

SHORT REPORT

An evaluation of the inclusion of enterprise and entrepreneurship education (EEE) within pharmacy programmes

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Abstract

Background: Pharmacy education is evolving to better serve the community, as seen in the 'Nine-star Pharmacist' model. This model promotes the development of skills needed for pharmacists in their managerial and healthcare roles. However, pharmacy degrees often omit enterprise and entrepreneurship education, which could equip newly qualified pharmacists with essential skills that benefit the community. This study aimed to elucidate the benefits of enterprise and entrepreneurship education for pharmacy students, to identify the potential importance of integrating entrepreneurship education into the pharmacy curriculum. **Methods:** Fifty-five students registered for the undergraduate pharmacy degree at the University of Bradford were asked to complete a questionnaire concerning their perception of integrating enterprise and entrepreneurship in pharmacy education. The questionnaire consisted of a Likert scale and open-ended questions. Descriptive statistics were conducted. **Results:** Fifty-five students completed the questionnaire. Eighty percent (n=43) of students agreed that developing enterprise and entrepreneurial skills would enhance their career prospects. Eighty-five percent (n=46) of students agreed that enterprise and entrepreneurship education should be offered within the pharmacy curriculum. **Conclusion:** The results of this study indicate that pharmacy students believe enterprise and entrepreneurship education (EEE) should be integrated into the pharmacy curriculum, as it would benefit their future careers.

Introduction

The pharmacy profession continues to evolve and adapt in response to the services it provides to the community. The workload of pharmacists continues to grow, and pharmacists have to adjust to new roles (Williams *et al.*, 2021). As demonstrated during the COVID-19 pandemic, pharmacists had increased responsibility and required high levels of innovation and adaptability to ensure service continuity. This increased responsibility was in addition to their work within hospitals and community pharmacies, which they might also manage as a business (Resnik *et al.*, 2000). This increased workload and responsibility within pharmacy are still on an upward trajectory in the

UK, with prescribing now included in the curriculum and the introduction of the pharmacy first clinical pathways (NHS, 2023). It is evident that pharmacists require a plethora of skills, including, but not limited to, broad clinical knowledge, communication skills, and entrepreneurial knowledge (Saseen *et al.*, 2017, Scahill & D'Souza, 2022). In fact, the role of the 'pharmapreneur' has been recognised by the World Health Organization (WHO), which has recently updated its 'Seven-star Pharmacist,' which describes the set minimum standards and roles of all current and future pharmacists, to the newly named 'Nine-star Pharmacist' (Sam & Parasuraman, 2015), which highlights that the existing skillset of pharmacists does not have adequate exposure to enterprise and

entrepreneurship education (EEE) to enable them to operate businesses successfully. Therefore, if pharmacists have increased confidence in their EEE knowledge, they are more likely to provide a more innovative service that will benefit the community.

According to the QAA (2018), “Enterprise and Entrepreneurship Education provides interventions that are focused on supporting behaviours, attributes and competencies that are likely to have a significant impact on the individual student in terms of successful careers, which in turn adds economic, social and cultural value to the UK” (Penaluna, 2018). Clearly, it is essential to research to elucidate the importance of EEE in university courses.

Within pharmacy courses worldwide, there is a low emphasis on EEE. (Breen *et al.*, 2020). The concept of enterprise skills development for pharmacists and healthcare professionals has been explored, but there is less focus on EEE as an educational package, demonstrating an unmet need (Refai & Thompson, 2011; Refai & Thompson, 2014; Refai & Klapper, 2016). Furthermore, studies have shown that current pharmacy training does not adequately prepare pharmacy students for their role in patient management, business management, leadership, and innovation (Augustine *et al.*, 2018), which is required as part of the 'Nine-star Pharmacist' model. In addition, the majority of research has taken place within the USA, which has a different clinical model compared to many other developed nations, such as the UK (Rough *et al.*, 2021). Therefore, further research must be conducted to ensure that the high-quality clinical services we have come to expect are provided within pharmacy practice. It is, thus, timely for research to examine the current pharmacy curriculum to ensure that it remains fit for purpose in response to current and future business challenges and opportunities, particularly from the perspective of future pharmacists.

However, it must also be acknowledged that employers may not want employees to take business and financial risks (Sewell & Pool, 2010). Applied to the pharmacy profession, this raises the question of whether providing pharmacists with business and financial knowledge should be an integral part of the pharmacy education and training pathway. Furthermore, introducing EEE skills into the pharmacy curriculum may dilute the core sciences and professional units, leading to unmanageable workloads.

It is evident that integrating entrepreneurial skills into pharmacy education has the potential to enhance clinical and innovative practice, but further research is

still required (Mattingly *et al.*, 2019, Mogul *et al.*, 2020). However, before it can be recommended that the pharmacy curricula integrate EEE skills into their training pathways, research must be completed to elucidate the value of such a change. Understanding students' perceptions of integrating entrepreneurship skills into the pharmacy curriculum is a crucial first step in creating relevant educational approaches (Alnuhait *et al.*, 2024). This study aimed to determine the students' perception of integrating EEE units into the pharmacy curriculum.

Methods

Questionnaires were sent to students completing the Master of Pharmacy (MPharm) course at the University of Bradford (Framework for Higher Education Qualifications, levels 4-7). A multi-channel approach was adopted for survey deployment, via posters and emails. Questionnaires included demographic data and questions regarding the inclusion of EEE modules/units into pharmacy education. Questionnaires were anonymised and consisted of a Five-Point Likert scale, closed, and open questions. Questionnaires were approved by the Chair of the Biomedical, Natural, Physical, and Health Sciences Research Ethics Panel at the University of Bradford (REF: EC26859). The research was conducted in compliance with the Helsinki Declaration. All handling and storage of data complied with GDPR data regulations. Descriptive statistics were performed using Microsoft excel (Washington) and IBM SPSS statistics software V29 (New York). The five-point Likert questionnaire responses were reported as the median value and visualised on stacked bar charts with a sliding scale.

Results

A total of fifty-five MPharm students completed the questionnaire. Demographic data has been recorded in Table I. All participants were above the age of eighteen. Of the students who completed the survey, 78% (n=42) self-identified as female, and 20% (n=13) self-identified as male. Interestingly, the majority of respondents were female and either in their first year or fifth year. Notably, the fields that student Pharmacists aspire to work in are Community Pharmacy and Hospital Pharmacy, with the majority wanting to work in these settings.

Table I: Summary of the demographics of the study participants

Category		Percentage of student responses (n=55)						
Gender		Female 78%			Male 20%		Non-binary 2%	
Year group	Year 1	Year 2	Year 3	Year 3 (Sandwich)	Year 4	Year 5 (Sandwich)	Foundation placement (Pre-registration placement)	
	33%	15%	5%	8%	1%	35%	3%	
Job outside of University studies		Yes 33%			No 67%			
Which field of work do you intend to practice in (multiple options can be selected)	Primary care	Community pharmacy	Hospital pharmacy	Industrial pharmacy	Clinical	Research	Other	
	44%	67%	70%	17%	11%	11%	2%	

The data revealed that 90% of students had limited EEE, and 80% and 78% of students agreed that possessing these skills would enable them to access more career

opportunities (80%) and would provide pharmacists with more job opportunities (78%) (Table II).

Table II: Student perception regarding enterprise modules (n=55)

	Yes	No	I do not know
Do you think enterprise/entrepreneurship modules should be offered on all pharmacy degrees?	85%	15%	-
Do you think they should be Optional (Yes) or Mandatory (No)	83%	17%	-
Do you think business skills allow pharmacists to have more job opportunities	80%	10%	10%
Do you think enterprise/entrepreneurship modules should be Spiralling modules (integrated into all taught years) (Yes) or single modules (No)?	37%	63%	-
Do you think you would benefit from attending summer workshops on enterprise/entrepreneurship activity?	59%	7%	34%

The Five-Point Likert questionnaire identified that students strongly agreed that EEE modules/units should be included in the Pharmacy curriculum (Figure 1). Finally, 85% of students said that this should be

offered in all pharmacy degrees. Of these, 83% felt that the modules/units should be optional, and 54% stated that the optimal year for this module or unit would be in their final year (year 4).

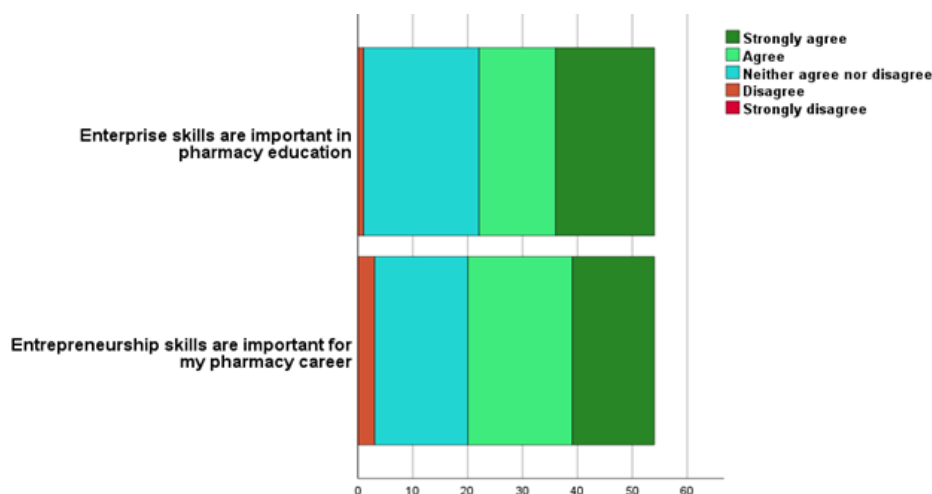


Figure 1: Five-Point Likert scale analysis of student perception of entrepreneurial skills in pharmacy education (n=55 responses)

In free-text responses, students stated that they supported the idea of developing and integrating EEE modules or units into pharmacy education, as this would help their professional careers. Interestingly,

students appear to prefer that EEE units occur at the later stages of their degree so that the skills that they learn and develop can be utilised quickly upon graduation (Table III).

Table III: Student perspectives with quotes regarding the development and integration of entrepreneurship modules and units into pharmacy education.

S/N	Quote
1	I like this idea, even if it is just hearing about how other pharmacists develop their businesses.
2	I think this idea would be great to introduce, but I think the best solution would be for it to be optional and at the latter stages of the pharmacy course, so that relevant information is not forgotten.
3	I would have liked to have done more about enterprise as part of my undergraduate course, as I currently have to learn on the job.

Discussion

Responses to Likert scale questions were positive. It is evident that entrepreneurial skills are of interest to pharmacy students and that they should be integrated into the pharmacy curriculum globally. Feedback from students suggests that EEE units should be stand-alone courses in designated years of the course. The data demonstrated that most students agreed that skills developed through EEE are a valuable addition to the pharmacy curriculum and will improve their clinical practice. Enterprise skills are noted to help increase student readiness for their roles as healthcare professionals (Refai & Thompson, 2014). However, no data were collected to assess improvements in clinical practice or the impact of EEE quantitatively, and it must be acknowledged that these results are based solely on student perception as future pharmacists. It is of note that although the majority of students believed that the inclusion of EEE in the curriculum is beneficial, a similar percentage did not think it is mandatory. This is an interesting finding, as it suggests that whilst students believe that it is helpful to them, it should be an optional unit. This might be because they would like to acquire EEE skills at a time when they are most applicable to them. To the best of our knowledge, this is the first study to analyse student perception in a UK cohort of pharmacy students regarding the integration of EEE units/modules into the pharmacy curriculum. Unfortunately, the literature does not clearly elucidate whether EEE is included in their curricula; therefore, future research should investigate whether EEE units/modules improve student performance quantitatively and enhance their performance on placements. It should also identify the perception of qualified pharmacists regarding the importance of developing business and entrepreneurial skills in pharmacy education.

Evidently, there are numerous potential benefits from having increased knowledge of entrepreneurship in pharmacy service enhancement. Additionally, from a commercial perspective, entrepreneurship can lead to the creation of value-added products, which can be further developed into commercial products. Therefore, entrepreneurship in pharmacy education should not only focus on setting up and managing a community pharmacy business.

This study was subject to several limitations. The study's design was to evaluate students' perceptions of the potential of integrating entrepreneurship modules into pharmacy education. Whilst the study met these aims, it must be acknowledged that, due to curriculum design, it is not possible to integrate EEE modules into the curriculum without undergoing a substantial program review. In addition, it would have been beneficial to compare results between different cohorts of students to identify whether there are other perspectives among students at various stages in their professional development or those who aspire to practice in different fields. Furthermore, the findings from this study should not be generalised and may not be representative of other pharmacy students. Therefore, a follow-up study should be conducted after the introduction of a new module with a focus on entrepreneurship skills. Furthermore, further research should elucidate whether experienced practising pharmacists and pharmacy educators share the same opinion as pharmacy students regarding the need for greater EEE within the pharmacy curriculum.

Conclusion

If university pharmacy degrees incorporate EEE skills into the curriculum, students will be better equipped to deliver superior clinical services to the community and

identify new service opportunities that generate revenue. This study demonstrates that pharmacy students strongly support the inclusion of EEE in their education and believe that it would improve their career prospects.

Declaration of Interest

The authors declare no conflict of interest.

Ethics approval and Informed consent

This study was approved by the Chair of the Biomedical, Natural, Physical, and Health Sciences Research Ethics Panel (REF: EC26859). The research was compliant with the Helsinki Declaration. All handling and storage of data complied with GDPR data regulations. All participants consented to participate.

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