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Perspectives of pharmacists on facilitating experiential learning placements for pharmacy students in non-patient facing Settings

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Abstract

Introduction: Recently, the model of pharmacy education in Ireland changed to a five-year pharmacy degree, with three distinct blocks of experiential placements dispersed throughout the degree. The United Kingdom is also considering the introduction of a similar five-year pharmacy degree, while the United States is looking to further expand experiential learning opportunities in non-clinical settings. This study was carried out to ascertain the perspectives of pharmacists working in non-patient facing roles on the change in the pharmacy education model. In particular, the aim was to understand the barriers to and facilitators of placements to aid in identifying placement recruitment strategies for non-patient facing placements.

Methods: A questionnaire was distributed to pharmacists employed in non-patient facing settings, including the pharmaceutical industry, education and regulation. Quantitative responses were analyzed using descriptive statistics, while qualitative questions were analyzed thematically.

Results: Regardless of experience in the practice setting or of supervision, the majority expressed a preference for offering paid placements of six months' duration. There was divided opinion regarding whether students should be given study leave, whether the student's supervisor should be a pharmacist and whether students should undertake specialized postgraduate training. The main barriers to placements were time, the placement structure, availability of suitable projects or supervisors and awareness of placement opportunities. Prior experience in the practice area, developing the talent pipeline and personal interests were all viewed as placement facilitators.

Conclusion: Given the increasing roles for pharmacists in non-patient facing practice settings, this study highlights the importance of stakeholder involvement during the implementation of a new model of education, to ensure that placements in all settings are feasible.

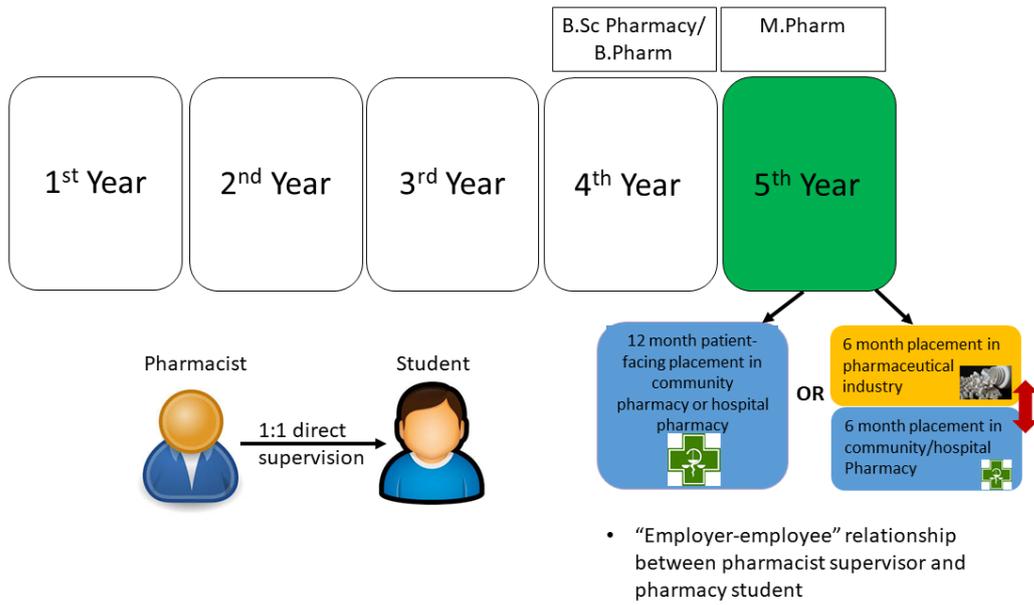
Introduction

In recent years, a new integrated model of pharmacy education has been proposed in both the UK and Ireland and has been introduced in some academic institutions. Beginning in 2010, the change in the model of education that is proposed in these jurisdictions is to move from the traditional ‘4+1’ pharmacy degree (four year undergraduate pharmacy degree, followed by one year of practice based training), to a five-year pharmacy degree in which the practice-based placements are dispersed within the degree, and organized, managed and quality assured by the academic institutions.^{1,2} Following the publication of Pharmacy Education and Accreditation Reviews Report, the five-year pharmacy education degree was implemented in the Republic of Ireland in 2015 (Fig. 1).^{1,3} Currently, three degrees are available in England in which the experiential learning placements are dispersed throughout the degree (University of Bradford, University of Nottingham and University of East Anglia); however, only the latter two run degrees in which the practice placements being managed by the University, whereas the model in University of Bradford is more accurately described as a ‘sandwich’ model with intercalated periods of training.⁴ Pharmacy schools in Scotland are planning to introduce a national integrated pharmacy degree in 2020.⁴ Given the major impetus to introduce an integrated pharmacy degree in other jurisdictions, with potential consequences for the practice placement elements of the degree, this article provides a timely insight into perspectives of pharmacists from non-patient facing settings on the implementation of the five-year pharmacy degree in Ireland.

The main driver for the change in the model of pharmacy education more globally is the desire for an increased quality of pharmacy graduate, which is made possible by the quality assurance of placements by the academic institutions.² Another major reason to implement a new model of pharmacy education is to allow students the opportunity to experience more than one placement practice setting.⁴ Increased placement opportunities in pharmacy education degrees are sought after not only in Ireland and the UK, but also in the US; recently the American Association of Colleges of Pharmacy (AACCP) released policy statements in which they advocate for the expansion of experiential learning opportunities by all federal agencies and encourage expansion in the pharmacy

curriculum to inform students of career opportunities in clinical, research and administrative positions.⁵ While there are currently opportunities for US students to undertake advanced pharmacy practice experiences in the pharmaceutical industry, the policy statements of the AACCP indicate that there is a drive to increase the offering of non-clinical placement experiences in the US also.^{5,6} It is a requirement of the Pharmaceutical Society of Ireland's (PSI's) accreditation standards that the academic institutions provide practice placement opportunities to students across the main practice settings of community, hospital and industry.⁷ Therefore, practice placements in non-patient facing settings, overseen by registered pharmacists who are employed in this sector, are essential. By contrast, the design of the new UK based pharmacy degree is such that placements take place in patient facing settings and thus, this will make careers in non-patient facing settings a less obvious choice for graduates.⁸ Despite this difference, there are similarities across the main reforms between the proposed degree in the UK and the degree which was implemented in Ireland; both involve a single five-year degree which culminates in graduation and registration as a pharmacist, the academic institutions are responsible for delivering the entire degree and signing off on students, there is a centralized application process and the 'pre registration year' is split into two placement blocks (one in fourth year and one in fifth year), in contrast to the shorter rotations carried out in the US.^{9,10} Thus, the findings of this study have relevance in many jurisdictions.

'4+1' PHARMACY DEGREE



FIVE-YEAR INTEGRATED PHARMACY DEGREE

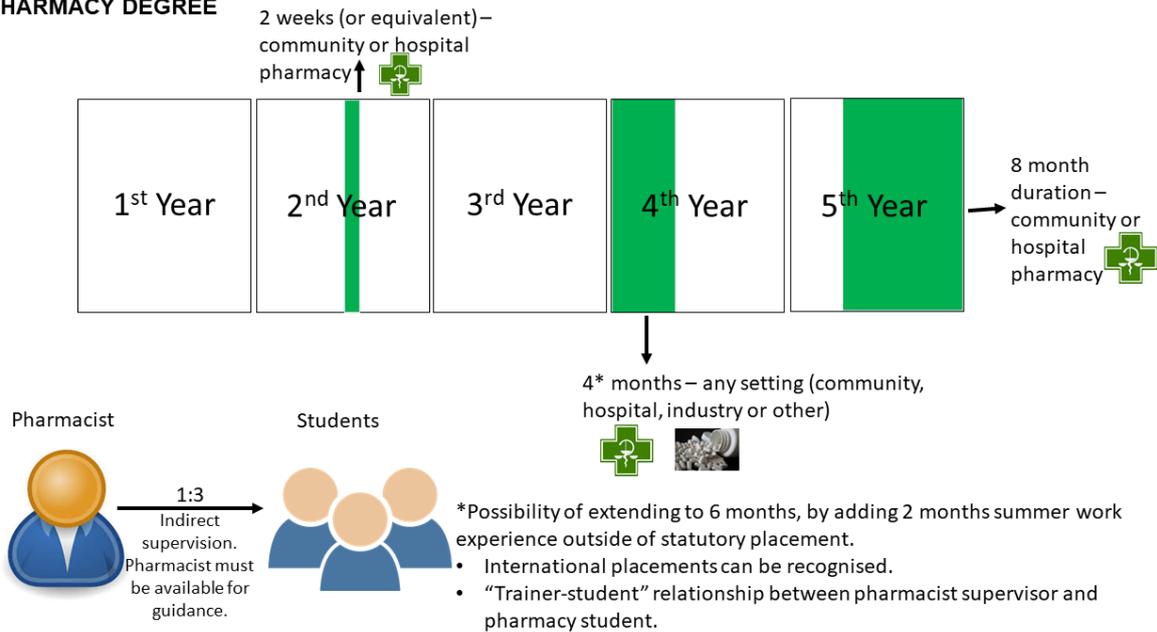


Fig. 1: Comparison of placements in non-patient facing settings in the 4+1 and new five-year pharmacy degrees

A 2010 Pharmine report suggests that there were 4.2% of pharmacists working in non-clinical roles in Ireland at that time, whereas recent estimates indicate that this has increased to 5.5%.^{11,12} It is also worth noting that Ireland is at the lower end of the European Union average in terms of the percentage

of pharmacists in non-clinical roles, with estimates of 10% or greater of the pharmacist workforce in these roles in Germany and Italy, rising to 50% or more in Sweden and Denmark.¹³ It has been suggested that without input from pharmaceutical industry, it is likely that there will be a mismatch between the competencies of graduates from the pharmacy degrees and the requirements in pharmaceutical industry and regulation.¹⁴ This was recognized almost 20 years ago and the proposed solution was for pharmaceutical industry and academia to collaboratively deliver education and training programs.¹⁵ Of particular note, experience in industry prior to graduation was identified as a requirement of graduates wishing to work in the pharmaceutical industry.¹⁵

Objective

The objective of this study was to identify the perspectives of pharmacists in non-patient facing practice settings, such as industry, regulation and academia, on the placement governance, placement structure and training pathways in the pharmacy degree in Ireland. A secondary objective is to characterize barriers to and facilitators of placements in these practice areas to create the research driven basis for defining placement recruitment strategies for non-clinical placements.

Methods

In this cross-sectional study, a mixed methods questionnaire was used to gather quantitative and qualitative data from pharmacists working in industry, academia and regulation. The questionnaire was distributed by email to members of an Irish organization called PIER (Pharmacists in Industry, Education and Regulatory), which represents the interests of pharmacists employed in non-patient facing roles. The questionnaire was constructed using Survey Monkey (Survey Monkey Inc., Palo Alto, CA, USA; <https://www.surveymonkey.com>) for ease of dissemination and data collection. The authors did not have access to PIER's mailing list, and PIER were not privy to survey responses. This study received ethical approval from the Social Research Ethics Committee at University College Cork (2018 015).

Two authors (EB and BG) developed the questionnaire (available upon request). The questionnaire gathered quantitative information on respondent demographics, experience of student supervision,

perspectives on governance and structure of experiential learning placements, training pathways for students wishing to pursue a career in non-patient facing settings and qualitative responses from open ended questions on barriers to and facilitators of placements. The questionnaire was pilot tested on a convenience sample of seven members of PIER on the 22nd January 2018. Respondents to the pilot were asked to give feedback on the relevance and clarity of the questions, which resulted in minor wording changes. After the pilot, the questionnaire was distributed to 390 pharmacists on the PIER mailing list between the 24th and 26th January 2018. One reminder email was sent to the mailing list one week prior to the questionnaire closing.

Quantitative data were analyzed using reported frequencies and descriptive statistics. A qualitative content analysis was conducted on the open ended questions. Each response was coded by two members of the research team (MD and EB), who employed an inductive approach in which coding and theme development were driven by the comment content. A short codebook was created by MD during initial coding of the qualitative comments. The coding and thematic analysis was carried out in a semantic way in order to reflect the explicit content of the responses.¹⁶ EB used the same codebook when independently categorizing the qualitative comments. In addition, a final review of the thematic analysis of data was compared with the original statements to ensure all comments were included and to prevent personal bias by the authors.

Results

Demographics

The questionnaire was completed by 84 respondents out of 390 recipients, i.e. a 21.5% response rate. The respondent demographics showed that majority of surveyed pharmacists were employed in the pharmaceutical industry, and were mostly in regulatory or quality assurance/compliance roles, while a minority were employed in academia, regulation and other roles (Table 1). The industrial pharmacist respondents were employed in a diverse range of company types, with slightly more respondents from sales and marketing/commercial companies, regulatory bodies and non sterile product manufacture than from other types of companies. There was a wide range of experience levels among respondents, with the majority having less than 5 years of experience and having entered industry directly after

undergraduate studies, with some prior industry experience. In terms of placement supervision, 39% of respondents had previously supervised a pharmacy student on placement, while only 8% were currently supervising a pharmacy student.

Table 1: Questionnaire Respondent Demographics

Variable	Number (%)
Area of practice	n = 84 (multiple choices allowed)
Industry	52 (61.91)
Regulatory	21 (25)
Academia	7 (8.33)
Other (consultancy)	4 (4.76)
Role in practice	n = 82
Manufacturing, technical services	7 (8.54)
Regulatory	20 (24.39)
Quality assurance/GMP ¹ compliance	15 (18.29)
Research and development	7 (8.54)
Market access	7 (8.54)
Sales and marketing	3 (3.66)
Wholesale/GDP ²	1 (1.22)
Pharmacovigilance	7 (8.54)
Medical information	3 (3.66)
Other (medical affairs, consultancy, academia)	12 (14.63)
Type of company	n = 82 (multiple choices allowed)
Small molecule manufacture	5 (4.46)
Non sterile product manufacture	13 (11.61)
Sterile product manufacture	9 (8.04)
Biological medicine manufacture	9 (8.04)
Distribution	9 (8.04)
Consultancy	8 (7.14)
Contract services	4 (3.57)
Research and development	11 (9.82)
Regulatory body	16 (14.29)
Sales and marketing/commercial	18 (16.07)
Other	10 (8.93)
Years of post registration experience in industry, education or regulation	n = 82
<5	34 (41.46)
Between 6 and 10	15 (18.29)
Between 11 and 15	6 (7.32)
Between 16 and 20	11 (13.41)
Between 21 and 25	10 (12.2)
Between 26 and 30	2 (2.44)
>30	4 (4.88)
Career Path	n = 82
Entered industry after undergraduate studies:	
Previous industry experience	31 (37.8)
No previous industry experience	4 (4.88)
Moved to industry from patient facing setting:	
Previous industry experience	7 (8.54)
No previous industry experience	18 (21.95)
Entered industry after postgraduate studies	18 (21.95)
Other (in academia, not pharmaceutical industry)	4 (4.88)
Supervision experience	n = 77
Currently supervising pharmacy student	6 (7.79)
Previously supervised pharmacy student	23 (29.87)
Never supervised pharmacy intern; supervised pharmacy student on summer work experience	9 (11.69)
Never supervised pharmacy intern; supervising student from another course	5 (6.49)
Never supervised any student	34 (44.16)

¹ GMP Good Manufacturing Practice

² GDP Good Distribution Practice

Placement Structure and Governance

The vast majority of respondents expressed a preference for the placement to last for at least six months (73%), while more than half (56%) felt that the placement would ideally be undertaken in a non-patient facing setting in the final year of the degree. Regarding the structure and governance of the placements, there was almost complete agreement that students should be paid by the placement provider (85%) and that international placements in non-patient facing settings should be possible (82%). There were mixed opinions regarding whether the placements should be back to back, so that every six months a new pharmacy student would begin their placement (57% agreed), whether the supervisor had to be a qualified pharmacist (53% agreed) and whether the student should be given protected study leave on one day per week (55% disagreed) (Fig. 2).

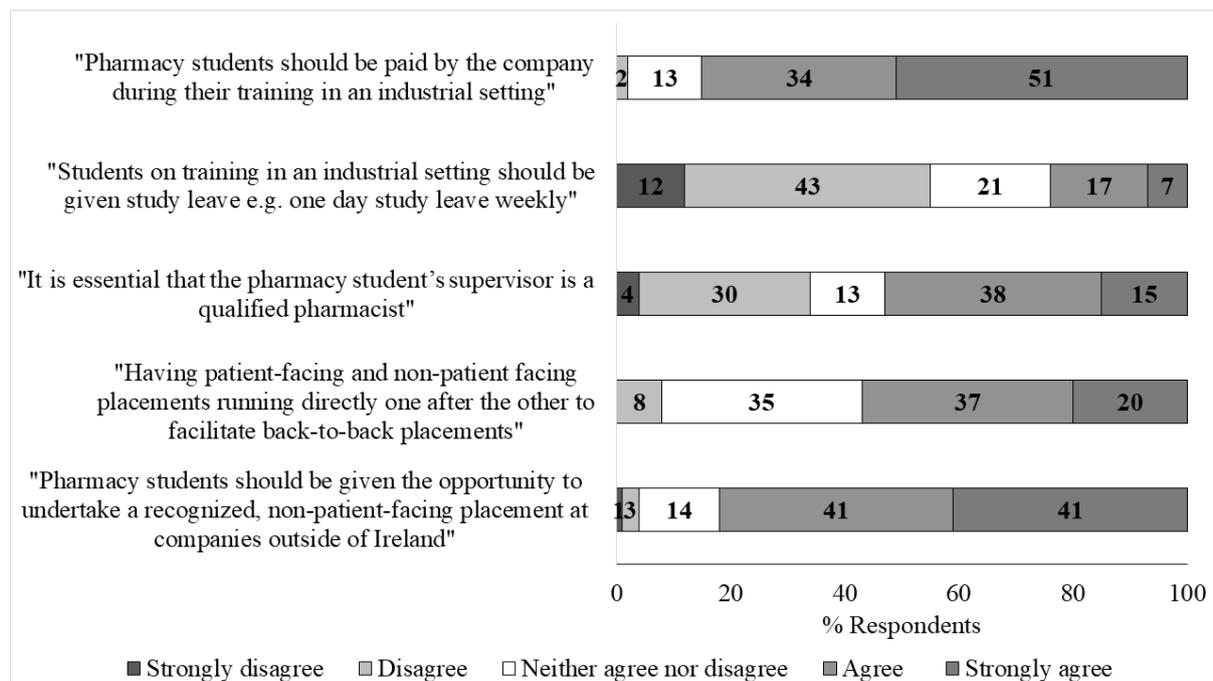


Fig. 2: Pharmacists' opinions on placement structure and governance of experiential learning placements in non-patient facing settings

Education Pathways to Non-patient facing Career

Respondents had divided opinions on the most appropriate education route for pharmacists wishing to pursue a non-patient facing role, with 45% stating that some postgraduate education is essential, while

37% felt that no postgraduate education is required for a non-patient facing role. The respondents' own career path may have influenced this perspective, as there were diverse entry routes to the respondents' non-patient facing career, including direct entry from undergraduate degree with relevant placement experience (38%), and without relevant placement experience (5%), entry following a postgraduate qualification (22%), or moving from a patient facing role with prior relevant experience (9%) or without prior relevant experience (22%). The most stark finding relating to this was that 91.5% of respondents felt that placement experience in the non-patient facing setting was a requirement for a career in their field.

Effect of Experience on Perspectives

The majority of non-patient facing pharmacists (60%) who have experience of facilitating students on placement have over 5 years' experience. Of those with less than 5 years' experience, 35.5% have some experience of supervising a student, whereas for those with greater than 5 years of experience, almost 70% have previously or are currently supervising a student. As viewpoints can differ between pharmacists based on both years of experience in a practice setting and also based on past experiences of supervising students, the results have been analyzed taking these two factors into account (Figs. 3 and 4). It is clear that regardless of years of experience in a practice area or of student supervision, the majority of respondents agreed on the minimum duration of a practice placement, payment for placement, willingness to supervise and whether to recommend pharmacy as a course, if a student wished to pursue a non-patient facing career.

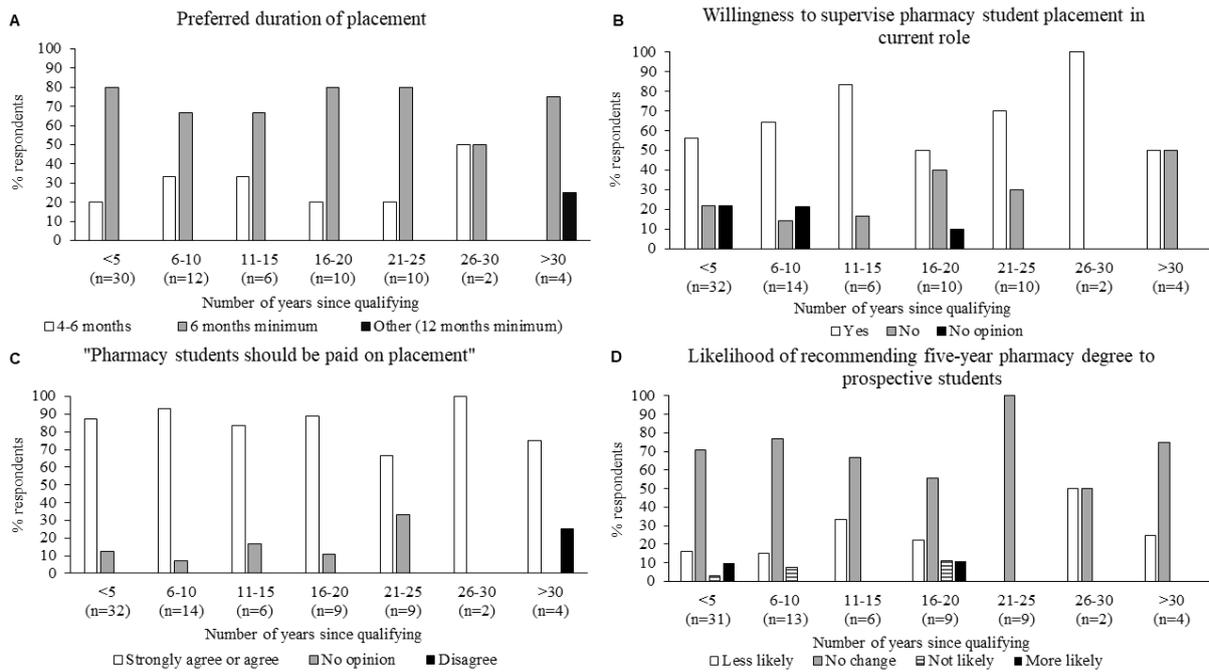


Fig. 3: Pharmacists' opinions regarding placements on the five-year pharmacy degree, based on years of experience in practice setting, in particular with regards to A) duration of placement, B) willingness to supervise pharmacy student placement, C) payment for placement and D) suitability of pharmacy degree for student with interest in non-patient facing career.

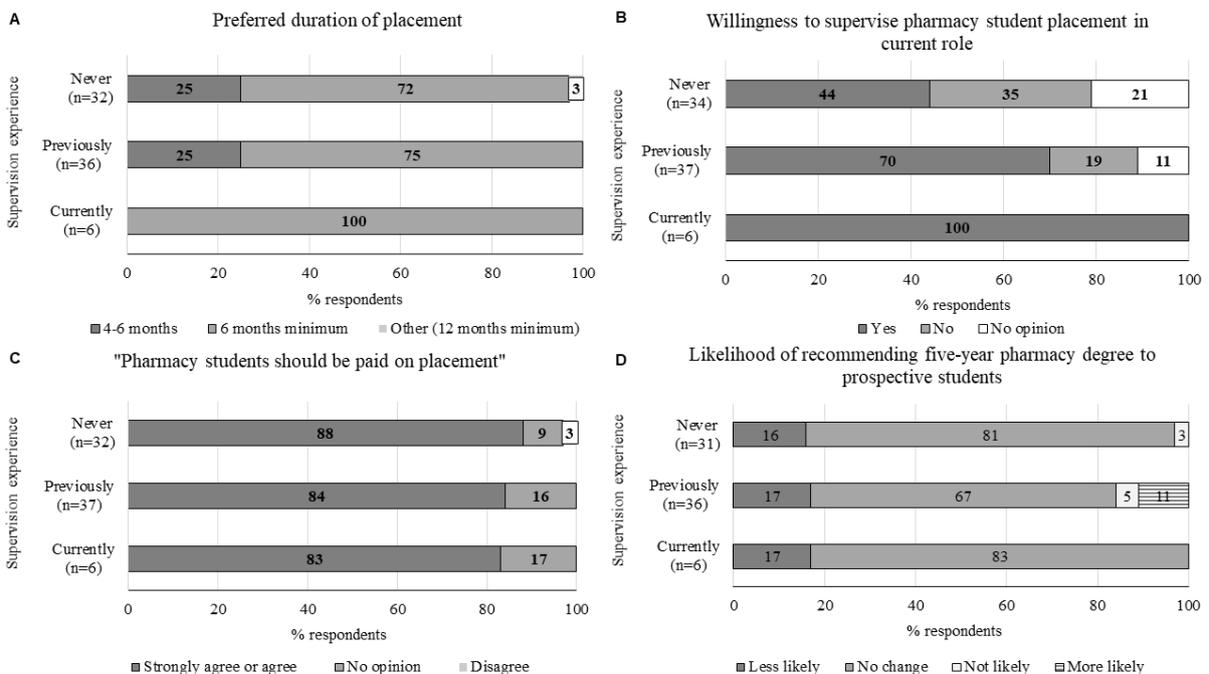


Fig. 4: Pharmacists' opinions regarding placements on the five-year pharmacy degree, based on experience of student supervision, in particular with regards to A) duration of placement, B)

willingness to supervise pharmacy student placement, C) payment for placement and D) suitability of pharmacy degree for student with interest in non-patient facing career.

Barriers to Placement

In the survey, there were two open ended questions which allowed respondents to give their opinion on the barriers they perceived to facilitating a pharmacy student on placement. Many respondents identified time as a barrier to the facilitation of student placements. The time that is required of the student's supervisor to induct, train and tutor the student was highlighted as an issue. It also seems to be embedded in some companies' cultures that placement facilitation reduces productivity.

The other main barrier which emerged was the mandatory non-payment of pharmacy students on placement – it was noted that this was in conflict with company policies and the potential negative impact on the students was also raised.

The placements on the new five-year pharmacy degree are structured differently to the previous 4+1 degree. Elements of the new placement structure presented a barrier including the study day each week, the training period of four months being too short and the lack of opportunity to have back to back six month placements. Respondents also raised additional concerns regarding the four month duration, as the lack of continuity in placement means that internal approval needs to be sought each year for the student placement.

A number of responses centered around availability and suitability of projects. A number of respondents identified company restructuring or the nature of the company's business in Ireland as the limiting factor in terms of finding suitable projects.

Furthermore, the lack of availability of a pharmacist to act as the student's tutor and the restriction of one student to one pharmacist tutor were raised as potential issues. All of these barriers relate to the 4 + 1 degree; the placement governance and legislation associated with the new five-year pharmacy degree has removed these barriers.

There was a lack of awareness among potential non-clinical placement providers that the academic institutions were interested in placing students in non-patient facing settings. However, many potential placement providers have been actively approached by the academic institutions regarding the new placement degree the respondents to the questionnaire may not have been the point of contact at the company.

Facilitators of Placement

There were two open ended questions in the survey, in which the responses highlighted potential strategies to increase pharmacy student placements in industry. Previous experience within the non-patient facing setting is viewed as a major facilitator. Related to this theme, many respondents expressed the opinion that a greater level of industrial pharmacy training at the academic institutions, including from external guest lecturers, would increase the training opportunities for students in industry.

The talent pipeline is a major facilitator of student placements; according to respondents, pharmacy students are a valuable resource to pharmaceutical companies as they *“learn quickly”*, *“integrate well with existing staff”*, and pharmacists find that facilitating student placements is a *“worthwhile experience”*.

Some elements of governance were viewed as potential facilitators of student placements, e.g. a minority stated that non payment would allow more industry placements. Additionally, allowing students to undertake placements without direct supervision by a pharmacist is a facilitator, as while the pharmacist must be available to the student for support and guidance, another member of staff can be nominated to take over the direct supervision of the student.

Altruism emerged as a facilitator, as did personal passion for helping others who want to develop their career in a non-patient facing setting. One respondent noted how facilitating a student on placement contributed to their continuing professional development, in terms of gaining management experience.

Discussion

There is an impetus to move to an integrated five-year pharmacy degree, due to the drive to increase quality assurance and to standardize the educational experience for pharmacy students.^{2,17} The introduction of dispersed placements in the pharmacy degree, as one element of an integrated model of pharmacy education, additionally has the potential to increase placement opportunities outside of traditional patient facing settings.^{3,17} It was recently stated that the design of a new pharmacy degree should take into account the views of all external stakeholders, as an essential step to ensuring successful implementation.¹⁸ Thus, it is imperative that the opinions of stakeholders, whose involvement is paramount to the success of the degree are sought and insofar as possible, are taken into account in course design and implementation. The aim of this study was to explore the factors which facilitate or impede pharmacy student placements in non-patient facing practice settings according to an essential cohort of external stakeholders i.e., pharmacists with the potential to facilitate student placements in non-clinical practice settings. The respondents to this study had a diverse demographic profile, which suggests that the views of pharmacists from all non-patient facing practice areas, backgrounds and experience levels were represented, albeit with a much higher representation of pharmacists from industry compared to other non-patient facing settings.

In this study, pharmacists' opinions were sought on the elements of the placement that had changed in the new five-year pharmacy degree. The majority of respondents, regardless of years of experience in a non-patient facing role or experience of supervision, expressed the view that they preferred the placement structure in the 4+1 course, with a few exceptions. As this finding is very focused on the specific requirements of the placements in Ireland, this is not generalizable to other pharmacy degrees; however, it highlights the necessity of including all stakeholders in the design of an education program. The majority of respondents thought that the optimal duration of placement was six months minimum, to take place in the final year of study and for students to be on back to back placements, i.e. continuity of placement students. The respondent pharmacists also expressed a preference for receiving applications for placements from all interested students, as opposed to a selection of applications based on a matching algorithm. These preferences reflect the structure and

governance of the previous one year internship, and have changed since the introduction of the new pharmacy degree, largely due to the introduction of new legislation.^{19,20} It is interesting to bear in mind, however, that just 8% of survey respondents were supervising a student intern at the time and the statutory placements on the new pharmacy degree had not started. Therefore, despite an expressed preference for the structure of the internship style placement, very few pharmacists hosted an intern on placement. The reasons for this were not explored in this survey.

Payment for placement emerged as one of the dominant themes in this survey. The mandatory non payment of placements was identified as a major concern, in particular due to the risk of “*very real hardship*”, of making pharmacy “*elitist*” and “*exclusionary*” and it was perceived by some as “*unethical*”. In contrast to this, the cost of employing a student in a model of mandatory payment was perceived by a small number of respondents as a barrier. At the time that this survey was disseminated, it was mandated that all placements on the new pharmacy degree be unpaid, in order to ensure that a “student trainer” relationship was upheld. However, an update in January 2019 has changed this policy – the placement provider can now choose to offer a paid or an unpaid placement. These results imply that placement providers take a predominantly negative view of mandatory non-payment of placements; this should be taken into consideration by regulators and pharmacy schools alike in the design of new pharmacy degrees.

There are some elements of the placement on the five-year pharmacy degree which are preferred by the majority of pharmacists in non-patient facing roles, including the flexibility around supervision, i.e. that the pharmacist can provide guidance, but that another member of staff can be the direct supervisor. The majority of respondents were also strongly in favor of recognizing international placements as statutory training, which is now legislatively permitted.²⁰ This suggests that it is important when designing new pharmacy degrees, to be cognizant that flexibility, insofar as is reasonable, is viewed favourably by placement providers.

An overwhelming majority of respondents expressed the view that for any pharmacy student to have a future career in a non-patient facing setting, it was important for the student to have experience in a non-patient facing setting during their studies (>90%). A stark finding of this study was that less than

half of the non-patient facing pharmacists surveyed (44%) had ever supervised a student from any course of study; only 8% of respondents were currently supervising a pharmacy student; however, 62% were open to supervising a pharmacy student in their current role. Therefore, there is a discordance between the respondents' perspective that experience in a non-clinical setting prior to graduation is important to secure a non-patient facing role (>90%), and the number of respondents who would be willing to supervise a pharmacy student on placement (61.5%). These results suggest that great potential still exists for increasing placements for pharmacy students in non-clinical settings. The facilitators and barriers to placement facilitation outlined in this study are a useful starting point for attempting to address this discordance.

Barriers to Placements

Respondents identified six distinct barriers to placements in their practice settings, namely, time, conflict between placement governance and internal policies, the availability of suitable projects, supervision, awareness, and placement structure. Strategies to maximize training opportunities for undergraduate pharmacy students were found to be prior experience, governance, talent pipeline and personal interests. Many of the facilitators of and barriers to student placements in non-patient facing settings are similar to those described previously for healthcare professional experiential learning placements. The time commitment to supervising a student, as well as the accompanying decrease in productivity, is one of the main barriers identified by placement preceptors in diverse healthcare education fields.^{21,22,23} Studies have demonstrated that supervising a medical student placement adds one hour to the working day, as well as increasing overall stress levels.^{21,24} It should be noted that all of the literature cited which reports time as a barrier to placement facilitation relates to patient facing healthcare settings. This study indicates that time is also a barrier for preceptors in non-patient facing settings. Another barrier which seems to apply universally across healthcare professional student placements is lack of awareness of placement opportunities amongst providers.^{21,21}

Facilitators of Placement

Similar to the barriers to placement, two of the main facilitators identified in this study reflect the wider healthcare education literature, these being the interaction with the talent pipeline and personal

interests in contributing to the education of the next generation.^{21,22,23,24} Prior experience in non-clinical practice settings also emerged as a strong facilitator of placements. The authors suggest that educators can encourage students interested in non-patient facing careers to proactively seek to undertake summer placements/summer work experience in non-clinical settings to show motivation and interest in the area. One additional strategy recommended was to ask a colleague who is well respected to increase awareness in their setting, which reflects findings by Graziano and colleagues.²¹

Limitations

This study has some limitations. Firstly, the response rate to the questionnaire was low overall at 21.5%. Secondly, definitive figures on number of registered pharmacists employed in non-patient facing roles is lacking (PIER members voluntarily report their role as non-patient facing), thus it is not possible to state that the results of this questionnaire can be extrapolated to all pharmacists in non-patient facing roles in Ireland. Additionally, while PIER is an organization of pharmacists in industry, education and regulation, the most dominant group within PIER is pharmacists in industry; thus the results of this study may not be generalizable to all practice settings. When analyzing the qualitative comments, inter-rater reliability was not explicitly measured between the two researchers responsible for coding, which may have led to discrepancies in coding of qualitative comments. Finally, while the pharmacy degree in Ireland is recognized under EU directives (i.e. mutual recognition of pharmacy qualifications within the EU), aspects of pharmacy training are specific to Ireland and therefore some of the findings in this study may not be applicable in other countries.

Conclusion

With the increasing trends for integrating experiential learning opportunities for pharmacy students, and broadening opportunities for training in non-clinical settings, this study provides a timely insight into the attitudes and perceptions of non-patient facing pharmacist tutors towards supervising pharmacy students on placements. The perceived barriers and facilitators to placements occurring in non-patient facing settings are generally in line with international healthcare education literature, but include nuances which are specific to the pharmacy context. This study provides valuable information to stakeholders involved in advancing undergraduate pharmacy education in any jurisdiction and can

be used to develop research driven strategies to increase student placement opportunities in a sector which is becoming increasingly popular as a career choice among pharmacists.

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