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A Cross-Sectional Survey on the Challenges and Opportunities of Italian-Qualified Pharmacists Transferred to Work in Great Britain

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ABSTRACT

The Italian higher education system is actively updating the Master of Pharmacy (MPharm) curriculum to address evolving healthcare demands post-COVID-19 and to emphasize clinical competencies. Investigating the experiences of Italian pharmacists who have moved to Great Britain (GB) can provide important insights into the applicability of skills and knowledge acquired through Italian pharmacy education. This study aimed to explore the perspectives of Italian pharmacists practicing in GB concerning their Italian pharmacy education and to identify the challenges and opportunities they encounter in their new professional setting, with the goal of guiding the Italian Government and relevant stakeholders (Ministry of University and Research, MUR) in enhancing the clinical relevance and international alignment of the MPharm curriculum. A 50-item survey was created, pilot tested, and evaluated for face and content validity by an expert panel. The survey collected data on participants' demographics, motivations for relocating to GB, and their professional experiences in both Italy and GB, using Likert-type scales alongside open- and closed-ended questions. Convenience sampling was employed, and no formal sample size calculation was performed. Descriptive statistics were used to summarize responses with frequencies and percentages for Likert-type and categorical variables.

Among approximately 281 Italian-qualified pharmacists registered with the General Pharmaceutical Council in GB, 54 completed the survey, representing an estimated 19.2% of the population. The primary reasons for leaving Italy included low job satisfaction (38.9%) and limited career prospects (83.3%), while motivations for moving to GB included clinically oriented roles (68.5%) and higher salaries (79.6%). Notably, nearly two-thirds of respondents considered their Italian pharmacy education inadequate for fully meeting the requirements of practicing in GB. The contrast between Italian and GB pharmacy education—particularly in clinical training and practical experience—underscores the necessity of updating the Italian MPharm curriculum to reflect current professional demands, which would also support the international mobility of Italian pharmacists.

Keywords: Opportunities, Pharmacy, Education, Skills, Challenges, Barriers

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Introduction

The General Pharmaceutical Council (GPhC) defines pharmacists as professionals responsible for ensuring the safe and appropriate supply of medicines while providing guidance on their proper and effective use [1]. In March 2016, the International Pharmaceutical Federation's (FIP) Board of Pharmaceutical Practice described a pharmacist as "a scientifically trained healthcare graduate with expertise in all aspects of medicine supply and usage" [2]. Beyond traditional responsibilities, pharmacists now contribute to patient care through medicine reviews, counselling, prevention of drug interactions and adverse reactions, antimicrobial stewardship, and prescribing support [3]. Recognized as medication experts, pharmacists play a central role in safeguarding patients throughout the medication-use process [4]. Over the past decade, the profession has increasingly shifted toward a patient-centered model of care [5].

To support this evolution, organizations such as the FIP and World Health Organization (WHO) have recommended aligning pharmacy curricula with real-world practice to strengthen patient care and communication

skills [6–9]. Pharmacy education has consequently expanded to include biological, pharmaceutical, clinical, socioeconomic, and behavioral sciences, alongside hands-on training [7, 10].

Countries vary in how their pharmacy programs emphasize clinical practice and patient-centered care, while some continue to focus primarily on foundational sciences [11, 12]. Such differences may reflect national healthcare priorities, in line with the FIP's needs-based education model [13]. At the European level, harmonization of pharmacy education is promoted through the Bologna Process to facilitate workforce mobility, though educational requirements still differ, with pharmacy degrees ranging from three to six years and often including supervised practice in licensed pharmacies before final licensure [14, 15].

Comparative analyses, such as that by Arakawa *et al*. (2020), show that GB dedicates a substantial portion of its curriculum to Pharmacy Practice, Pharmaceutical Care, Clinical Pharmacy, Law, and Social Pharmacy (PRAC), totaling 1465.23 contact hours or 45.1% of the syllabus, which is significantly higher than the average 27.8% across other nations, highlighting the emphasis on practical and clinical training in GB [14].

Structure of pharmacy degrees in England and Italy

In GB, most pharmacists earn a GPhC-accredited four-year Master of Pharmacy (MPharm) degree, followed by a 52-week foundation training program supervised by a registered pharmacist [16]. Some universities integrate the foundation year into a five-year MPharm program. Completion of the GPhC registration assessment (formerly the pre-registration exam) allows graduates to enter the statutory pharmacy register. New 2021 GPhC standards outline the competencies required for pharmacists, including knowledge, skills, and professional behaviors, leading to independent prescribing eligibility after graduation and completion of foundation training in 2026 [17]. The MPharm is classified under the Bologna agreement as an "undergraduate master's program," permitting direct entry from secondary education and recognition across Europe. EU citizens can register as pharmacists in other EU countries after completing language requirements and supervised practice [18, 19]. EEA-qualified pharmacists may apply for recognition if their degree meets minimum training requirements and is listed under Directive 2005/36/EC, while EEA-EFTA graduates follow a different pathway [20]. Non-EU pharmacists or those trained outside the EU can register via the Overseas Pharmacist Accreditation Programme (OSPAP), a one-year postgraduate program followed by foundation training. Entry to MPharm programs generally depends on A-Level results in chemistry, with universities additionally evaluating fitness to practice through interviews, entrance exams, and credential checks [16].

In Italy, pharmacists can qualify through a Master's degree in Pharmacy or in Chemistry and Pharmaceutical Technologies (CTF), both accredited by the Ministry of University and Research (MUR) [21]. These five-year programs include a six-month placement in community or hospital pharmacies and follow a competency-based curriculum totaling 300 ECTS credits, with a strong focus on chemistry and foundational sciences [21, 22]. Previously, graduates were required to pass the State Examination—a combination of written, oral, and practical tests covering subjects such as pharmacology, pharmaceutical analysis, chemistry, compounding, and relevant legislation—to join the professional register and practice as community pharmacists. However, this requirement was removed under Legislative Decree n.163 of 8 November 2021 [23], meaning that from the 2023/2024 academic year onward, completing a pharmacy degree alone is sufficient for community pharmacist practice. This legislative change simplifies the path to practice while maintaining educational and professional standards. While additional four-year postgraduate programs, introduced in the mid-1990s, remain necessary for hospital pharmacy roles [24], the majority of Italian pharmacists (65%) are employed in community pharmacies, the pharmaceutical industry, or academic research [25].

Similar pathways exist across Europe, though curricula vary considerably, as highlighted by Atkinson and Rombaut (2011) [14]. Given the widespread migration of healthcare professionals, equipping pharmacists with adaptable skills is crucial to meeting diverse healthcare needs [26]. Health professionals—including doctors, nurses, and pharmacists—often seek international experience to enhance expertise, knowledge, and career development, with personal factors such as job satisfaction, remuneration, and working conditions influencing migration decisions [27].

Within the EU, pharmacy education and degree recognition are harmonized through the Bologna Declaration [18] and EU Directive 2005/36 [28], facilitating academic recognition and professional mobility across member states. This harmonization allows Italian pharmacists to practice in other EU countries and even in non-EU nations such as GB, providing a model often regarded as a benchmark for clinical pharmacy training and attracting pharmacists seeking international opportunities [29]. The integration of EU-trained pharmacists has been particularly

impactful in GB. Schafheutle and Hassell (2009) reported that in 2007, 40.6% of internationally trained pharmacists in GB were from Europe [30]; these pharmacists were typically younger (mean age 31.7 years), more likely to be female (68% vs. 56% of UK-trained pharmacists), employed full-time, and concentrated in urban centers such as London, underscoring their key role in service delivery. Lovell (2023) noted that applications to the Overseas Pharmacist Accreditation Programme (OSPAP) increased by over 265 in 2022/23 compared with the prior year, reflecting continued demand for internationally trained pharmacists [31].

The Italian pharmacy curriculum primarily reflects the community pharmacist's role, emphasizing safe dispensing and patient counselling. However, the profession has gradually shifted toward a more patient-centered approach, supported by professional bodies such as Federfarma and aligned with FOFI and Pharmaceutical Group of the European Union (PGEU) guidelines [32, 33]. Community pharmacists now also provide point-of-care testing, electrocardiogram monitoring, chronic disease management, adherence interventions, and preparation of personalized and orphan medications using galenic formulations [34].

This professional evolution was accelerated by legislation following the COVID-19 pandemic, enabling pharmacists to deliver clinical services aimed at preventing viral transmission ("Farmacia dei servizi") [35]. During the pandemic, community pharmacists offered essential healthcare services, including urgent treatments, patient counselling, screening activities, and vaccine administration, contributing significantly to vaccination campaigns [36]. These expanded clinical responsibilities were solidified in May 2022 through the "aperture" decree [37], allowing community pharmacists to continue administering COVID-19 and influenza vaccines, thereby strengthening public health efforts [38].

Despite Italy's progress in allowing community pharmacists to deliver clinical services, the national pharmacy curriculum has not evolved to fully support this expanded role. Gaps in clinical knowledge and hands-on skills may limit pharmacists' ability to provide such services effectively [39]. Research by Nunes-da-Cunha *et al*. (2016) demonstrated that, compared with the United States, Italian pharmacy programs incorporate relatively few clinical courses throughout the five-year degree [11]. Internationally, the number of clinical subjects ranges from just one in Slovenia to eighteen in the U.S., while patient-centered courses make up 19.7% of the curriculum in Greece and 54% in Malta; Italy, in comparison, includes only two clinical courses, representing 23.8% of total patient-focused content.

To bridge these gaps, FOFI, the Italian Ministry of Health, and the National Conference of University Deans (CRUI) jointly reviewed Italian university pharmacy programs. This collaboration led to a decree in October 2022, reforming the curriculum by integrating additional clinical training and expanding core competencies related to evidence-based practice and patient-centered care [40]. The revised program now features 10 university credits covering areas such as internal medicine, endocrinology, pediatrics, radiotherapy, and medical imaging, with implementation responsibilities assigned to CRUI and local academic bodies.

Comparing the Italian and GB MPharm programs

Although undergraduate pharmacy programs in Italy and GB share foundational topics, the GB curriculum places a stronger emphasis on outcomes and practical competencies [41]. While details vary between institutions, both countries' programs cover fundamental and applied sciences (e.g., biology, chemistry, biochemistry, pathophysiology), clinical disciplines (e.g., physiology, pharmacology, therapeutics), and professional practice subjects (e.g., ethics, legislation, pharmacokinetics, pharmacodynamics). Both curricula include supervised, patient-facing training experiences [21, 42].

Following the 2021 GPhC standards, British universities are revising MPharm programs to equip students for independent prescribing from the point of registration starting in 2026 [43]. This involves adopting a spiral curriculum model, in which learning is revisited and progressively deepened, allowing students to consolidate knowledge and skills in core subjects over time [44] **(Figure 1)**.

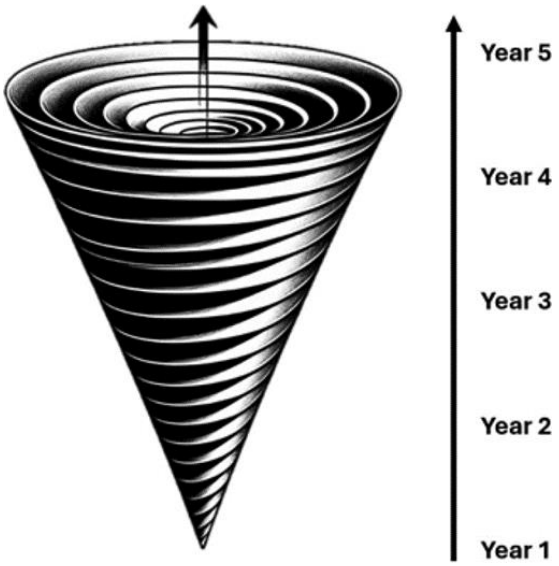

Figure 1. Spiral curriculum, adapted from Harden (1999) [44]: What is a spiral curriculum? Medical Teacher 21:141-3.

Table 1 presents a comparison between the Italian pharmacy degree and the Chemistry and Pharmaceutical Technologies (CTF) program, both designed according to MUR accreditation guidelines [21]. The pharmacy program prioritizes the chemical and physical sciences underpinning medicines, equipping students with a detailed understanding of drug pharmacology. However, areas such as clinical pharmacy, pharmaceutical care, and practical pharmacy applications are covered only minimally. The CTF degree also focuses heavily on chemistry and physics, yet both programs confer the eligibility to practice as a pharmacist in Italy once the degree is completed [23].

Table 1. Comparison between the typical Italian Ministry of University and Research (MUR) accredited pharmacy and chemistry and pharmaceutical technologies (CTF) curriculum structures [22].

	Italian Pharmacy Master's Degree	Italian CTF Master's Degree
	• General biology	• General biology
	• Human anatomy	• Human anatomy
	• General and inorganic chemistry	• General and inorganic chemistry
	• Analytical chemistry	• Analytical chemistry
	• General Physics	• General Physics
Second year	• Mathematics	• Mathematics
	• Pharmacognosy and pharmaceutical botany	• Pharmacognosy
		• Physical chemistry
	• Biochemistry	• Applied microbiology
	• Applied Biochemistry	• General pathology
	• Physiology	• Biochemistry
		• Medicines analysis I
Third year	• General Pathology	• Pharmaceutical chemistry I
	• Medicines analysis I	• Organic chemistry II
	• Pharmaceutical chemistry I	• Applied biochemistry
	• Microbiology and hygiene	• General Pharmacology and pharmacotherapy
	• General pharmacology and pharmacotherapy	• Physical methods in organic chemistry
		• Drugs synthesis and extraction techniques
	• Pharmaceutical chemistry II	• Pharmaceutical Chemistry I

Fourth year	• Medicines analysis II	• Analysis of medicines II
	• Toxicology	• Pharmaceutical technologies I
	• Pharmaceutical technologies	• Toxicology
Fifth year	• Pharmaceutical legislation	• Pharmaceutical technologies II
	• Pharmaco-economics or pharmacovigilance	• Synthesis of biomolecules and innovative drugs
	• Community pharmacy placement (6 months unpaid)	• Biotechnologies
		• Community pharmacy placement (6 months unpaid)

In Great Britain, pharmacy undergraduates gain practical experience through short placements in community pharmacies, hospitals, or general practices throughout their degree, allowing them to apply theoretical knowledge in real-world contexts [42]. This hands-on approach has been praised from an educational standpoint [45] and aligns with the Canadian NHS's focus on cultivating confidence in professional practice among pharmacists [46]. Such experiential learning may help reduce the gap between academic preparation and workforce expectations, a challenge particularly evident in Italy, where higher education has been criticized for insufficiently equipping graduates for employment [47]. In contrast, Italian pharmacy students typically encounter practical training only in the final years of their studies [21].

The contrast between GB and Italian pharmacy education extends to clinical exposure. While Italian programmes are heavily theory-based, GB courses integrate practical experiences alongside classroom learning, preparing graduates for roles in various healthcare settings, including hospitals and general practices [16, 17, 42]. In Italy, entry into hospital pharmacy practice requires completing a four-year postgraduate programme (Scuola di Specializzazione in Farmacia Ospedaliera (SSFO)), regulated by the Italian Society of Hospital Pharmacy and Pharmaceutical Services (SIFO) [24].

These differences also shape the structure and utilisation of the pharmacy workforce in each country. In the UK, community pharmacies have a long-standing role in public health research and continue to evolve, particularly with initiatives like the Pharmacy First service [48–51]. Hospital pharmacists contribute significantly to patient care and practice-based research, supported by formal training pathways for consultant roles [52]. Integration of clinical pharmacists into primary care has been shown to reduce GP workload, lower emergency visits, and achieve overall cost savings, even as primary care utilisation rises [53, 54]. Italy, however, has yet to develop an equivalent primary care pharmacist workforce or consultant pharmacist roles, although hospital pharmacy is gradually moving toward a more clinically oriented model [24].

Given these disparities, questions remain regarding whether Italian-trained pharmacists are fully prepared to meet the demands of healthcare systems with stronger clinical focus. To explore this, a questionnaire was designed to capture the experiences and perceptions of Italian pharmacists who have moved to GB for work.

The decision to relocate to GB is supported by evidence that pharmacists experience greater job satisfaction when allowed more clinical involvement [55]. Additionally, Italian pharmacy curricula emphasize scientific knowledge over practical pharmacotherapy, clinical decision-making, and collaborative care [22]. Registration data analyses also highlight significant EU pharmacist migration to the UK, reflecting the attraction of broader clinical opportunities [30]. Collectively, these factors suggest that Italian pharmacists may favor the UK over other EU countries due to enhanced professional prospects.

To date, there has been no systematic investigation into the challenges, opportunities, or barriers faced by Italian pharmacists transitioning to a more clinically focused role abroad, particularly in GB. Findings from this study will provide crucial insights into current skill gaps, offering evidence to inform the potential redesign of Italian pharmacy education.

Study aim

This research investigates the professional journey of Italian pharmacists who relocate to Great Britain, focusing on the obstacles they encounter, the opportunities available, their motivations for moving, and how they adjust to a new healthcare system. Additionally, it examines factors that may influence their ability to secure employment in GB. The insights gained aim to guide the Italian government and relevant authorities, including the Ministry of University and Research (MUR), in updating the MPharm curriculum to enhance its clinical focus and ensure compatibility with international standards.

Central research question

How do the experiences, challenges, and opportunities faced by Italian pharmacists in GB reflect the necessity to modernize the Italian MPharm curriculum to strengthen its clinical orientation and international relevance?

Specific research questions

The survey was designed to address the following areas:

1. Describe the work experiences of pharmacists within the Italian healthcare system (covered in Section B).
2. Examine the reasons that drive pharmacists to pursue careers in Great Britain (Section C).
3. Highlight any gaps between the knowledge provided in Italian pharmacy education and the competencies required for practice in GB (Section D).
4. Investigate the professional challenges and opportunities that Italian pharmacists encounter while practicing in GB (Section E).

The survey results are reported in line with established guidelines, including the Consensus-Based Checklist for Reporting of Survey Studies (CROSS) [56] and the STROBE checklist for observational research [57] **(Figure 2)**.

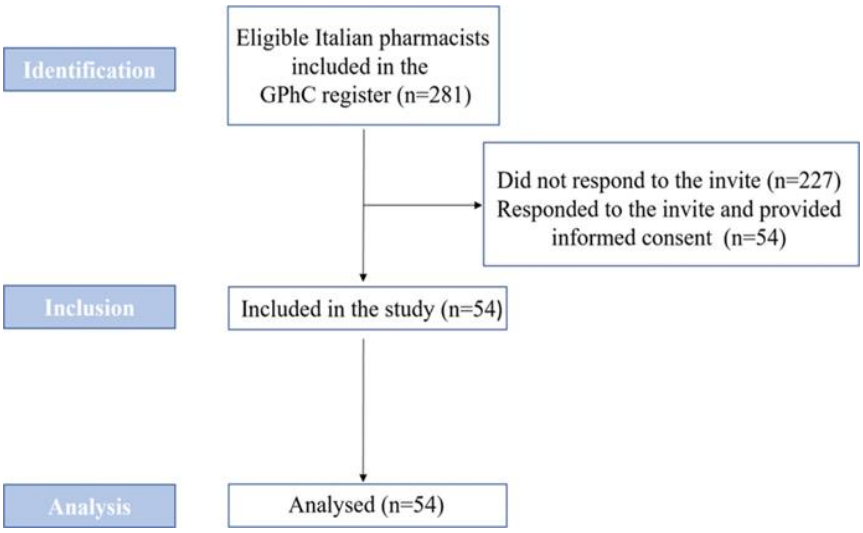

Figure 2. Flow diagram of participants following STROBE guidelines.

Materials and Methods

Study design and setting

This cross-sectional survey was carried out in November 2022 by the Italian Society of Clinical Pharmacy (SIFAC), in collaboration with Sapienza University of Rome (Italy), the University of Central Lancashire (UCLan, GB), and the University of Nottingham (GB), with data collected from participants in Great Britain.

Participant eligibility criteria

Enrollment in the study required participants to meet all inclusion criteria.

Inclusion criteria:

- Individuals who had obtained an Italian pharmacy or CTF degree prior to relocating to GB.
- Individuals registered as pharmacists with the General Pharmaceutical Council (GPhC) in GB.
- Individuals with work experience in GB as a pharmacy assistant/trainee, pharmacy technician, or pharmacist.

Exclusion criteria:

- Individuals without internet access preventing survey completion.
- Individuals who did not provide informed consent or withdrew from the study at any stage.

The inclusion of participants with experience as pharmacy assistants, trainees, or technicians was deliberate. Due to differences in clinical education and professional roles between Italy and GB, many Italian pharmacists initially

enter these positions in GB. This criterion allowed the study to investigate whether Italian pharmacists face skill-based barriers that prevent direct employment as pharmacists and whether gradual exposure to the UK pharmacy environment—through shadowing or less clinical roles—supports skill development and professional confidence.

Survey development

Survey creation involved two phases. Initially, the research team drafted the questionnaire, which was pilot tested with six Italian pharmacy practitioners and SIFAC members to assess face and content validity. Feedback on clarity, comprehensibility, length, and coherence was incorporated to refine the instrument. Pilot participants did not take part in the main survey.

Data collection

The survey was administered online via Google Forms. To maintain data integrity, responses were restricted to one per account. The survey explored participants' perspectives, experiences, and attitudes regarding their prior pharmacy training in Italy, perceptions of curriculum strengths and weaknesses, and any clinical skill gaps identified after transitioning to a more clinically oriented role in GB.

The questionnaire consisted of five sections:

- Section A: Demographic and professional baseline information.
- Section B: Professional experiences in Italy to understand training and work conditions.
- Section C: Motivations for relocating to GB.
- Section D: Evaluation of the Italian pharmacy curriculum, divided into two parts: D1, disciplines requiring enhancement, and D2, disciplines that could be reduced.
- Section E: Practical aspects of working in GB, subdivided into E1, relevance of Italian training to UK practice; E2, registration processes and career progression; and E3, skills considered essential for effective practice in GB.

Variables

Collected participant characteristics included age range, sex, degree type, final grade, whether pharmacy/CTF was the first choice, any additional degrees earned prior to moving, prior work experience in Italy, and years of professional experience as a pharmacist in Italy **(Table 2)**. Statements in Sections B to E were assessed using five-point Likert scales, ranging from "strongly agree" to "strongly disagree."

Table 2. Participant characteristics

Characteristic	n (%)
Age group	
41–50 years	21 (38.9)
31–40 years	18 (33.3)
20–30 years	8 (14.8)
Over 50 years	7 (13.0)
Gender	
Female	32 (59.3)
Male	22 (40.7)
Degree type	
Pharmacy	36 (66.7)
CTF	18 (33.3)
Region of degree attainment	
South Italy	28 (51.9)
North Italy	16 (29.6)
Central Italy	10 (18.5)
Final degree mark	
66–90	22 (40.7)
90–100	15 (27.8)

101–109	2 (3.7)
110–110 cum laude	15 (27.8)
Was pharmacy/CTF your first-choice degree?	
Yes	37 (68.5)
No	17 (31.5)
Additional qualifications before relocating to GB	
None	33 (61.1)
Specialisation	7 (13.0)
Postgraduate Diploma	6 (11.1)
PhD	5 (9.3)
Postgraduate Certificate	2 (3.7)
Second Master's degree	1 (1.9)
Previous work experience in Italy	
Yes	43 (79.6)
No	11 (20.4)
Years of professional experience in Italy as a pharmacist	
More than 3 years	17 (31.5)
1–3 years	14 (25.9)
Less than 1 year	12 (22.2)
Data missing	11 (20.4)

Sample size

A non-random, convenience sampling approach was adopted for this study. As the investigation was exploratory and intended to generate hypotheses rather than test them, no formal sample size or power calculation was conducted.

Sampling method

Participant recruitment for the online survey was conducted through targeted invitations shared on LinkedIn and Facebook to optimise outreach across professional and general audiences. LinkedIn was specifically used to engage professional groups relevant to the study's objectives, leveraging its network of qualified professionals, as demonstrated by prior research [58, 59]. In contrast, Facebook was employed to complement this strategy by expanding the participant base to a wider population, promoting greater demographic variety and sample representativeness, following recommendations by Stuart and Moore (2021) [60].

Each invitation comprised a cover letter and a participant information sheet. The cover letter outlined the purpose and potential contributions of the study, highlighting confidentiality and anonymity assurances to mitigate ethical concerns, consistent with the principles described by Gelinas *et al*. (2017) [61]. The participant information sheet further detailed the study's objectives, voluntary participation, estimated completion time, and contact information for the research team. Only individuals who confirmed their willingness to participate by completing the electronic consent form were granted access to the remainder of the survey.

This two-platform recruitment design aimed to broaden the study's reach while adhering to ethical research standards, acknowledging both the advantages and constraints of using social media for participant recruitment. The combined use of LinkedIn and Facebook was intended to counterbalance the limitations inherent to each platform and improve overall recruitment efficiency, aligning with methodological recommendations from prior studies [58–60].

Consent

Participation in the anonymous online survey constituted informed consent from all respondents.

Statistical analysis

Different analytical methods were employed to explore the dataset from multiple perspectives. Descriptive statistics were applied to characterise the participants; categorical and Likert-scale variables were summarised using frequency distributions and percentages.

Software

Data were exported in Excel and .csv formats for management and further processed using R (version 4.2.1, 2022-06-23) and IBM SPSS Statistics (version 28).

Results and Discussion

As reported by the GPhC through direct correspondence, 281 Italian-qualified pharmacists were registered in Great Britain as of November 2022. Of these, 54 completed the survey, corresponding to an estimated population coverage of 19.2%.

Participant characteristics (Section A)

Table 2 summarises the demographic and educational features of respondents. The majority of participants were aged between 41 and 50 years, while those above 50 were underrepresented. Most participants were female, with roughly two-thirds holding a pharmacy degree and one-third possessing a CTF qualification. Based on the universities attended, respondents were grouped into three geographic regions, with the South (including Sicily) being the most prevalent and the Centre (including Sardinia) the least. Approximately 40% of participants reported final degree marks within the 66–90 range under the Italian grading system [62], while 27.8% had achieved the top scores. Pharmacy was the preferred field of study for 68.5% of respondents, and 61% held no additional academic degrees. Nearly 80% had professional experience in Italy prior to moving to Great Britain.

Experience as a pharmacist in Italy (Section B)

A total of 20% (n = 11) of participants had not worked as pharmacists in Italy before relocating to Great Britain. As depicted in **Figure 3**, over half of the respondents either disagreed (39.5%) or strongly disagreed (23.3%) that their Italian MPharm education adequately prepared them for professional practice in Italy. Additionally, 44.2% strongly disagreed with recommending pharmacy or CTF studies in Italy to others, and the majority expressed overall dissatisfaction with their professional experiences in Italy, selecting "strongly disagree" (48.8%) or "disagree" (20.9%) regarding satisfaction-related statements.

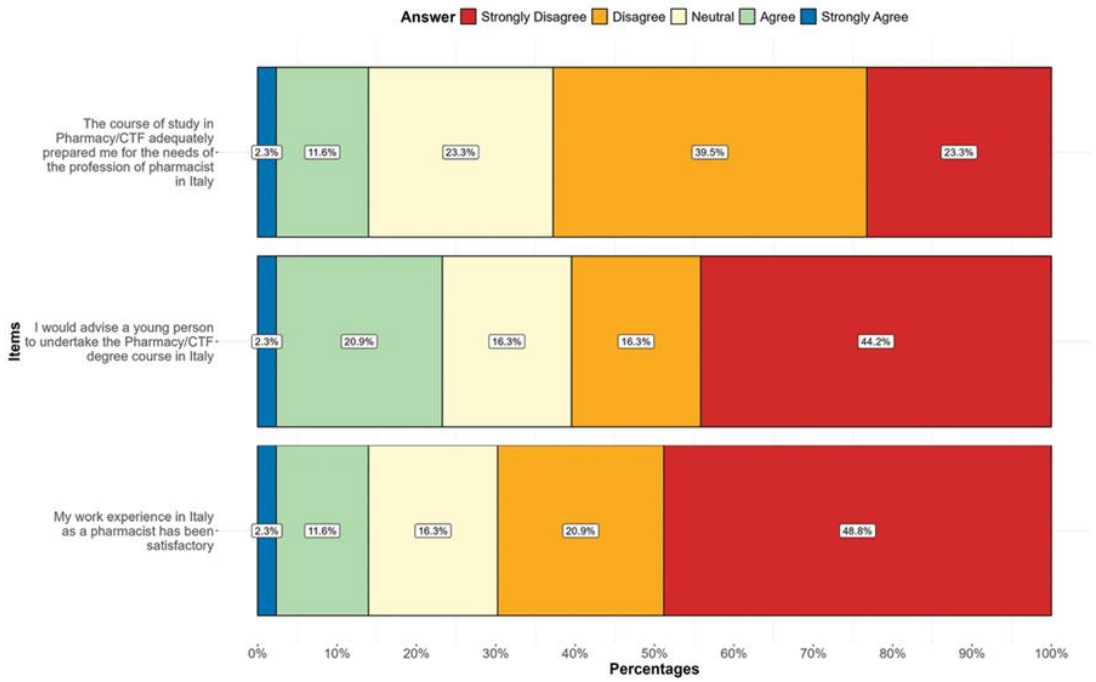

Figure 3. Experiences and views.

Why did you decide to move to GB? (Section C)

As illustrated in Section C of the survey **(Figure 4)**, respondents' relocation to GB was influenced less by a perceived scarcity of jobs in Italy—an idea 24.1% disagreed with and 44.4% neither confirmed nor denied—and more by frustration with the limited potential for professional advancement in their home country, as reflected by 83.3% who strongly agreed and 16.7% who agreed. A large proportion (79.6%) also felt that Italian wages failed to match their actual level of responsibility. Moreover, the pursuit of deeper clinical pharmacy expertise in GB emerged as another compelling factor, with 68.5% strongly agreeing and 24.1% agreeing.

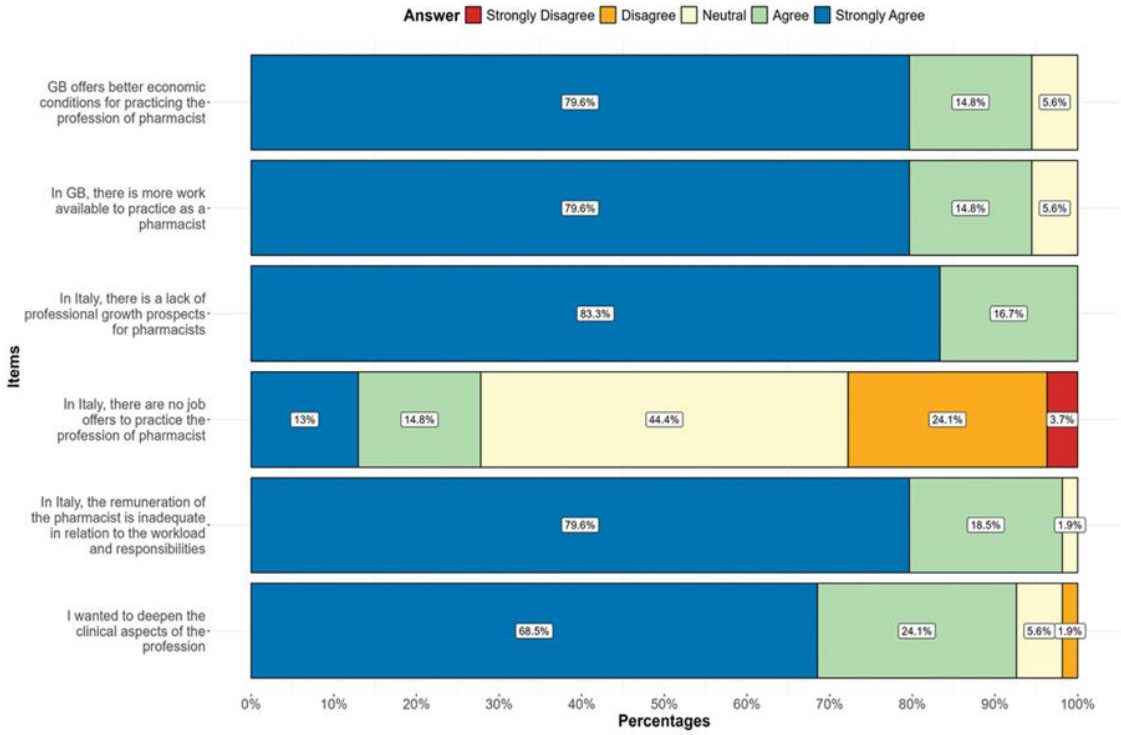

Figure 4. Motivations for moving to GB.

Did you find a gap between the knowledge gained in Italy and that required to practice as a pharmacist in GB? (Section D)

Disciplines requiring implementation in the Italian curriculum (Section D1)

According to the findings illustrated in **Figure 5**, participants demonstrated a strong inclination toward enriching the Italian pharmacy curriculum with a broader range of clinically oriented subjects. The highest level of agreement emerged for introducing core courses in clinical pharmacy (79.6% strongly agreed and 20.4% agreed) and pharmaceutical care (57.4% strongly agreed and 38.9% agreed). Notably, a considerable proportion—46.3% and 40.7%—strongly endorsed the inclusion of medical semiotics, known in English contexts as bedside diagnostic or physical examination [63], alongside communication skills training between healthcare professionals and patients. These areas, though currently missing from Italy's educational framework, are considered fundamental for pharmacists in GB, particularly those working as independent prescribers or in clinically advanced positions [64]. In contrast, 14.8% strongly opposed and 7.4% disagreed with integrating pharmacy management courses, likely reflecting a belief that such subjects fall outside the clinical priorities of the profession.

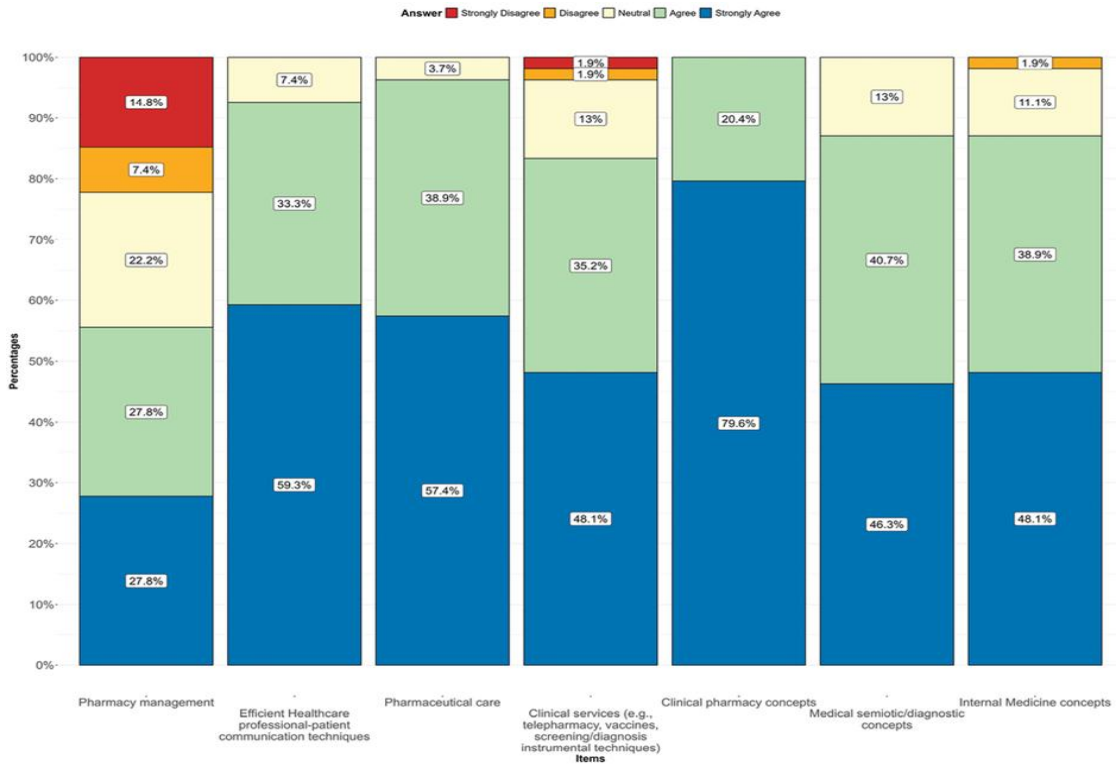

Figure 5. Disciplines requiring implementation.

Disciplines requiring a reduction in the Italian curriculum (Section D2)

As shown in Section D2 **(Figure 6)**, many respondents highlighted the need to scale back subjects considered less clinically relevant within the Italian pharmacy curriculum. In particular, 24.1% strongly agreed and 13% agreed that the organic chemistry component should be reduced. Similarly, 37% and 14.8% of participants supported trimming the content of analytical chemistry and pharmaceutical analysis courses, while 31.5% and 7.4% shared the same view regarding medicinal chemistry. A notable portion of respondents also questioned the extensive focus on courses deemed less applicable to modern pharmacy practice, such as general chemistry and pharmaceutical technology, with 7.4% and 25.9% respectively favoring a reduction in their coverage.

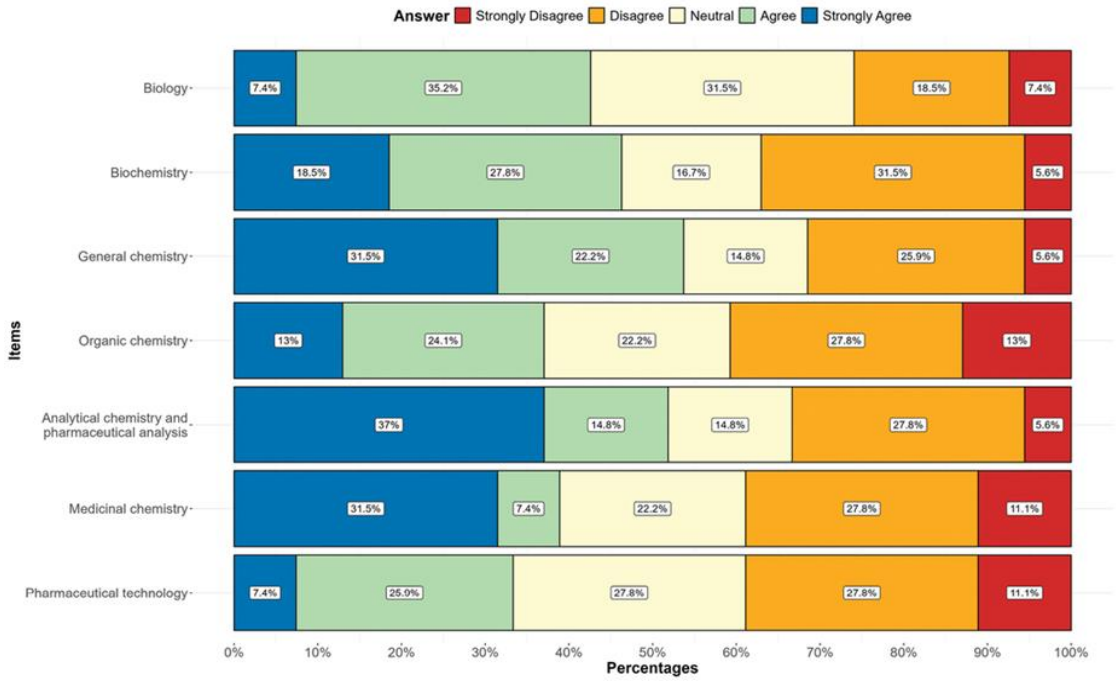

Figure 6. Disciplines to be reduced.

Which challenges and opportunities did you find in GB? (Section E)

Useful disciplines for practicing in GB (Section E1)

As illustrated in Section E1 **(Figure 7)**, participants identified pharmacology and pharmacotherapeutics—both already part of the Italian pharmacy curriculum—as the most beneficial subjects for professional practice in GB, with 63.0% agreeing and 13.0% strongly agreeing. In contrast, analytical chemistry and pharmaceutical analysis were considered less relevant, with 42.6% strongly disagreeing with their usefulness, while 27.8% held similar views regarding medicinal chemistry. However, opinions on the latter were more divided, showing a more balanced distribution across the extremes of the Likert scale.

Figure 7. Useful disciplines.

Registration, employment, and career progression (Section E2)

As reported in **Table 3**, the findings from Section E2 indicate that although 81.5% of respondents managed to obtain employment in GB within six months, a notable portion (62.9%) were not able to start directly as pharmacists. Instead, many initially took on roles such as pharmacy assistants/dispensers (16.7%), pharmacy technicians (18.5%), or trainee pharmacists (27.8%), with 22.2% remaining in these positions for 1–2 years. Among the 34 participants (63%) who began in these entry-level roles, 85% eventually transitioned into pharmacist positions, 11.4% left GB, and one individual (2.8%) was still in an entry-level role at the time of the survey. These results underscore the barriers Italian-trained pharmacists encounter in entering and advancing within the GB pharmacy workforce, emphasizing the need for measures that allow foreign-trained pharmacists to fully apply their qualifications and skills.

Table 3. Registration, employment and career progression.

Items	n (%)
Were you registered with the GPhC prior to relocating to Great Britain?	
No	27 (50.0)
Yes	27 (50.0)
How much time was required to secure employment in Great Britain?	
0–6 months	44 (81.5)
6–12 months	5 (9.3)
> 2 years	3 (5.6)

1–2 years	2 (3.7)
Were you required to work as a trainee, assistant, or pharmacy technician before obtaining a pharmacist position in Great Britain?	
No	20 (37.0)
Trainee Pharmacist	15 (27.8)
Pharmacy technician	10 (18.5)
Pharmacy assistant/dispenser	9 (16.7)
How long were you employed as a trainee, assistant, or pharmacy technician before securing a pharmacist role in Great Britain?	
< 1 year	21 (38.9)
Never	19 (35.2)
1–2 years	12 (22.2)
> 2 years	2 (3.7)
Are you currently employed as a trainee, assistant, or pharmacy technician?	
No, I have secured a pharmacist position	30 (85.7)
No, I have departed from Great Britain	4 (11.4)
Yes	1 (2.9)
How many years of experience have you accumulated as a pharmacist in Great Britain?	
> 5 years	34 (63.0)
1–3 years	8 (14.8)
3–5 years	7 (13.0)
< 1 year	5 (9.3)

Skills needed to practice as a pharmacist in GB (Section E3)

As outlined in Section E3 **(Figure 8)**, the survey results reveal that 55.6% of participants strongly agreed they faced challenges in obtaining pharmacist positions in GB. The majority identified acquiring clinical skills as the main obstacle, with 48.1% strongly agreeing and 22.2% agreeing. Language proficiency was also highlighted as a considerable barrier, with 42.6% strongly agreeing and 29.6% agreeing. In contrast, participants considered the application of their pharmaceutical-technical skills less critical, as 24.1% strongly disagreed and 44.4% disagreed.

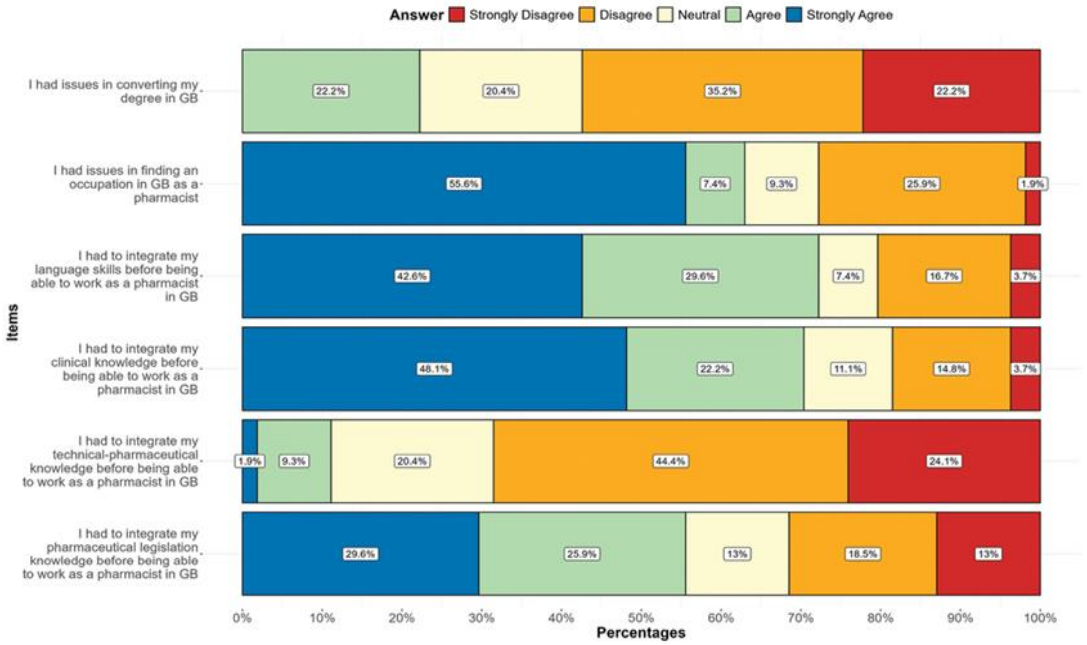

Figure 8. Skills required.

The composition of the healthcare workforce is increasingly shaped by social and cultural diversity, with many pharmacy graduates seeking career opportunities beyond their home countries, particularly EU-trained pharmacists relocating to GB [30]. This study represents the first known attempt to explore why Italian-qualified pharmacists move to GB, investigating the main obstacles, professional challenges, and opportunities they encounter, while emphasizing the potential need to reform pharmacy education in Italy to better support career development. The results suggest that, even though pharmacy employment in Italy is generally strong, Italian pharmacists are motivated to move primarily by the prospect of more advanced clinical responsibilities and improved career progression in GB. A notable driver of migration was dissatisfaction with the limited clinical training in Italian pharmacy programmes, prompting pharmacists to pursue the structured, clinically oriented roles available in GB to enhance their expertise and professional growth.

The choice to enrol in scientific university programmes is influenced by multiple factors. Evidence from studies outside Italy shows that factors such as expected income, personal background, and work-life balance strongly influence students' decisions to choose pharmacy over other healthcare careers, including medicine or dentistry [65, 66]. In Italy, a decline in pharmacy student enrolment since 2016 [67] may reflect perceptions of high workload and low satisfaction associated with the pharmacist role [68, 69]. These perceptions can diminish the intrinsic motivation to pursue higher education [70], potentially explaining both the trends observed by Giani (2019) and the increasing number of Italian pharmacists seeking more clinically rewarding work environments abroad [55, 67].

Further evidence comes from a recent nationwide survey conducted by the Italian Professional Association of Non-Proprietor Pharmacists (CONASFA), which examined why many pharmacists are leaving the profession [71]. Based on over 2,030 responses from pharmacists across different regions and pharmacy types, the study identified dissatisfaction with remuneration—including salaries, bonuses, and welfare benefits—as a key factor. Other significant contributors included stress and burnout, often associated with heavy workloads, poor work-life balance, and unclear opportunities for career progression and professional development.

Our findings align with these observations, revealing that participants expressed dissatisfaction with the Italian undergraduate pharmacy curriculum. Many respondents reported that the courses did not equip them with the necessary skills for professional practice and that they would not recommend pharmacy or CTF programmes to others. Additionally, most indicated that pharmacy/CTF was not their preferred choice of degree, suggesting that dissatisfaction with the initial educational pathway may have influenced their decision to pursue pharmacy careers in GB.

In the context of pharmacy employment, high levels of job satisfaction have been associated with stronger collaboration among pharmacists and reduced staff turnover [72]. A mixed-method exploratory study by Aspden *et al*. (2021) identified the work environment, remuneration, and career prospects as the primary factors influencing pharmacists' decisions to leave the profession.

These findings are echoed in our survey, where many respondents highlighted dissatisfaction with salary, limited career advancement, and the desire to engage in clinical roles as key motivations for relocating to GB. This is particularly significant because the role of the clinical pharmacist in Italy is not as clearly defined or formally recognised as it is in GB [24]. By practicing in GB, Italian pharmacists gain opportunities to develop their clinical skills and expertise, which appears to be a strong motivating factor for migration, consistent with evidence that greater clinical involvement enhances job satisfaction among pharmacists [55].

Interestingly, our survey indicated that the primary driver for leaving Italy was not a lack of employment opportunities. Italy ranks highest in Europe for the number of pharmacists working in community pharmacies and is second in terms of pharmacists per pharmacy [25]. Furthermore, 63% of Italian pharmacy graduates find employment within one year, rising to 86.4% within five years of graduation [25], suggesting that career opportunities in Italy are abundant, as also reflected in our participants' perceptions.

Regarding employment contracts, community pharmacists in Italy are governed by the National Collective Agreement (CCNL) under the commerce sector, rather than the healthcare sector, which differs from contracts for other health professionals such as doctors or nurses [73]. In contrast, GB contracts for community pharmacists are regulated by the government, the NHS, and the Pharmaceutical Services Negotiating Committee (PSNC) [74], integrating pharmacists into the broader NHS framework. This arrangement allows pharmacies to provide accessible clinical services, manage minor illnesses in the community, and reduce pressure on general practice and urgent care services. In Italy, however, there remains a significant gap between pharmacists' professional

skills and the recognition of these competencies within contractual arrangements [73], which may explain the strong dissatisfaction reported by many survey participants regarding their work experiences.

Reflecting on professional experience in Italy, a substantial portion of our survey respondents had previously worked as pharmacists in Italy before relocating to GB. Many in this group reported that the Italian pharmacy programme did not sufficiently equip them with the skills needed to perform their duties effectively. Additionally, the majority expressed that they would not recommend enrolling in a pharmacy or CTF degree in Italy, further highlighting perceived shortcomings in the educational preparation for professional practice.

Across Europe, pharmacy education continues to emphasise pharmaceutical sciences over clinical training, in contrast to curricula in the United States and Great Britain [11, 16]. Italian studies indicate that problem-based clinical courses are particularly valuable for students' learning [22]. Recent reports, including a survey by FOFI and IPSOS (2023) [75], show strong support among Italian pharmacists for integrating clinical content into degree programmes, in line with government recommendations (DM1147, 2022). Consistently, participants in our survey suggested that subjects such as internal medicine, clinical pharmacy, pharmaceutical care, medical semiotics, patient communication, and clinical services should be incorporated into the Italian pharmacy curriculum, whereas traditional topics like general, organic, and analytical chemistry could be streamlined.

Previous research has highlighted the gap between pharmacists' academic training and the competencies required in real-world practice, particularly for clinical tasks [76–78]. Our survey extended these findings by asking Italian pharmacists about challenges they faced when transitioning to careers in GB and perceived shortcomings in their education. Many respondents reported that improving language proficiency and clinical skills was essential to secure employment in GB, reflecting deficiencies identified in Italian pharmacy programmes [22]. Before practicing fully as pharmacists, most participants initially worked in supporting roles—such as pharmacy assistants, dispensers, technicians, or trainees—which appeared to provide crucial experience and bridge knowledge gaps in both clinical practice and communication. Even those who had completed a four-year post-graduate hospital pharmacy specialisation in Italy often needed additional training to meet the expectations of the British healthcare system.

Strengths

This study's primary strength lies in exploring a largely overlooked topic: the professional trajectories of Italian pharmacists relocating to GB. By comparing the Italian and British pharmacy curricula, the study highlights how educational differences affect professional adaptation and development. Findings emphasize the need for curriculum reform in Italy to better equip graduates for clinically focused roles, offering practical implications for educational and policy stakeholders. These results provide a foundation for guiding Italian authorities—including the government, the National Conference of University Deans (NCUD), and the Ministry of University and Research (MUR)—in revising pharmacy education, aiming to align Italian pharmacists' competencies with the clinical orientation and practice standards seen in more developed pharmacy systems such as those in GB and the United States.

Limitations

This study, while pioneering in its focus on Italian-qualified pharmacists, has several limitations that warrant consideration. The use of convenience sampling was necessary due to restricted access to the broader population, limited resources, and the need to collect data efficiently. A larger sample would have strengthened the reliability of the findings and allowed for more definitive conclusions regarding factors influencing the challenges faced in clinically oriented pharmacy practice, as exemplified in GB. Consequently, the results should be interpreted cautiously, since the study sample may not fully represent the experiences of all Italian pharmacists. Additionally, despite using an online survey to reach as many participants as possible, there is no guarantee that all eligible pharmacists received the invitation. Future research should aim for larger, more representative samples and consider employing methods such as confirmatory factor analysis to enhance the consistency and generalisability of the findings.

Conclusion

The findings from this survey suggest that Italian pharmacists' migration to GB is driven not by a lack of employment opportunities but by limited career progression, inadequate salaries, and insufficient opportunities

for job satisfaction in clinical roles. Respondents consistently reported feeling underprepared for patient-centred clinical responsibilities, reflecting a notable gap in their education that hindered career advancement. Many participants indicated that, prior to fully practising as registered pharmacists in GB, they needed to strengthen their clinical knowledge and skills, often spending extended periods in support roles—such as pharmacy assistants, dispensers, technicians, or trainees—before achieving professional confidence and employment stability.

Despite recent European reforms inspired by the Bologna Declaration, the Italian pharmacy degree continues to prioritise foundational science courses over clinical and patient-focused training. In contrast, the GB pharmacy curriculum is widely recognised as a benchmark for clinical practice, given its emphasis on practical clinical coursework [79]. The introduction of the Italian Ministerial Decree (DM 1147) represents a step toward modernising the curriculum, recommending inclusion of clinical subjects that enable pharmacists to deliver community-based patient care (farmacia dei servizi). While the decree addresses only some areas highlighted by our survey, it is a critical move toward preparing Italian pharmacists for more hands-on, patient-oriented roles.

Overall, the results indicate an urgent need for Italian pharmacy programmes to evolve, both to comply with recent legislative guidance and to equip future pharmacists with a more comprehensive foundation for clinically focused practice. These findings offer valuable insights for universities, the National Conference of University Deans (NCUD), and other policymakers seeking to implement curriculum improvements that align Italian pharmacy education with international clinical standards.

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