Patient-Centered Pharmacy Education

Defining educational contents in a patient-centered education curriculum

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Ph.D. Candidate
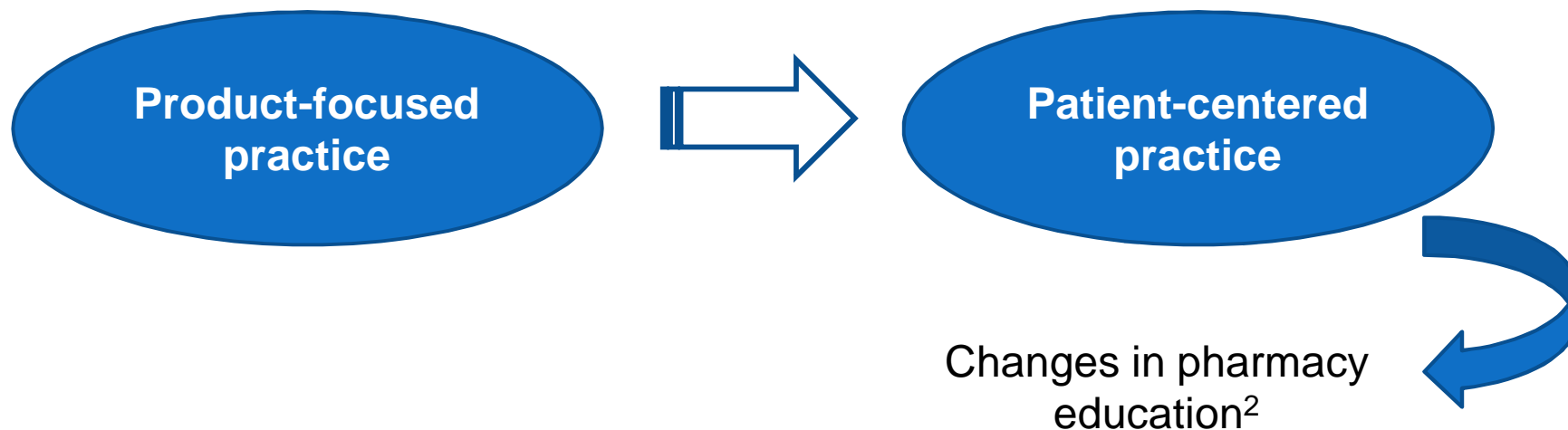
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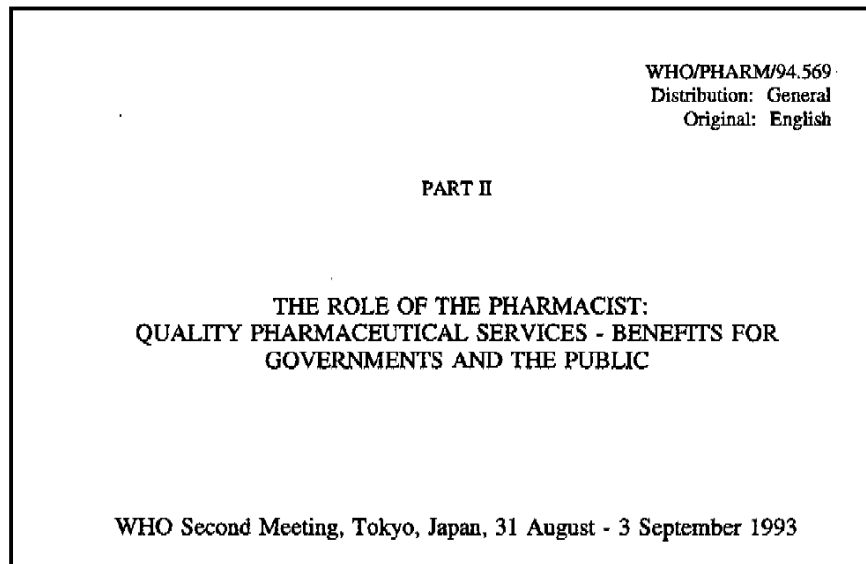Fernando Fernandez-Llimos
Assistant Professor

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The role of the pharmacist in the health care system[1]

Product-focused practice → **Patient-centered practice**

Changes in pharmacy education[2]

1. Report of a WHO second meeting, Tokyo, Japan, 31 August–3 September 1993. Geneva: World Health Organization, 1994 Contract No.: WHO/PHARM/94.569.

2. The role of the pharmacist in the health care system. Preparing the future pharmacist: curricular development. Report of the third WHO consultative group on the role of the pharmacist, Vancouver, Canada, 27–29 August 1997. Geneva: World Health Organization, 1997

Provision of pharmaceutical care

WHO/PHARM/94.569
Distribution: General
Original: English

PART II

THE ROLE OF THE PHARMACIST:
QUALITY PHARMACEUTICAL SERVICES - BENEFITS FOR
GOVERNMENTS AND THE PUBLIC

WHO Second Meeting, Tokyo, Japan, 31 August - 3 September 1993

Components of the curriculum should be properly balanced:

- Basic sciences
- Pharmaceutical sciences
- Biomedical and clinical sciences
- Socio-economic and behavioural sciences
- Practice experience

Report of a WHO second meeting, Tokyo, Japan, 31 August–3 September 1993. Geneva: World Health Organization, 1994 Contract No.: WHO/PHARM/94.569.

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Table 16. Subject areas in % : reported data

	CHEMSCI	PHYSMATH	BIOLSCI	PHARMTECH	MEDISCI	LAWSOC	GENERIC
Austria	44.0	2.0	22.0	14.0	10.0	0.00	1.00
Belgium	24.0	9.0	11.0	18.0	27.0	2.00	8.00
Bulgaria	31.0	7.0	11.0	13.0	24.0	7.00	7.00
Czech Republic	17.0	5.0	8.0	22.0	19.0	13.00	16.00
Denmark	42.0	7.0	7.0	16.0	16.0	9.00	3.00
Estonia	21.0	4.0	2.0	21.0	39.0	10.00	3.00
Finland	20.0	5.6	2.5	21.9	28.8	15.60	5.60
France	17.6	9.5	17.9	5.9	42.0	2.20	5.00
Germany	39.8	4.5	10.9	13.4	28.3	2.10	3.80
Greece	39.3	5.8	14.2	8.2	15.9	2.70	14.00
Hungary	27.2	5.2	5.2	16.0	28.5	3.88	14.22
Ireland	13.6	11.1	7.1	18.3	35.5	7.30	7.10
Italy	32.4	7.2	10.4	9.1	31.5	4.80	2.20
Latvia	27.7	6.4	6.4	20.2	26.6	8.50	6.40
Lithuania	28.0	2.6	11.7	11.7	36.4	9.80	9.80
Malta	15.4	7.2	12.7	15.4	30.8	3.60	15.00
Netherlands	20.1	3.9	10.6	14.2	31.1	8.30	11.80
Poland	21.3	4.1	8.0	15.9	38.2	6.20	6.20
Portugal	19.6	6.8	14.6	14.9	32.2	12.00	1.20
Rumania	26.1	8.7	15.8	14.1	24.9	3.70	6.60
Slovakia	28.8	8.8	10.9	14.4	27.6	3.40	6.00
Slovenia	27.0	8.5	8.5	22.0	21.0	8.50	4.70
Spain	23.5	5.5	19.9	11.0	27.6	5.50	7.00
Sweden	18.3	11.3	12.8	19.5	21.5	11.80	5.00
United Kingdom	13.6	5.7	23.9	22.7	23.9	3.40	6.80

CHEMSCI: chemical sciences
PHYSMATH: physics, mathematics
BIOLSCI: biological sciences
PHARMTECH: pharmaceutical technology
MEDISCI: medical sciences
LAWSOC: law, society, ethics
GENERIC: generic subjects, traineeship

Atkinson J, Rombaut B. The 2011 PHARMINE report on pharmacy and pharmacy education in the European Union. Pharm Pract (Granada). 2011;9(4):169-87.

Medical sciences "MEDISCI"

- Human anatomy & physiology
- Medical terminology
- Pharmacology
- Pharmacognosy
- Pharmacotherapy / therapeutics
- Toxicology
- Pathology, histology
- Microbiology
- Nutrition, non-pharmacological treatment
- Hematology
- Immunology
- Parasitology
- Hygiene
- Emergency therapy
- Clinical chemistry / bioanalysis (of body fluids)
- Radiochemistry
- Dispensing process, drug prescription, prescription analysis (detection of adverse effects and drug interactions)
- Generic drugs
- Planning, running and interpretation of the data of clinical trials

- Medical devices
- Orthopaedics
- OTC medicines, complementary therapy
- At-home support and care
- Skin illness and treatment
- Homeopathy
- Phytotherapy
- Drugs in veterinary medicine
- Pharmaceutical care, pharmaceutical therapy of illness and disease

Components of the curriculum should be properly balanced:

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Atkinson J, Rombaut B. The 2011 PHARMINE report on pharmacy and pharmacy education in the European Union. Pharm Pract (Granada). 2011;9(4):169-87.

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RESEARCH

A Comparison of Patient-Centered Care in Pharmacy Curricula in the United States and Europe

Ines Nunes-da-Cunha, MSc, PharmD,[a] Blanca Arguello, PhD, PharmD,[b,c]
Fernando Martinez Martinez, PhD, PharmD,[a] Fernando Fernandez-Llimos, PhD, PharmD, MBA[b,c]

[a] University of Granada, Granada, Spain
[b] University of Lisboa, Lisbon, Portugal
[c] Institute for Medicines Research, Lisbon, Portugal

Objective. To compare United States and European Higher Education Area (EHEA) undergraduate pharmacy curricula in terms of patient-centered care courses.
Methods. Websites from all pharmacy colleges or schools in the United States and the 41 countries in the EHEA were retrieved from the FIP Official World List of Pharmacy Schools and investigated. A random sample of schools was selected and, based on analyses of course descriptions from syllabi, each

Nunes-da-Cunha I, Arguello B, Martinez FM, Fernandez-Llimos F. A Comparison of Patient-Centered Care in Pharmacy Curricula in the United States and Europe. Am J Pharm Educ. 2016;80(5):83.

§ To be eligible for the study, the institutions had to meet the following criteria:

- a website in English, French, German, Italian, Portuguese or Spanish;
- a complete curriculum for the academic year 2013-2014 on the website;
- the hours or credits per discipline in the curriculum;
- a syllabus of all disciplines available on the website (as a tolerance criterion, a lack of up to five syllabi was allowed);
- and an internship (pharmacy practice experiences) integrated into the curriculum.

§ Twenty-five percent of the schools from each country, with a minimum of four institutions per country, were selected.

§ The syllabi for all of the disciplines from the selected schools in the sample were downloaded.

§ To analyze the discipline contents in the syllabi, <u>we created a guidance for data extraction and classification</u>, based on the "Curricular Core – Knowledge, Skills, Attitudes, and Values" section of ACPE's Standards.

Nunes-da-Cunha I, Arguello B, Martinez FM, Fernandez-Llimos F. A Comparison of Patient-Centered Care in Pharmacy Curricula in the United States and Europe. Am J Pharm Educ. 2016;80(5):83.

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Social sciences
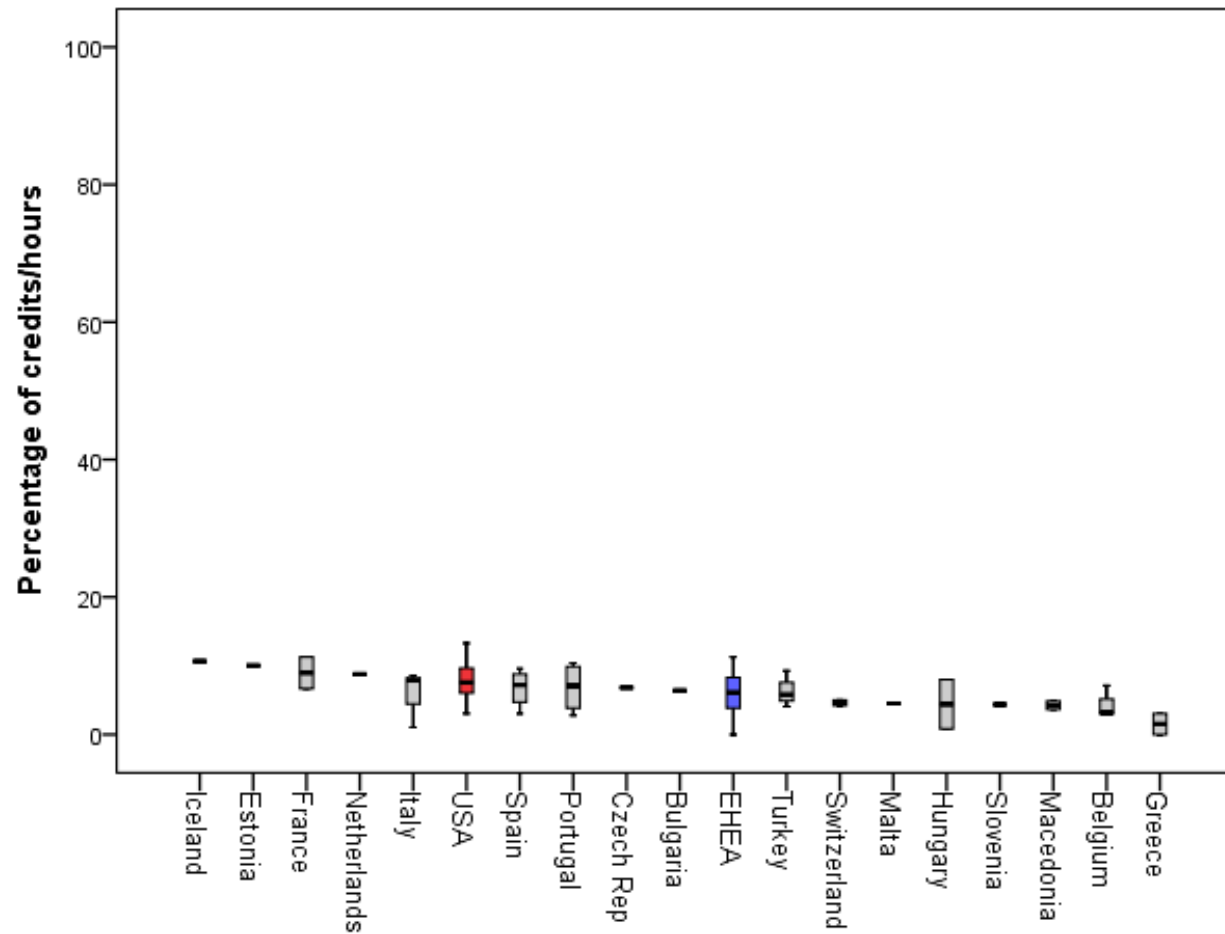
EHEA= 6.0%

USA= 7.8%

Nunes-da-Cunha I, Arguello B, Martinez FM, Fernandez-Llimos F. A Comparison of Patient-Centered Care in Pharmacy Curricula in the United States and Europe. Am J Pharm Educ. 2016;80(5):83.
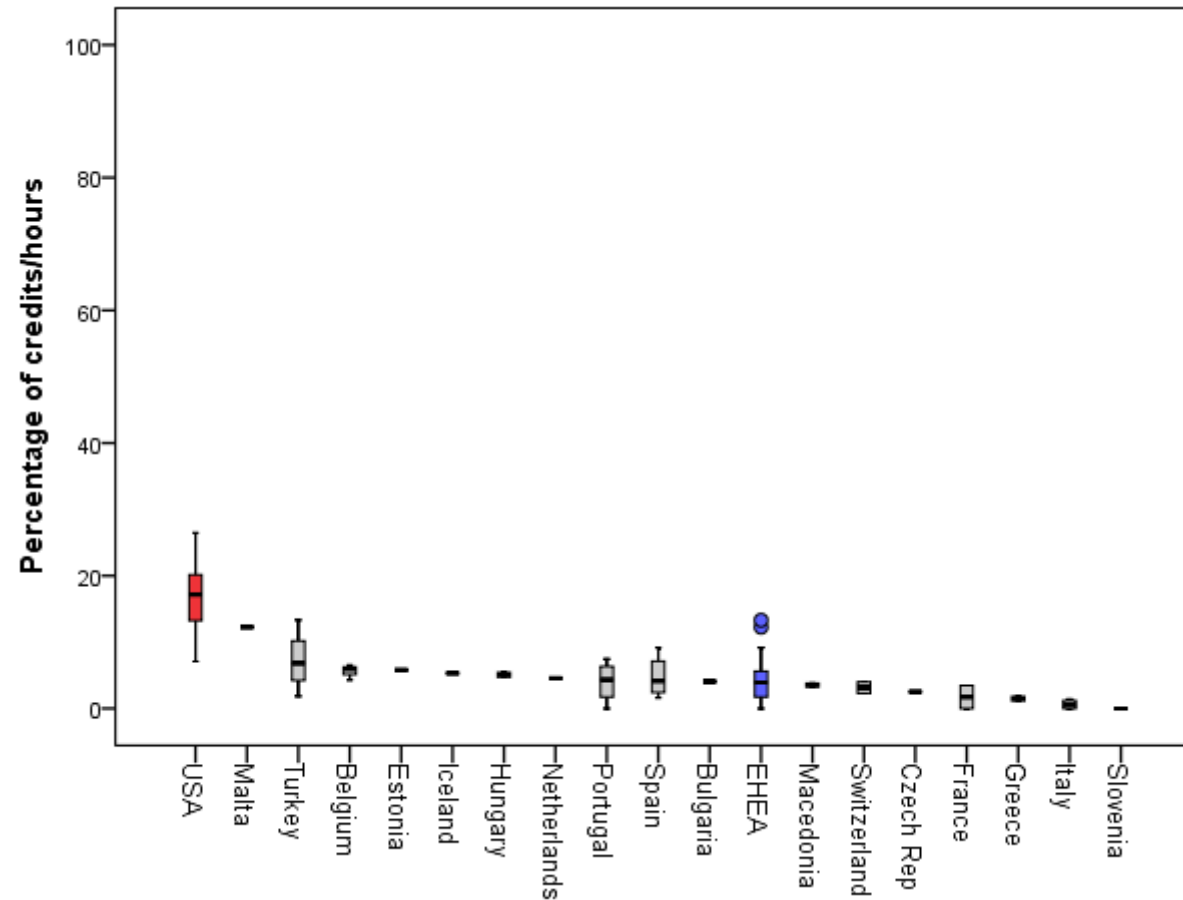
Experiental courses
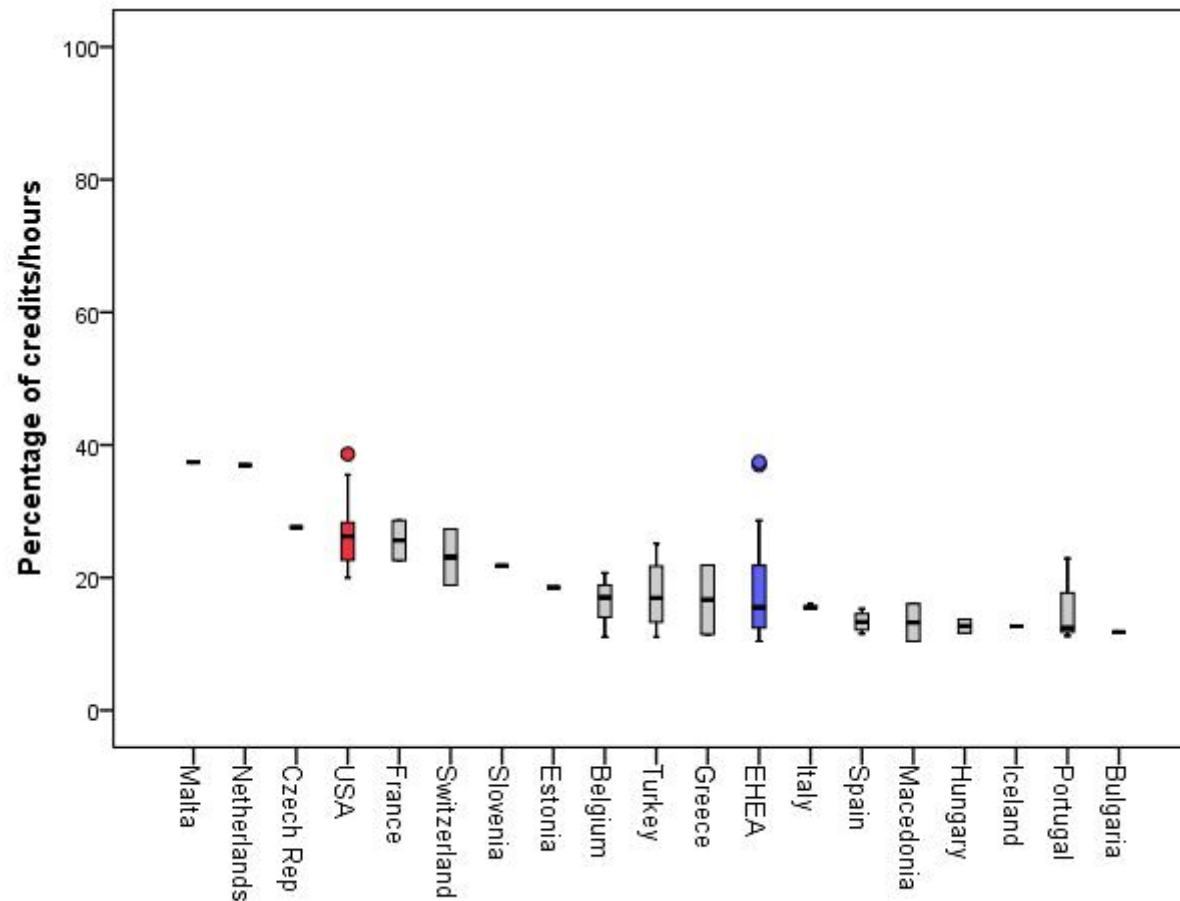
EHEA= 17.9%

USA= 26.4%

Nunes-da-Cunha I, Arguello B, Martinez FM, Fernandez-Llimos F. A Comparison of Patient-Centered Care in Pharmacy Curricula in the United States and Europe. Am J Pharm Educ. 2016;80(5):83.
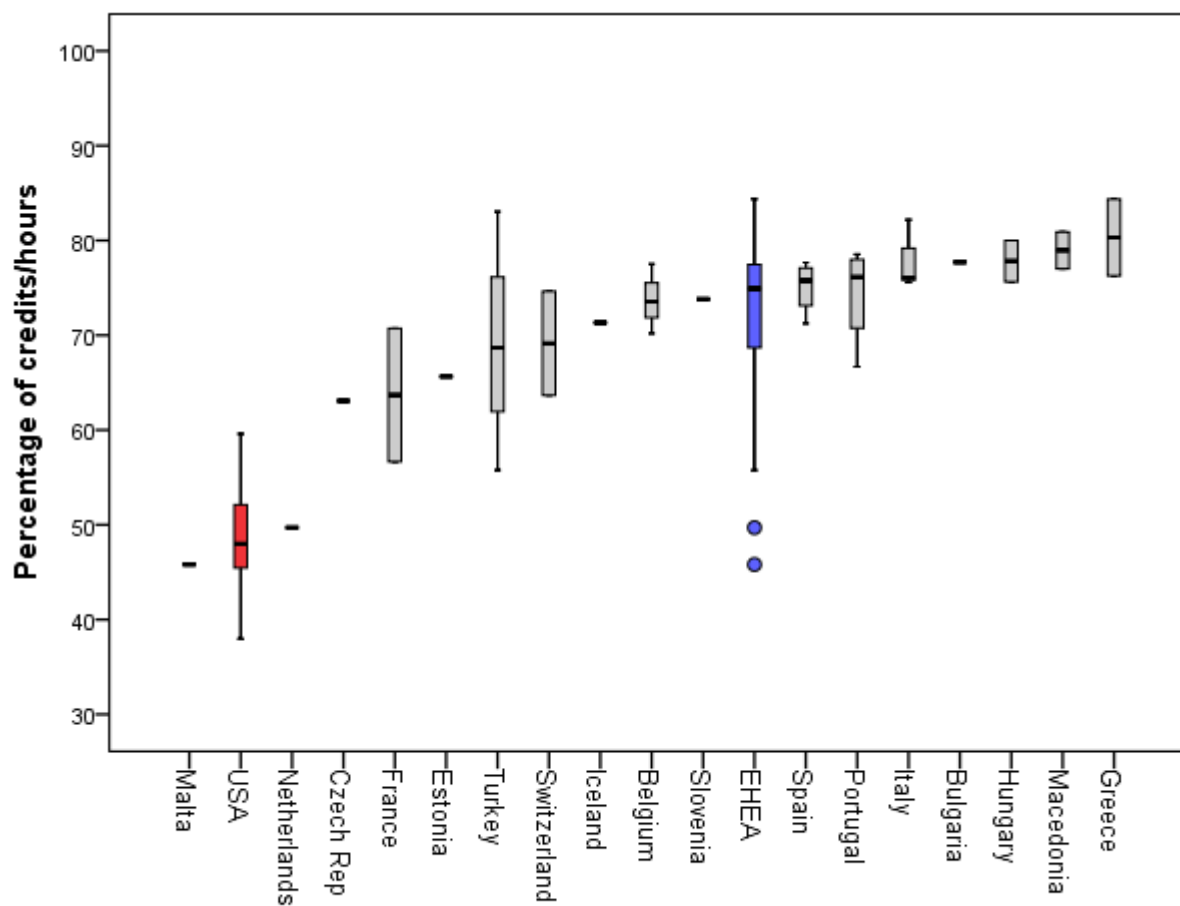
Clinical Sciences

EHEA= 4.1%

USA= 16.7%

Nunes-da-Cunha I, Arguello B, Martinez FM, Fernandez-Llimos F. A Comparison of Patient-Centered Care in Pharmacy Curricula in the United States and Europe. Am J Pharm Educ. 2016;80(5):83.
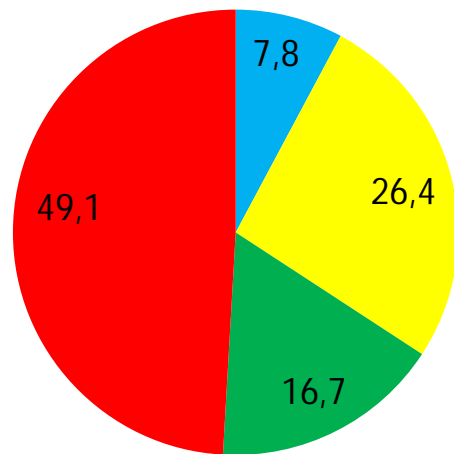
Basic sciences

EHEA= 72%

USA= 49%

Nunes-da-Cunha I, Arguello B, Martinez FM, Fernandez-Llimos F. A Comparison of Patient-Centered Care in Pharmacy Curricula in the United States and Europe. Am J Pharm Educ. 2016;80(5):83.

Ranking

Table 2. Score of the Pharmacy Curriculum and Percentage of Patient-centered Courses in the Curriculum

Country	Score					% Patient-centered Courses
	Clinical Courses	Social Courses	Experiential Courses	Other Courses	Total	
United States	18	13	15	17	63	51.0
Malta	17	6	18	18	59	54.2
Netherlands	11	15	17	16	59	50.3
Estonia	14	17	11	13	55	34.4
France	4	16	14	14	48	36.3
Czech Republic	5	10	16	15	46	36.9
Turkey	16	8	9	12	45	29.5
Iceland	13	18	3	10	44	28.7
Switzerland	6	7	13	11	37	30.9
Belgium	15	2	10	9	36	26.2
Spain	9	12	6	7	34	24.6
Portugal	10	11	2	6	29	23.9
Italy	2	14	7	5	28	23.8
Slovenia	1	4	12	8	25	26.2
Hungary	12	5	4	3	24	22.2
Bulgaria	8	9	1	4	22	22.3
Macedonia	7	3	5	2	17	21.1
Greece	3	1	8	1	13	19.7

Nunes-da-Cunha I, Arguello B, Martinez FM, Fernandez-Llimos F. A Comparison of Patient-Centered Care in Pharmacy Curricula in the United States and Europe. Am J Pharm Educ. 2016;80(5):83.
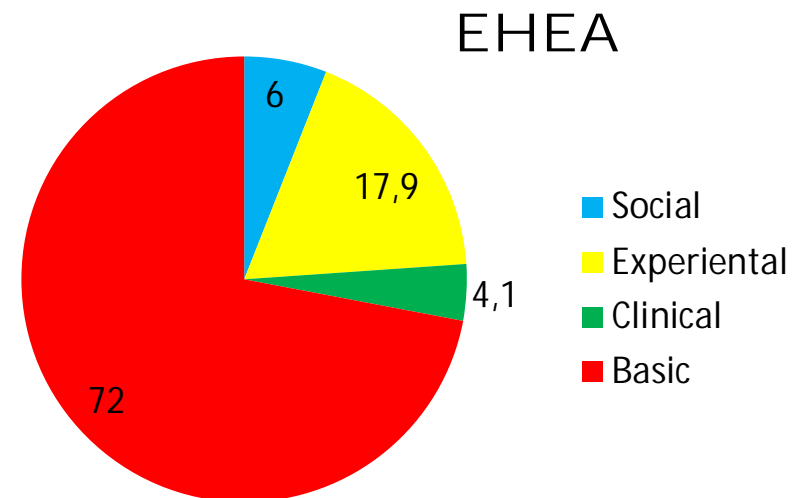
% course load

Nunes-da-Cunha I, Arguello B, Martinez FM, Fernandez-Llimos F. A Comparison of Patient-Centered Care in Pharmacy Curricula in the United States and Europe. Am J Pharm Educ. 2016;80(5):83.

Competency Frameworks for Pharmacy
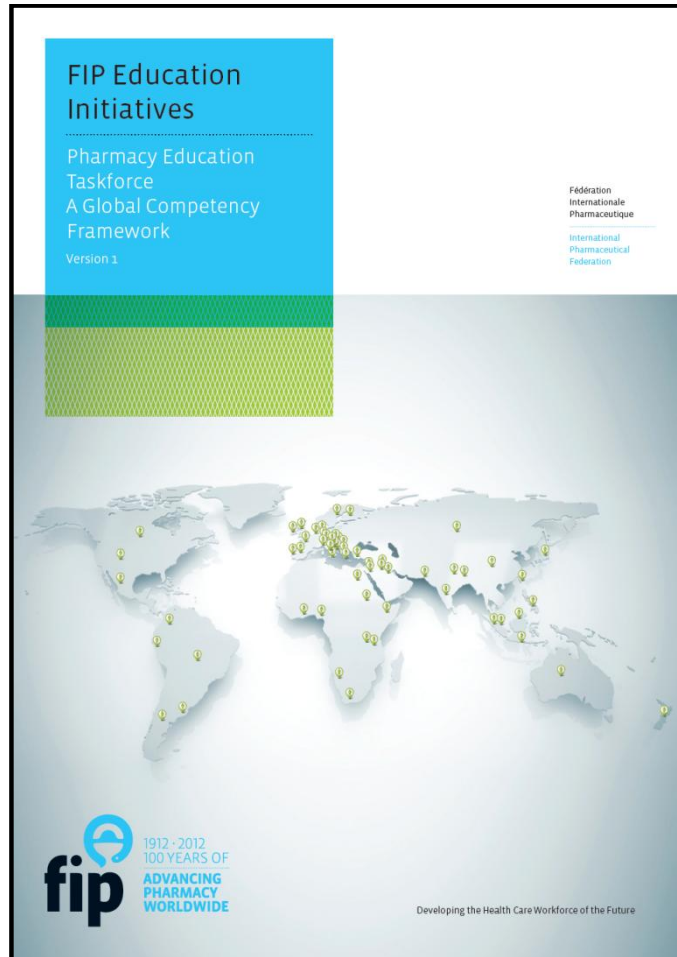
Global competency framework

§ Created with the aim of supporting the educational development of pharmacy practitioners

§ Works as a mapping tool and changes with the evolution of the profession

International Pharmaceutical Federation. Pharmacy Education Taskforce. A Global Competency Framework for Services Provided by Pharmacy Workforce. The Hague, The Netherlands: International Pharmaceutical Federation; 2012.

Competency Frameworks for Pharmacy

- **Australia:** Pharmaceutical Society of Australia. National Competency Standards Framework for Pharmacists in Australia. 2010.

- **Singapore:** Singapore Pharmacy Council. Competency standards for pharmacists in Singapore (Entry to practice). 2011.

- **International Pharmaceutical Federation:** Pharmacy Education Taskforce. A Global Competency Framework for Services Provided by Pharmacy Workforce. 2012.

- **United States of America:** American Association of Colleges of Pharmacy. Educational Outcomes. Center for the Advancement of Pharmaceutical Education Outcomes. 2013.

- **Canada:** National Association of Pharmacy Regulatory Authorities. Professional Competencies for Canadian Pharmacists at Entry to Practice. 2014

- **New Zealand:** Pharmacy Council of New Zealand. Safe Effective Pharmacy Practice. Competence Standards for the Pharmacy Profession. 2015.

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Competency Frameworks for Pharmacy

- **United Kingdom:** Competency Development and Evaluation Group. General Level Framework, a Framework for Pharmacist Development in General Pharmacy Practice. October 2007.

- **Spain:** Orden CIN/2137/2008, de 3 de julio, por la que se establecen los requisitos para la verificación de los títulos universitarios oficiales que habiliten para el ejercicio de la profesión de Farmacéutico.

- **Ireland:** The Pharmaceutical Society of Ireland. Core Competency Framework for Pharmacists. 2013.

- **Portugal:** Ordem dos Farmacêuticos. Modelo de Competências Farmacêuticas da Ordem dos Farmacêuticos. 2015.

- **Europe:** European Pharmacy Competences Framework. The PHAR-QA Project: Quality Assurance in European Pharmacy Education and Training. 2016.

Scenarios of competency frameworks use

- **1a. Perfect use of competency framework**
- **1b. Competencies aligned but not with the country framework**

- **2. No alignment with the existing country competency framework**

- **3. Misleading use of the competency framework**

Use and misuse of competencies

1a. Perfect use of competency framework (e.g. CAN_0363)

As **Communicators**, pharmacy graduates:

2.1. Communicate non-verbally and verbally with others.
- 2.1.1. use active listening skills and respond appropriately;
- 2.1.2. exhibit empathy, tact and respect in their dealings with others;
- 2.1.3. demonstrate sensitivity, respect and empathy in intercultural and inter-professional situations;
- 2.1.4. when speaking, use organized processes and appropriate, precise expressions and vocabulary;
- 2.1.5. tailor the content of their communication to specific contexts and audiences, and:
- 2.1.6 adapt their communication techniques to facilitate efficient and effective clinical encounters.

2.2. Communicate in writing.
- 2.2.1. write clearly, using organized processes and appropriate vocabulary;
- 2.2.2. correctly apply the rules of syntax, grammar and punctuation, and:
- 2.2.3. adapt the content of their arguments to specific contexts and target audiences.

2.3. Present information.
- 2.3.1. appear comfortable, engage the audience, use appropriate tone and pace, and use nonverbal language appropriately;
- 2.3.2. are organized and can set and adhere to appropriate time limits, and:

Association of Faculties of Pharmacy of Canada (AFPC). Educational Outcomes for First Professional Degree Programs in Pharmacy (Entry-to-Practice Pharmacy Programs) in Canada. Vancouver2010.

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Use and misuse of competencies

1a. Perfect use of competency framework (e.g. CAN_0363)

Meeting AFPC Educational Outcomes:

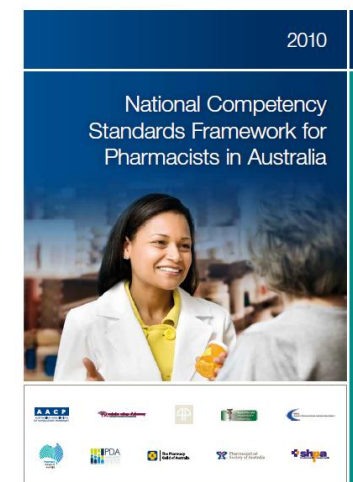| Personal Course Objectives At the completion of this course, the student should be able to:	Learning Level (ICE – Ideas, Connections, Extensions)	AFPC Outcome Achieved	Performance Level (Novice, Functional, Competent)
Practice effective verbal, non-verbal and written communication skills	Connections	2.1 2.2 2.3 2.4 7.1	Functional
Practice in an ethical and professional manner with a focus on PHIA and legalities surrounding practice	Connections	7.2 7.4	Functional
Identify and utilize literature resources in response to drug information requests from patients, other health care professionals or care-givers	Ideas	6.1 6.2	Novice

Use and misuse of competencies

1b. competencies aligned but not with the country framework

(e.g. AUS_0042)

Standard 2.1 Communicate effectively

- ▫ **Element 1 – Adopt sound principles for communication**

- ▫ **Element 2 – Adapt communication for cultural and linguistic diversity**

- ▫ **Element 3 – Manage the communication process**

- ▫ **Element 4 – Apply communication skills in negotiation**

2010

National Competency
Standards Framework for
Pharmacists in Australia

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Use and misuse of competencies

1b. competencies aligned but not with the country framework

(e.g. AUS_0042)

Standard 2.1 Communicate effectively

Performance Criteria	Evidence Examples
Element 1 – Adopt sound principles for communication	
1 Maintains open lines of communication.	• Ability to exchange and share information with others.
2 Values the input of others.	• Ability to demonstrate respect for the opinions and views of others.
3 Understands that non-verbal elements can exert a significant impact on the effectiveness of communication.	• Ability to describe key non-verbal factors impacting communication (e.g. presentation, posture, gestures, facial expression).
4 Recognises barriers to effective communication must be addressed.	• Ability to describe barriers to effective communication (e.g. emotional status (distress, anger or aggression), culture, values and beliefs, sensory impairment (hearing or vision), disabilities (mental or physical), personality conflict, socioeconomic or educational status, communication through a third party). • Ability to demonstrate or describe strategies and/or resources to address barriers to effective communication (e.g. revised communication pathways, tools for third party communication).

Pharmaceutical Society of Australia. National Competency Standards Framework for Pharmacists in Australia.2010

Use and misuse of competencies

1b. competencies aligned but not with the country framework

(e.g. AUS_0042)

Alignment *

Learning Outcome	Learning Activity/Activities	Assessment
0045 Communicate health and medication management information to patients and health care professionals in a useful and context-relevant way	Lectures & case studies in workshops weeks 1 to 9	Assessment task 2 Assessment task 3
0047 Use appropriate non-verbal, verbal, questioning and listening skills when communicating with patients and other HCPs	Lectures & case studies in workshops weeks 1 to 9	Assessment task 2 Assessment task 3

* Note: further information about how this Subject's content relates to the Pharmaceutical Society of Australia National Competency Standards Framework for Pharmacists in Australia can be found will be provided during the course.

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Use and misuse of competencies

2. No alignment with the existing country competency framework

(e.g. IRL_1285)

DOMAIN 1		PROFESSIONAL PRACTICE
Competency:	1.1	Practises 'patient-centred' care
Behaviours:	1.1.1	Demonstrates a 'patient-centred' approach to practice
	1.1.2	Ensures patient safety and quality are at the centre of the pharmacy practice
	1.1.3	Educates and empowers the patient to manage their own health and medicines
	1.1.4	Acts as a patient advocate to ensure that patient care is not jeopardised
	1.1.5	Monitors the medicines and other healthcare needs of the patient on a regular basis and makes recommendations for improvement to the patient and other healthcare professionals as appropriate
	1.1.6	Understands patients' rights to receive safe and high quality healthcare including pharmacy care and ensures that patient care delivered reflects evidence-based practice
Competency:	1.2	Practises professionally
Behaviours:	1.2.1	Carries out duties as a pharmacist in a professional manner
	1.2.2	Demonstrates awareness of the position of trust in which the
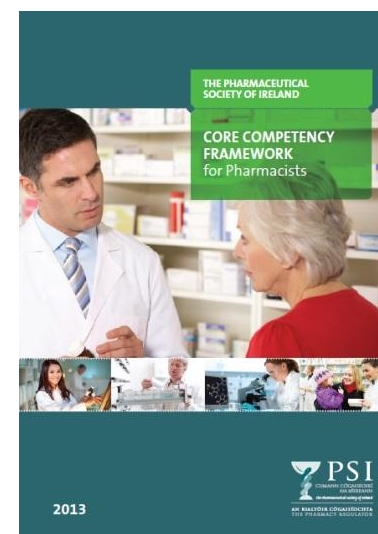
THE PHARMACEUTICAL SOCIETY OF IRELAND

CORE COMPETENCY FRAMEWORK for Pharmacists

PSI

2013

The Pharmaceutical Society of Ireland. Core Competency Framework for Pharmacists: PSI; 2013

Use and misuse of competencies

2. No alignment with the existing country competency framework

(e.g. IRL_1285)

PF2010 Professional Pharmacy Core Skills

Credit Weighting: 5

Semester(s): Semesters 1 and 2.

No. of Students: Max 70.

Pre-requisite(s):

Co-requisite(s): PF2009, PF2014

Teaching Method(s): 5 x 1hr(s) Lectures; 7 x 1hr(s) Tutorials; 9 x 3hr(s) Practicals; 1 x 2weeks(s) Placements ((80 hours)).

Module Co-ordinator: Prof

Lecturer(s): Prof S

Module Objective: Through a blend of lectures, workshops, laboratory-based training and work placements facilitate students' pharmacy practice skills with particular emphasis on the six domains of the Core Competency Framework for Pharmacists as required by The Pharmaceutical Society of Ireland in relation to acquiring knowledge and skills for extemporaneously preparing sterile and non-sterile dosage forms

Module Content: The professional practice-focused module will provide the students with the knowledge, skill and measurable competencies necessary to compound non-sterile and sterile preparations. Students will learn how to evaluate regulatory, preparatory and clinical-related risk thereby reducing the likelihood of adverse effects for patients. Students will gain hands-on experience in a compounding

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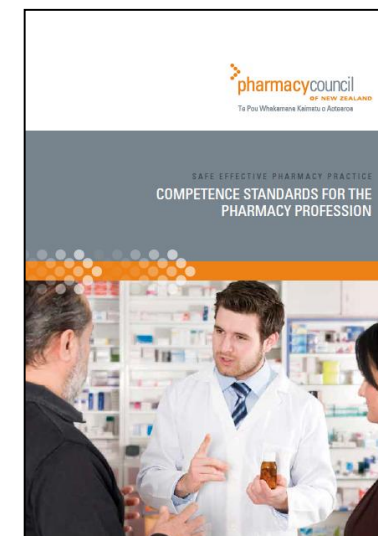
Use and misuse of competencies

2. No alignment with the existing country competency framework

(e.g. NWZ_1534)

Domain 01: Health and medicine management

COMPETENCY	01.1	CONSULT WITH THE PATIENT
Behaviours	01.1.1	Obtains and assesses the individual's medication and disease history including where relevant, laboratory and diagnostic test results
	01.1.2	Uses appropriate sources to obtain or clarify additional relevant clinical information
	01.1.3	Recognises and supports the right of individuals to have health beliefs and practices different to one's own, including the use of traditional healing and treatments
	01.1.4	Advises patients when and in what circumstances to seek further medical intervention
	01.1.5	Assesses the potential for inappropriate use, misuse or abuse of medicinal treatments
Behaviours	01.2.1	Demonstrates a patient-centred care approach to practice
	01.2.2	Agrees the goal(s) of treatment with the patient, taking into consideration the patient's knowledge of their own condition and preferred course(s) of treatment

Pharmacy Council of New Zealand. Safe Effective Pharmacy Practice. Competence Standards for the Pharmacy Profession.2015

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Use and misuse of competencies

2. No alignment with the existing country competency framework

(e.g. NWZ_1534)

Paper title	Professional Pharmacy Practice A
Teaching Arrangements	Lectures, seminars, workshops and laboratories
Textbooks	Text books are not required for this paper.
Graduate Attributes Emphasised	Lifelong learning, Communication, Critical thinking, Cultural understanding, Ethics, Information literacy, Research.
Learning Outcomes	The overall aim of this paper is to introduce the student to the professional practice of pharmacy. The paper will help the student develop skills in the area of critical thinking, communication and working with colleagues, communication and working with members of the public, information retrieval, evaluation and dissemination and critical appraisal of research proposals and reports. Specifically: by the end of this paper, students should be able to: Social Pharmacy ◦ Understand the process of behaviour change, including interventions to improve the use of medicines on the

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Use and misuse of competencies

3. Misleading use of the competency framework (e.g. ES_1741)

Competencias que los estudiantes deben adquirir:

1. Identificar, diseñar, obtener, analizar, controlar y producir fármacos y medicamentos, así como otros productos y materias primas de interés sanitario de uso humano o veterinario.
2. Evaluar los efectos terapéuticos y tóxicos de sustancias con actividad farmacológica.
3. Saber aplicar el método científico y adquirir habilidades en el manejo de la legislación, fuentes de información, bibliografía, elaboración de protocolos y demás aspectos que se consideran necesarios para el diseño y evaluación crítica de ensayos preclínicos y clínicos.
4. Diseñar, preparar, suministrar y dispensar medicamentos y otros productos de interés sanitario.
5. Prestar consejo terapéutico en farmacoterapia y dietoterapia, así como en el ámbito nutricional y alimentario en los establecimientos en los que presten servicios.
6. Promover el uso racional de los medicamentos y productos sanitarios, así como adquirir conocimientos básicos en gestión clínica, economía de la salud y uso eficiente de los recursos sanitarios.
7. Identificar, evaluar y valorar los problemas relacionados con fármacos y medicamentos, así como participar en las actividades de farmacovigilancia.
8. Llevar a cabo las actividades de farmacia clínica y social, siguiendo el ciclo de atención farmacéutica.

9. Intervenir en las actividades de promoción de la salud, prevención de enfermedad, en el ámbito individual, familiar y comunitario; con una visión integral y multiprofesional del proceso salud-enfermedad.
10. Diseñar, aplicar y evaluar reactivos, métodos y técnicas analíticas clínicas, conociendo los fundamentos básicos de los análisis clínicos y las características y contenidos de los dictámenes de diagnóstico de laboratorio.
11. Evaluar los efectos toxicológicos de sustancias y diseñar y aplicar las pruebas y análisis correspondientes.
12. Desarrollar análisis higiénico-sanitarios, especialmente los relacionados con los alimentos y medioambiente.
13. Desarrollar habilidades de comunicación e información, tanto orales como escritas, para tratar con pacientes y usuarios del centro donde desempeñe su actividad profesional. Promover las capacidades de trabajo y colaboración en equipos multidisciplinares y las relacionadas con otros profesionales sanitarios.
14. Conocer los principios éticos y deontológicos según las disposiciones legislativas, reglamentarias y administrativas que rigen el ejercicio profesional, comprendiendo las implicaciones éticas de la salud en un contexto social en transformación.
15. Reconocer las propias limitaciones y la necesidad de mantener y actualizar la competencia profesional, prestando especial importancia al autoaprendizaje de nuevos conocimientos basándose en la evidencia científica disponible.

Orden CIN/2137/2008, de 3 de julio, por la que se establecen los requisitos para la verificación de los títulos universitarios oficiales que habiliten para el ejercicio de la profesión de Farmacéutico.

Use and misuse of competencies

3. Misleading use of the competency framework (e.g. ES_1741)

- Human Anatomy and Histology
  - **CG3**. Learn to apply the scientific method and acquire skills in handling legislation, sources of information, literature, protocol development and other aspects that are necessary considered for the design and critical assessment of preclinical and clinical trials.
  - **CG13**. Develop communication and information skills, both oral and written, to deal with patients and users of the center where they carry out their professional activity. To promote the working and collaboration in multidisciplinary teams and those related to other health professionals.
- Parasitology
  - **CG4**. Design, prepare, deliver and dispense medications and other health products of interest.
  - **CG7.** Identify, evaluate and assess the problems related to drugs and medications, as well as participate in pharmacovigilance activities.
  - **CG13**. Develop communication and information skills, both oral and written, to deal with patients and users of the center where they carry out their professional activity. To promote the working and collaboration in multidisciplinary teams and those related to other health professionals.

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Use and misuse of competencies

3. Misleading use of the competency framework (e.g. ES_1741)

- Geology applied to the pharmacy (Geopharmacy)
  - **CG4**. Design, prepare, deliver and dispense medications and other health products of interest.
  - **CG5.** Providing therapeutic counseling in dietotherapy and pharmacotherapy and in the field in nutrition and food for establishments serving.
  - **CG6.** To promote the rational use of medicines and medical devices, as well as to acquire basic knowledge in clinical management, health economics and efficient use of health resources.
  - **CG9.** To participate in the activities of promotion of the health, prevention of disease, in the individual, familiar and community area; with the integral and multiprofessional vision of the process health - disease.
- Inorganic Chemistry
  - **CG13**. Develop communication and information skills, both oral and written, to deal with patients and users of the center where they carry out their professional activity. To promote the working and collaboration in multidisciplinary teams and those related to other health professionals.

Use and misuse of competencies

3. Misleading use of the competency framework (e.g. ES_1741)

CG13. Develop communication and information skills, both oral and written, to deal with patients and users of the center where they carry out their professional activity. To promote the working and collaboration in multidisciplinary teams and those related to other health professionals.

- Human Anatomy and Histology
- Basic Principles of Chemistry
- Inorganic Chemistry
- Radiopharmacy
- Cellular and Human Physiology II
- Microbiology I
- Parasitology
- Parasites and Immunity
- Plant Biotechnology Applied to Pharmacy
- Biotechnology
- Pathophysiology

- Clinical Microbiology and Parasitology
- Pharmaceutical Hydrology
- Pharmaceutical Technology I, II, and III
- Functional Tests
- Clinical Virology and Mycology
- Biopharmacy and Pharmacokinetics
- Pharmacognosy and Phytotherapy
- Clinical Physiology and Biochemistry
- Drug Pharmaceutical Development
- Dietetics and Diet Therapy
- Toxicology

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Use and misuse of competencies

Biochemistry

3. Misleading use of the competency framework

- ESP_1738
  - **CG3**. Learn to apply the scientific method and acquire skills in handling legislation, sources of information, literature, protocol development and other aspects that are necessary considered for the design and critical assessment of preclinical and clinical trials.
  - **CG9**. To participate in the activities of promotion of the health, prevention of disease, in the individual, familiar and community area; with the integral and multiprofessional vision of the process health - disease.
  - **CG13**. Develop communication and information skills, both oral and written, to deal with patients and users of the center where they carry out their professional activity. To promote the working and collaboration in multidisciplinary teams and those related to other health professionals.

- ESP_1741
  - **CG9**. To participate in the activities of promotion of the health, prevention of disease, in the individual, familiar and community area; with the integral and multiprofessional vision of the process health - disease.
  - **CG13**. Develop communication and information skills, both oral and written, to deal with patients and users of the center where they carry out their professional activity. To promote the working and collaboration in multidisciplinary teams and those related to other health professionals.

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Use and misuse of competencies

3. Misleading use of the competency framework

Biochemistry

- ESP_1748
  - **CG3**. Learn to apply the scientific method and acquire skills in handling legislation, sources of information, literature, protocol development and other aspects that are necessary considered for the design and critical assessment of preclinical and clinical trials.
  - **CG13**. Develop communication and information skills, both oral and written, to deal with patients and users of the center where they carry out their professional activity. To promote the working and collaboration in multidisciplinary teams and those related to other health professionals.
- ESP_1996
  - **CG3**. Learn to apply the scientific method and acquire skills in handling legislation, sources of information, literature, protocol development and other aspects that are necessary considered for the design and critical assessment of preclinical and clinical trials.
  - **CG4**. Design, prepare, deliver and dispense medications and other health products of interest.
  - **CG7.** Identify, evaluate and assess the problems related to drugs and medications, as well as participate in pharmacovigilance activities.
  - **CG13**. Develop communication and information skills, both oral and written, to deal with patients and users of the center where they carry out their professional activity. To promote the working and collaboration in multidisciplinary teams and those related to other health professionals.

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Use and misuse of competencies

3. Misleading use of the competency framework

Biochemistry

- ESP_1737
  - **CG1**
  - **CG2**
  - **CG3**
  - **CG4**
  - **CG5**
  - **CG6**
  - **CG7**
  - **CG8**
  - **CG9**
  - **CG10**
  - **CG11**
  - **CG12**
  - **CG13**
  - **CG14**
  - **CG15**

- ESP_1739

VI.- COMPETENCIAS

BÁSICAS, GENERALES Y TRANSVERSALES:
Todas las de la Titulación del Grado en Farmacia.

NB:
VI.- COMPETENCIES
BASIC, GENERIC and CROSS-SECTIONAL
All of the included in the Degree of Pharmacy

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Curriculum design

The curriculum development must meet the needs of the society
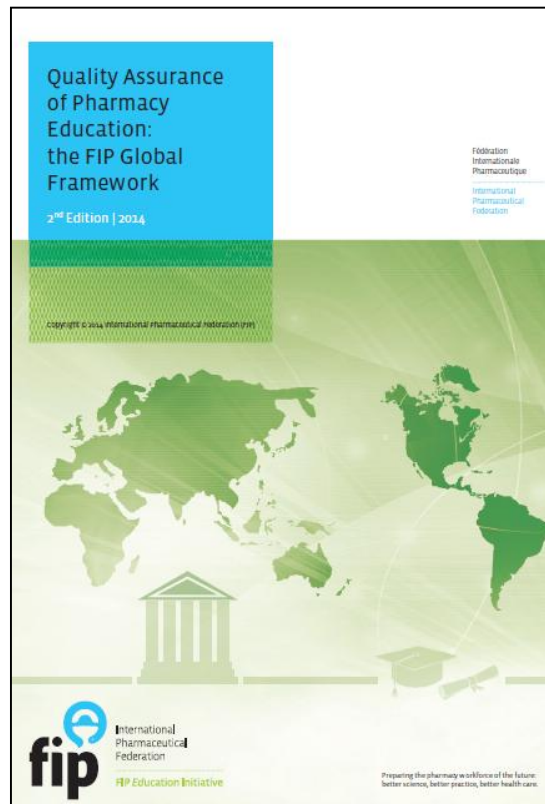
"Educational programmes must be designed and delivered (curricular content, teaching and learning methodologies, educational outcomes, etc.) to ensure that these competencies are achieved by all graduates."

"All courses and elements of the curriculum should be 'mapped' (cross-referenced) to the expected competencies and educational outcomes."

International Pharmaceutical Federation. Quality Assurance of Pharmacy Education: The FIP Global Framework. 2nd ed; 2014.

Curriculum design

| Competencies that a graduate must acquire for the exercise of their profession | ⇄ | educational contents |
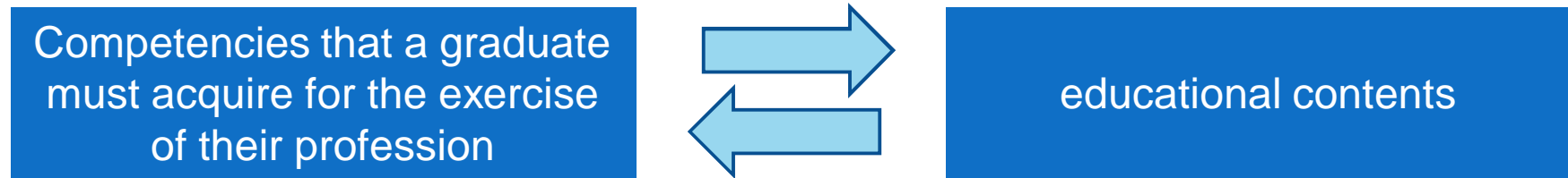
A perfect alignment between competencies and learning contents is crucial for graduates to acquire the necessary competencies to pharmacy practice.

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Creating a catalogue of educational contents for a patient-centred undergraduate pharmacy curriculum

**Educational contents
for a patient-centred
undergraduate
pharmacy curriculum**

Ines Nunes-da-Cunha

Fernando Fernandez-Llimos

2017

Nunes-da-Cunha I, Fernandez-Llimos F. Educational contents for a patient-centred undergraduate pharmacy curriculum. Lisbon 2017
ISBN: 978-989-20-7578-5

https://www.pharmacypractice.org/files/educational_contents.pdf

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Methods

Benchmarking method

Qualitative analysis of the contents included in the syllabus of the disciplines from undergraduate pharmacy curriculum in Australia, Canada, New Zealand and United States.
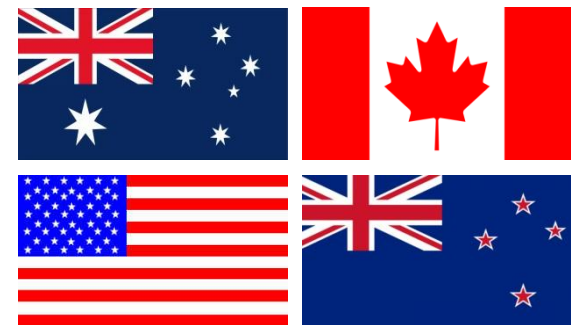
Methods

Location of educational contents

1. Selection of the countries

   a) wide implementation of pharmacy services

   b) the official language in these countries is English

   c) they have undergone a curriculum change to more clinical models

2. Selection of the schools of pharmacy

   a) extracted from FIP Official World List of Pharmacy Schools

   b) <u>ALL</u> schools with curriculum described in English and with all courses syllabus available in the website were included for analysis

3. Selection of the courses

   a) <u>ALL</u> courses with patient-centred educational contents* (topics described under clinical sciences and social/behavioral/administrative sciences) were included for content analysis

*Accreditation Council for Pharmacy Education. Accreditation standards and guidelines for the professional program in pharmacy leading to the doctor of pharmacy degree. Version 2.0. Effective February 14, 2011.

Methods

PHAR 510 INTRODUCTION TO PHARMACY (1 CREDIT)

The entering pharmacy learners will be introduced and oriented to the profession of pharmacy in this introductory course. They will examine the historical evolution of the pharmacist's role from one focused on drug compounding and distribution to a patient-centered practice model and interprofessional collaboration. Learners will become acquainted with pharmacy career opportunities and pathways, and learn the importance of leadership, professionalism, and involvement in pharmacy organizations. Learners will gain insight into self and professional goals through reflection and development of professional portfolios.

Data extraction

- The complete program content for each course were collected (syllabus, course schedule, course content, course description, etc.) from the school website.

- An email was sent to the professors responsible for each of the courses, asking them for collaboration by submitting additional information to complete the existing on the web page.

Methods

Data analysis

The ACPE* "Guidance on the Science Foundation for the Curriculum" was used as a coding framework.

Thematic analysis of the educational contents described in the syllabus of the courses included for analysis à iterative process, based on the grounded theory

- Process of coding à NVivo program
- Process of organization and classification of topics coded à MS Excel

*ACPE: Accreditation Council for Pharmacy Education

Method

Quality assessment of the process

Evaluation of the completeness of patient-centered educational contents in the undergraduate pharmacy curriculum

- A quantitative analysis was performed at 9 schools of pharmacy that present a complete and rich syllabus for all courses on their webpage in the academic year 2016/2017 (AUS=2, CAN=2, USA=4, and ESP=1).

- The percentage of patient-centered educational contents in the undergraduate pharmacy curriculum taught in each of these universities was calculated.

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149 schools of pharmacy (FIP)

110 schools were included

Australia = 15

Canada = 5

New Zealand = 1

United States = 89

8733 disciplines appeared in the teaching programs

1703 were considered under patient-centred pharmacy

- in 595 disciplines appeared the email address of the responsible professor

- 28.4% (n=169) of professors answering the request, and 20% (n=119) sent additional information

Created after interpretation of the ACPE guidelines

| The initial coding tree | à 39 categories organized in 3 hierarchical levels |

After the analysis of the 1703 syllabi content
+
119 additional information's

| The final coding tree | à **355 content topics** in 4 hierarchical levels |

(with more than 1800 items)

Educational contents for a patient-centred undergraduate pharmacy curriculum

Ines Nunes-da-Cunha
Fernando Fernandez-Llimos

2017

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The final coding tree of educational contents (4 hierarchical levels)

Un_____ ___ _____

1. Clinical Sciences Aspects

1.2 Pharmacist-Provided Care

1.2.2 Counselling and Patient Education

Introduction to the clinical counseling

- Patient counselling concepts
- Clinical counselling techniques
- Counselling in pharmacy practice
  - Development and delivery of patient counselling to optimize health outcomes
- Technology employed to promote patient counseling
  (e.g. telephone counselling)

Pharmacist as patient educator and health information provider

- How educating and empowering patients
- Access, analyse and apply relevant educational strategies and the best method to provide counseling/education
- Develop population-based patient education programs

53

1. **Clinical Sciences Aspects**
   1.1 Pharmacy Practice
   1.2 Pharmacist-Provided Care
   1.3 Medication Dispensing and Distribution Systems
   1.4 Patient Assessment
   1.5 Medication and Patient Safety
   1.6 Drug Information and Literature Evaluation

   > 6 **2nd level**
   > 29 **3rd level**
   > 154 **content topics**

2. **Social and Behavioral Pharmacy Sciences Aspects**
   2.1 Social Aspects of Pharmacy Practice
   2.2 Patient-reported Outcomes
   2.3 Professional Communication
   2.4 Ethics
   2.5 Public Health

   > 5 **2nd level**
   > 18 **3rd level**
   > 83 **content topics**

3. **Administrative Pharmacy Sciences Aspects**
   3.1 Health Care Systems
   3.2 Economics / Pharmacoeconomics
   3.3 Practice Management and Leadership
   3.4 Pharmacy Law and Regulatory Affairs
   3.5 Informatics and Health Technology

   > 5 **2nd level**
   > 16 **3rd level**
   > 100 **content topics**

4. **Miscellaneous**
   4.1 Research Design
   4.2 History of Pharmacy

   > 2 **2nd level**
   > 4 **3rd level**
   > 18 **content topics**

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Quality assessment of the process

Percentage of 4th level topics included in the catalog of educational contents for a patient-centred undergraduate pharmacy curriculum taught at pharmacy schools analyzed (n=355)

	AUS_0028	AUS_0038	CAN_0363	CAN_0366	USA_1884	USA_1923	USA_1941	USA_1951
Number of contents taught superficially	104	132	167	168	158	190	160	179
Number of contents taught in depth	55	30	54	94	94	65	126	59
Total	159	162	221	262	252	255	286	238
%	44,78	45,63	62,25	73,8	70,98	71,83	80,56	67,04

No floor effect
No ceiling effect

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Quality assessment of the process

Percentage of 4th level topics included in the catalog of educational contents for a patient-centred undergraduate pharmacy curriculum taught at pharmacy schools analyzed (n=355)

	AUS_0028	AUS_0038	CAN_0363	CAN_0366	USA_1884	USA_1923	USA_1941	USA_1951	ESP_1741	ESP_1741*
Number of contents taught superficially	104	132	167	168	158	190	160	179	114	89
Number of contents taught in depth	55	30	54	94	94	65	126	59	31	26
Total	159	162	221	262	252	255	286	238	145	115
%	44,78	45,63	62,25	73,8	70,98	71,83	80,56	67,04	40,84	32,39

Highly sensitive

* Eliminating one elective discipline

Epilogue

1. Pharmacists are a healthcare professional, and their education and training must be patient-centred.

2. Education should be based on the acquisition of competencies, and a competency framework assists in the development of pharmacy curricula. Competency frameworks should not be created by universities alone, but in collaboration with professional societies and employers. Employers and regulators should define the job profile and the corresponding competencies required for this position.

3. Universities must follow a competency-based education, but each competency must be perfectly aligned with the educational contents that are necessary for students to achieve it.

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Future works

https://www.pharmacypractice.org/files/educational_contents.pdf

**Educational contents
for a patient-centred
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pharmacy curriculum**

Ines Nunes-da-Cunha
Fernando Fernandez-Llimos

2017

Mapping a course patient-centredness by assessing the percentage of contents taught in their disciplines.

Identify missing contents in a given course.

Creating a theoretical contents-competencies alignment

**International task force of experts
in the different areas**

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