1
East of England	141/228	1974	73.3	71.6	74.9
West Midlands	96/204	1939	72.0	70.2	73.7
North West	112/181	1905	70.7	69.0	72.4
Kent, Surrey and Sussex	146/197	1881	69.8	68.0	71.6
East Midlands	80/146	1844	68.4	66.7	70.2
Thames Valley	47/78	1808	67.1	65.3	68.9
Yorkshire and the Humber	112/164	1725	64.0	62.2	65.8
South West	105/150	1705	63.3	61.4	65.1
Wessex	51/93	1595	59.2	57.3	61.1
North East	59/98	1523	56.5	54.6	58.4
Wales	68/101	1514	56.2	54.3	58.1

502 \*relates to proportion of applicants who selected at least one programme from within the region.  
503 Note: Data at a county levels are available on request from authors.

Table 3: Respondent ranking of the factors influencing preferencing decisions

Factors	5 (a lot of influence) n (%)	4 n (%)	3 n (%)	2 n (%)	1 n (%)	0 (no influence at all) n (%)
Proximity to my University/School of Pharmacy	19 (6.5%)	21 (7.1%)	42 (14.3%)	33 (11.2%)	22 (7.5%)	157 (53.4%)
Proximity to my permanent home or by where I would like to live long-term	179 (60.7%)	45 (15.3%)	26 (8.8%)	7 (2.4%)	4 (1.4%)	34 (11.5%)
Existing relationship/s with the employer/s	34 (11.5%)	24 (8.1%)	31 (10.5%)	21 (7.1%)	20 (6.8%)	165 (55.9%)
Long-term career aspirations for working in a particular sector	187 (63.4%)	52 (17.6%)	30 (10.2%)	6 (2%)	5 (1.7%)	15 (5.1%)
Size of the employing organisation	62 (21.1%)	63 (21.4%)	71 (24.1%)	37 (12.6%)	15 (5.1%)	46 (15.6%)
Salary	56 (19%)	66 (22.4%)	61 (20.7%)	33 (11.2%)	23 (7.8%)	55 (18.7%)
Information made available by the employer about their organisation and training programme	81 (27.5%)	89 (30.2%)	58 (19.7%)	31 (10.5%)	14 (4.7%)	22 (7.5%)
Perceived ease of gaining a training place	39 (13.2%)	40 (13.6%)	60 (20.3%)	43 (14.6%)	40 (13.6%)	73 (24.7%)
Tier 2* sponsorship availability	30(10.2%)	0 (0%)	11 (3.7%)	2 (0.7%)	10 (3.4%)	242 (82%)
Peer opinion	12 (4.1%)	36 (12.2%)	46 (15.6%)	42 (14.3%)	28 (9.5%)	130 (44.2%)
Family opinion	29 (9.8%)	50 (16.9%)	60 (20.3%)	52 (17.6%)	21 (7.1%)	83 (28.1%)

Top three factors rated most highly by the respondents appear in grey \*work permit required by UK Home Office for skilled immigration- applicable to international students

509 Table 4: Factors associated with applicant decisions: TDF themes

Themes in relation to TDF domain	TDF descriptor <sup>6</sup>	Sub themes
Knowledge	An awareness of the existence of something	Knowledge about training programmes
		Knowledge about the employers
		Knowledge about the geographical and demography information
Skills	An ability or proficiency acquired through practice	Perceived opportunity for skills development
Social/Professional Role and Identity	A coherent set of behaviours and displayed personal qualities of an individual in a social or work setting	Career aspiration as a hospital pharmacist
		Career aspiration as a community pharmacist
Environmental context and resources	Any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behaviour	Perceived quality of the training
		Sector of training, hospital or community
		Size of the community pharmacy employer, i.e. large multiple vs independents
		Preference to train in an urban environment
		Local demography of community pharmacy
Goals, motivations and Intentions	Mental representations of outcomes or end states that an individual wants to achieve	Motivations to train with a 'reputable' employer
		Motivation to train in the preferred sector (mostly hospital)
		Motivation to train in the preferred location
Beliefs about capabilities	Acceptance of the truth, reality, or validity about an ability, talent, or facility that a person can put to constructive use	Belief about securing the desired training places
Beliefs about consequences	Acceptance of the truth, reality, or validity about outcomes of a behaviour in a given situation	Consequences of preferencing 'wisely'
		Consequences of selecting best employers and programmes
Emotions	A complex reaction pattern, involving experiential, behavioural, and physiological elements, by which the individual attempts to deal with a personally significant matter or	Optimism or pessimism about securing a preferred programme

	event	
Memory, attention and decision processes	The ability to retain information, focus selectively on aspects of the environment and choose between two or more alternatives	Decision making process
		Number of programmes preferred by the applicants
		Time frame to decide on the preferencing decisions
Social influences	Those interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviours	Opinion of pre-registration pharmacists
		Opinion of family and friends
		Opinion of pharmacists/tutors obtained during placements or work experiences

510 TDF: Theoretical domains framework