



JAGIELLONIAN
UNIVERSITY

MEDICAL
COLLEGE

25th Annual Conference

EUROPEAN ASSOCIATION OF FACULTIES OF PHARMACY

Honorary Patronage
His Magnificence Rector of
the Jagiellonian University
Prof. Wojciech Nowak

Creative Education: towards competences in a patient- oriented pharmacy education



EAFP

Kraków 15-17.05.2019

25th Annual Conference

EUROPEAN ASSOCIATION OF FACULTIES OF PHARMACY

Creative Education:
towards competences in a patient-
oriented pharmacy education



JAGIELLONIAN
UNIVERSITY

MEDICAL
COLLEGE

Kraków 15-17.05.2019

Publisher:

Jagiellonian University Medical College
European Association of Faculties of Pharmacy (EAFP)

Copyright © 2019 The main organisers of the Annual Conference.
All rights reserved

Printing:

FALL
ul. Garczyńskiego 2, 31-524 Kraków
www.fall.pl

ISBN 978-83-66027-37-4

Scientific Committee

Lilian M. Azzopardi (University of Malta)
Andries Koster (Utrecht University)
Patrizia Santi (University of Parma)
Dimitrios Rekkas (Kapodistrian University of Athens)
Renata Jachowicz (Jagiellonian University)
Agnieszka Skowron (Jagiellonian University).

Local Organizing Committee

Renata Jachowicz
Jacek Sapa
Mateusz Kurek
Jakub Szlęk
Witold Jamróz
Witold Brniak
Joanna Szafraniec
Ewelina Łyszczarz
Anna Górską
Agata Antosik

INTRODUCTION	11
AUDITORIUM MAXIMUM PLAN	16
CONFERENCE PROGRAMME	19
15 TH MAY – AUDITORIUM MAXIMUM JU – EXHIBITION HALL	19
15 TH MAY – COLLEGIUM NOVUM JU – MAIN ASSEMBLY HALL.....	19
16 TH MAY – AUDITORIUM MAXIMUM JU – MEDIUM LECTURE HALL.....	21
17 TH MAY – AUDITORIUM MAXIMUM JU – SMALL LECTURE HALL	25
LECTURES.....	27
ORAL PRESENTATIONS	32
POSTER PREVIEW PRESENTATIONS (SHORT ORAL PRESENTATIONS)	34
POSTER SESSION	35
Advancements in pharmaceutical education.....	35
Cooperation for a better education.....	36
Software / Databases.....	36
Clinical pharmacy.....	37
Practical education	37
Examination.....	37
Pharmacy students	38
Postgraduate/professional education.....	38
Varia	39
ABSTRACTS.....	42
ORAL PRESENTATIONS.....	42
POSTER SESSION	69
Advancements in pharmaceutical education.....	72
Cooperation for a better education.....	91
Software / Databases.....	101
Clinical pharmacy.....	115
Practical education	120
Examination.....	127
Pharmacy students	135
Postgraduate/professional education.....	140
Varia	149
INDEX	153

Welcome to the 2019 EAFP Annual Conference

It is a great pleasure to welcome you on behalf of the Executive Committee of the European Association of Faculties of Pharmacy to the 2019 Annual Conference. The conference is co-organised by the Faculty of Pharmacy of Jagiellonian University, Krakow, Poland. The theme of the conference is 'Creative education: Towards competences in a patient-oriented pharmacy education'.

This theme follows on the Position Paper launched by EAFP last year which highlights the importance of pharmacy graduates acting as anchoring professionals who are practising in different settings providing a patient-oriented focus and act as co-ordinators with other disciplines. During the 2019 Annual Conference, plenary sessions address the introduction in pharmacy education of innovative concepts related to precision medicine, medical devices and information technology, interprofessional learning and big data. Whilst embracing innovation in pharmacy and healthcare systems, establishing competences of pharmacy graduates which particularly highlight the patient-focus are characteristics of relevant pharmacy curricula.

The submissions received from participants from different countries around the globe extending from the United States to Australia enrich the conference programme since these present experiences in creative pharmacy education. An added-value of the EAFP conference is the homogeneity of the participants who have a common goal, that of leadership and enthusiasm in pharmacy education and research. This unique characteristic of the participant group facilitates achieving networking, sharing and exchange of ideas and collaborations. During the conference, the first recipient of the EAFP Partnership for Faculty Education and Research Grant will be presenting the results of the project. These grants are intended to start-up collaborations between faculties of pharmacy and to support faculty who are developing in their academic career.

This is the second time that the EAFP Annual conference is hosted in Krakow after 17 years. The hospitality provided by colleagues from the Faculty of Pharmacy at Jagiellonian University is a true reflection of the warm and vibrant academic culture of Krakow. I augur that you will discover the uniqueness of Krakow and take home messages which contribute to creative pharmacy education.

Lilian M. Azzopardi BPharm (Hons), MPhil, PhD, MRPharmS, FFIP
President, EAFP
Professor and Head, Department of Pharmacy
University of Malta, Malta

Welcome to the Jagiellonian University!

I am very happy to welcome you to the 25th conference entitled “**Creative Education: towards professional competences in pharmacy education**”, to our University, to Cracow, main center of knowledge and education raising the level of intellectual life in the country.

It has been three years since the decision regarding the organization of EAFP conference at our University was made and it is the second time when the EAFP conference takes place in Krakow. After 16 years we are finally together in our Alma Mater, the oldest University in Poland, the 2nd university founded in Central Europe after Prague (1348) and one of the oldest in the world. The educational institution Alma Mater Cracoviensis was founded in 1364 by King Casimir the Great. In 1400 the University was refunded and modernized thanks to donation of Queen Jadwiga, wife of King Ladislaus Jagiello, after whom the university was named Jagiellonian University. Since the 14th century Krakow has been a university town and attracted the students from all over Europe. Through the ages many distinguished alumni such as Nicolaus Copernicus, King John III Sobieski, Saint Karol Wojtyla, later pope John Paul II, chemist Karol Olszewski, writers Stanislaw Lem, Nobel laureates Wislawa Szymborska, Ivo Andrić graduated the JU.



Nowadays, the Jagiellonian University educates 48 000 students each year in 87 fields of studies and 146 specialities. It comprises 16 faculties including 3 medical ones, i.e. Faculty of Medicine, Faculty of Pharmacy and Faculty of Health Sciences. The history of pharmacy as an academic discipline began in Krakow in 1783. Currently, the Faculty of Pharmacy is composed of 10 chairs and 9 departments, Postgraduate Training School, Garden of Medicinal Plants and Museum of Pharmacy as a scientific and didactic unit. We invite you to the Museum of Pharmacy, one of the largest museums of this type in Europe to welcome reception and to “Wieliczka” Salt Mine, a world class monument inscribed on the UNESCO World Cultural and Natural Heritage List to conference dinner. We hope that the conference sessions, coffee breaks as well as social events will offer the opportunities to share own experience, ideas and to meet and discuss in an informal atmosphere, strengthening old and creating new collaboration.

With the greatest joy I welcome everyone to the walls of our Alma Mater.

Prof. dr hab. Renata Jachowicz
EAFP 2019 Conference Chair

Krakow 15.05.2019

Introduction

Welcome to Krakow and its University!

Krakow, a city situated on the Vistula river was established on Wawel Hill probably in the 7th century, however archeological evidence proves that the area was inhabited as early as the Old Stone Age. The first document referred to Krakow is dated on 965 when the travelling Cordoba merchant Abraham ben Jacob described Krakow as a trade center of Slavonic Europe, situated at the crossing of trade routes and surrounded by woods.

By the end of the 10th century, the city flourished and in 1038 Krakow became a capital of Poland. The Mongol invasions in the 13th century resulted in almost entire destruction of the city. To prevent further attacks, the city was surrounded by 3 km of defensive walls, 46 towers and 7 main gates. Krakow rose to a new prominence under the rule of Casimir the Great, who expanded Wawel Castle and established two new cities, Kleparz and Kazimierz. On 12th of May, 1364 the king announced the foundation of Cracow Academy describing it in the following words in the royal charter *“Let it be a pearl of the inestimable sciences so that it may bring forth men outstanding for the maturity of their counsel, pre-eminent for their virtue, and well qualified in all the branches of knowledge”*. The activity of the University, the second one in central Europe after the University of Prague (1348) and one of the oldest in the world practically began in 1367 with three established faculties: law, medicine and liberal arts. After the king's death in 1370, the University ceased to exist. After a period of disinterest and lack of funds, the University was restored by King Vladyslav Jagiello and his wife Saint Jadwiga. The Queen denoted her jewelry to the University, which has been called the Jagiellonian University since that day. On 26th of July, 1400 the inauguration of the first year of the reconstituted university took place in Collegium Maius. In the 15th century, the University became Europe leading academic center of mathematics, astronomy, astrology, geography and legal studies with the number of foreign students accounted for 44%. Through the ages many distinguished alumni such as astronomer Nicolaus Copernicus, King John III Sobieski, Saint Karol Wojtyła, later Pope John Paul II, chemist Karol Olszewski, writer Stanisław Lem, eminent jurist Paweł Włodkowic and Nobel laureates Ivo Andrić and Wisława Szymborska graduated the Jagiellonian University.

Currently the University provides education to approximately 50000 students within the framework of more than 80 different fields on all three levels of study: Bachelor's, Master's, and Doctoral. The outstanding researchers and high-quality research facilities make the JU one of the leading Polish scientific institutions, collaborating with major academic centers from all over the world. The current position of the JU is also reflected in the growing number of patent applications

and the growing number of patents granted to its academic staff members. In the European Patent Office Annual Report the University took the first place from Polish institutions applying for the European patent protection in 2018.

The intensification of innovation activity leads to the achievement of awards and distinctions, including the nomination for the Crystal Brussels Prize. **Jagiellonian University**, as the only Polish and one of Central and Eastern European universities, was ranked among the 100 most innovative European universities by Thomas Reuters ranking. Moreover, the University remains one of the largest beneficiaries of the national and foreign agencies' funds for research projects and grants. The University staff have been honored with a number of prestigious distinctions and awards, including the elite awards of the Foundation for Polish Science ("Polish Nobel Prizes").

The JU is one of the founding members of the prestigious international network of the European Union Research-Intensive Universities focusing on the optimal use of the potential of research institutions, the promotion of high teaching standards, the development of European research cooperation policy, and the development of innovative solutions to meet the difficult challenges of the present day, both scientific and social. The University faces these challenges by the interdisciplinary large-scale research projects such as Jagiellonian Centre for Experimental Therapeutics (JCET), Małopolska Centre for Biotechnology (MCB), Molecular Biotechnology for Health, OMICRON, and National Synchrotron Radiation Centre SOLARIS offering a wide range of research in the field of medicine, biotechnology, biology, chemistry, pharmacy, cosmetology and environmental protection.

The remarkable successes of JU scientists and high education level are reflected by high ranks in rankings of Higher Education Institutions. The University has taken the first place since 2013 in the Perspektywy HEIs ranking being one of the most extensive educational rankings in the world and one of four Polish rankings that have an international quality certificate. The JU was also ranked in the elite CHE Excellence Ranking organized by the Center for Higher Education Development which allows for the identification of outstanding institutes in Europe and presents detailed information about the study curriculum. The development of the staff didactic competences is realized in several projects financed by the European Social Fund. The POWER "Ars Docendi" (2017–2019) is a cycle of training and consulting dedicated to a group of 300 JU teachers to improve their teaching competences, IT skills, information management. Since 2018 the University has been realized "ZintegrUJ" programme which is aimed at the improvement of the quality of teaching, increasing the attractiveness of the didactic offer by the implementation of new modules and lectures from foreign universities and internationalization of the teaching program.

Currently, the University comprises sixteen faculties, including three medical ones, i.e. medicine, health sciences and pharmacy that form the Medical College. Faculty of Pharmacy was established in 1783 as the first pharmacy school in Poland. A two-year course included pharmacology, applied pharmacy, toxicology, pharmacognosy and hygiene. The major initiators of the reforms in teaching pharmacy were Andrzej Badurski and Andrzej Szaser, who was the first professor at the Chair of Pharmacy and Medical Matter. At the beginning he delivered the lectures in his own pharmacy located on the Main Market Square and then he opened his first laboratory for students called Pharmacy Hall and the cabinet of Pharmacognosy, that also provided medicinal preparations for patients. The great improvement of the quality of pharmaceutical education was made in 1825 when professor Florian Sawiczewski was appointed the Head of the Department of Pharmacy. Between 1857 and 1920 many eminent professors such as Edward Janczewski, Józef Łazarski, Emil Czymiański, Karol Olszewski, Zygmunt Wróblewski, Marian Smoluchowski, Rafał Czerwiakowski, Józef Rostański, and Władysław Szajnocha provided classes for students.

The World War II temporarily interrupted the teaching and research activities of the Department of Pharmacy, however it was resumed in 1945 and three years later become the independent Faculty of the JU. In 1950 it was separated from the University and incorporated into the Medical Academy along with the Faculty of Medicine. Both faculties rejoined the JU in 1993 and together with the Faculty of Health Sciences formed the Jagiellonian University Medical College. The Faculty of Pharmacy is divided into 10 chairs and 9 departments, postgraduated training school and additionally it curates the Museum of Pharmacy, the Garden of Medicinal Plants as well as the Animal House. The Faculty employs 167 teaching and research staff members, including 17 professors, 34 habilitated doctors and 97 doctors. Currently it is one of the 11 Polish pharmaceutical faculties offering the education within the field of pharmacy, medical analytics and cosmetology. It provides the education for over 1100 undergraduates and doctoral students. Moreover, it provides postgraduate studies in industrial pharmacy, medical analytics, clinical research on medical products, applied cosmetology, trichology in cosmetology and oenology. In 2018 the Faculty introduced new type of studies, the only one in Poland and Central Europe called Drug Discovery and Development (DDD). The programme is an offer for graduates of first and second cycle studies and focused on all aspects of identifying and introducing new medicines.

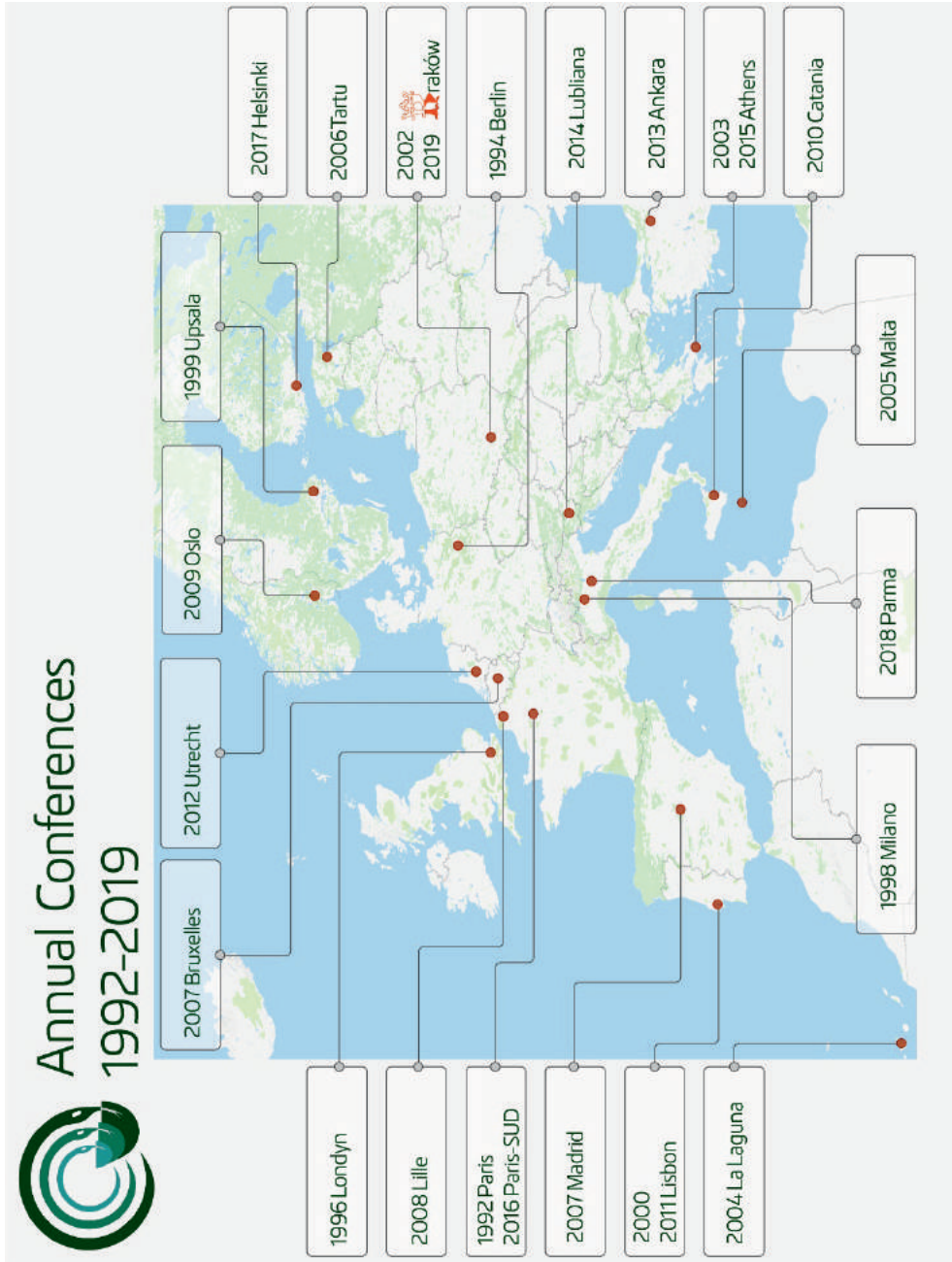
A significant emphasis is put on the improvement of the education quality, especially by the development of didactic competences and modern solutions for the field of pharmaceutical sciences. The Faculty staff is involved in the JU didactic programs such as “Ars Docendi” and “ZintegruJ” which are designed to stimulate the development of the teaching skills, including mentoring, tutoring, IT and language competences, information management, internationalization of the teaching offer and

the implementation of new education modules. Moreover, the Faculty staff cooperates with students within the projects and events beyond the obligatory courses, such as the activity of scientific students' associations, Night of Scientists, Night of Museums and the Science Festival which promote the scientific and didactic activity of the Faculty of Pharmacy and the profession of pharmacist as well. In 2018 over 30 Faculty staff members presented their research and performed lectures and workshops during the Night of Scientists while over 60 introduced the educational and scientific offer during the Science Festival. Furthermore, the Faculty of Pharmacy organized the didactic debate and several workshops during the annual Teaching Quality Week.

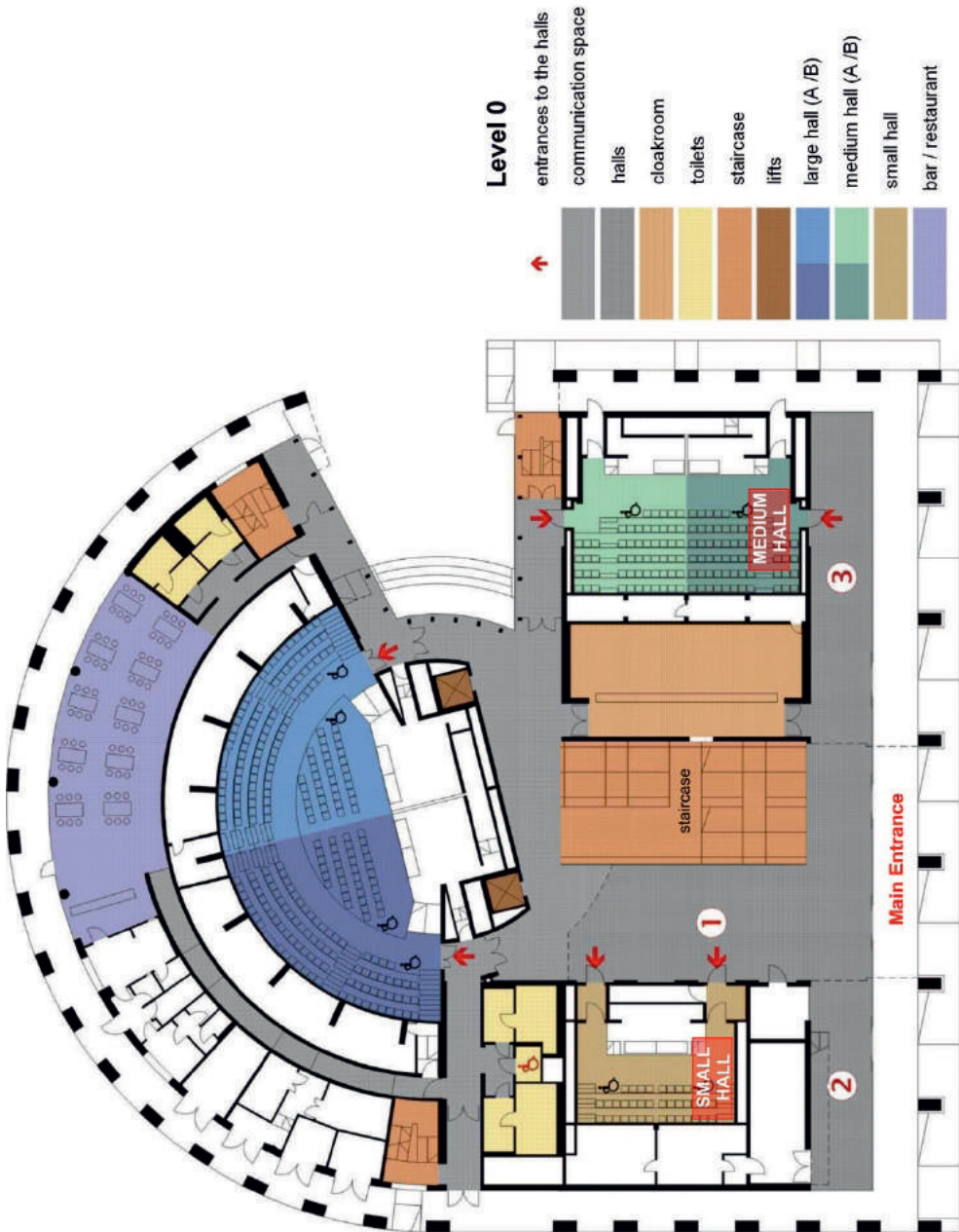
The Faculty of Pharmacy is involved in various international cooperation activities, including research and educational projects, innovation and technology transfer, staff and students exchange within bilateral agreements. Since 2000 the Faculty of Pharmacy is a member of the European Association of Faculties of Pharmacy (EAFP) which activities are dedicated towards the advancement of education of pharmacy.

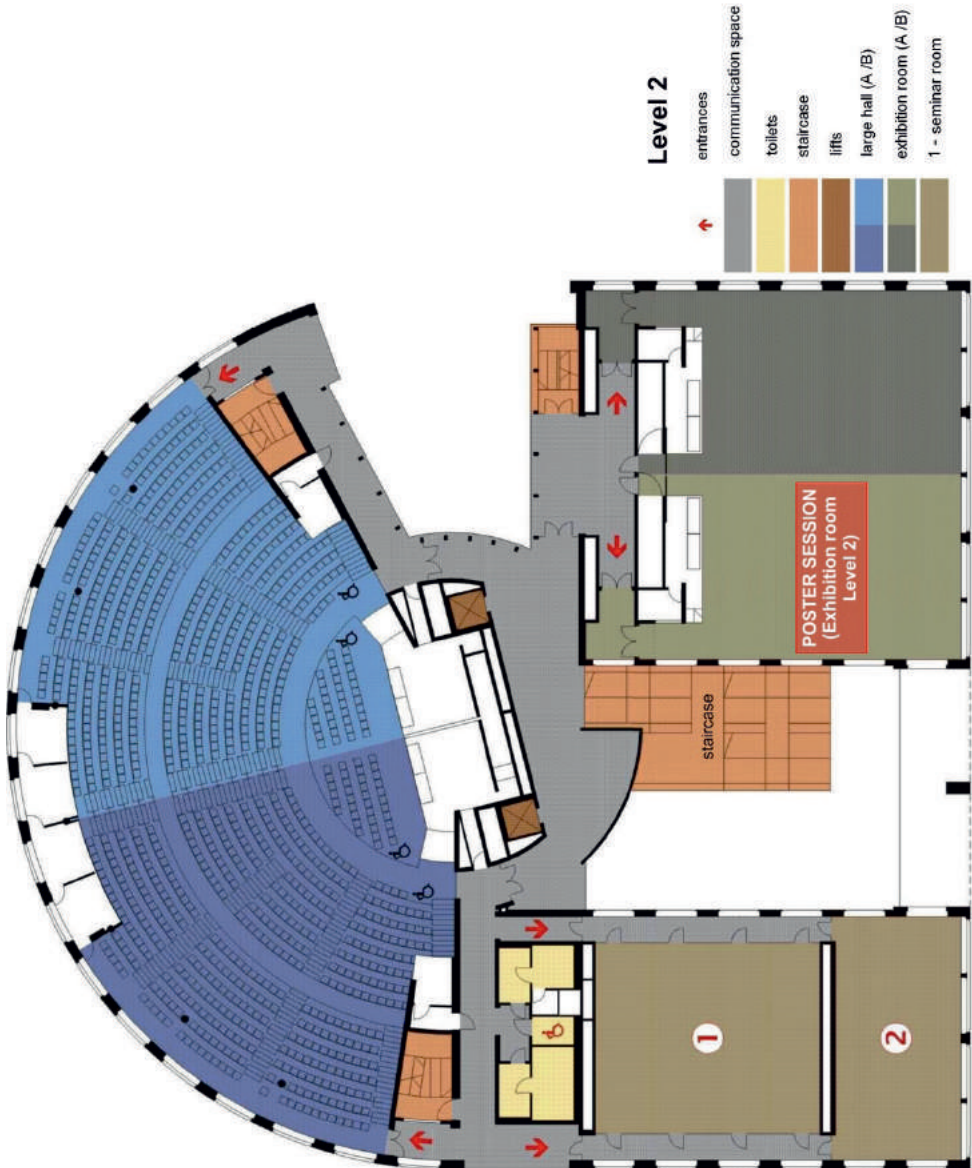
The prestige of the Faculty of Pharmacy is illustrated by high positions in the most recognizable university rankings. Since 2013 it has taken the first place in the Perspektywy HEIs ranking of the Polish Faculties of Pharmacy. In 2018 it was ranked on 54th position alongside the pharmacy and pharmaceutical sciences faculties in the Academic Ranking of World Universities (Shanghai Ranking) regarding as one of the three most influential and widely observed university rankings. Moreover, a comprehensive evaluation of the quality of scientific or research and development activities carried out by the Scientific Evaluation Committee (KEJN) granted an A+ category to the Faculty considering it a leading Polish scientific center.

Dr Joanna Szafraniec



Auditorium Maximum Plan





We thank our sponsors



ABL&E-JASCO POLSKA



Conference programme

15th May – Auditorium Maximum JU – Exhibition Hall

9³⁰ – 12⁰⁰ Pre-Conference Workshop – dr hab. Sebastian Polak, dr Zofia Tylutki
Virtual clinical trials and virtual twin approach for the drug pharmacokinetics and cardiac safety assessment

15th May – Collegium Novum JU – Main Assembly Hall

12³⁰ – 14⁰⁰ Registration

14⁰⁰ – 14³⁰ **Opening ceremony**
 Prof. dr hab. Renata Jachowicz, Jagiellonian University Medical College
 Prof. Lilian M. Azzopardi, EAFF President
 Prof. dr hab. Tomasz Grodzicki, Vice-Rector JU Medical College
 Prof. dr hab. Jacek Sapa, Faculty of Pharmacy Dean

14³⁰ – 15¹⁰ **Keynote: Changing landscape in healthcare.**
 Martin Seychell, Deputy Director General DG Santé, European Commission, Brussels
Chairpersons: Lilian Azzopardi (Malta) and Renata Jachowicz (Poland)

1st Session: Engaging students in personalized health care and precision medicine
Chairpersons: Borut Božič (Slovenia) and Agnieszka Skowron (Poland)

15¹⁰ – 15⁴⁰ **The era of precision medicine.**
 Theodoros Sergentanis, School of Medicine, National and Kapodistrian University, Athens

Oral presentations:

15⁴⁰ – 15⁵⁵ Empowering pharmacy students to participate in the clinical implementation of pharmacogenetics. Anthony Serracino Inglott, University of Malta (Malta)

16¹⁰ – 16²⁵ Expansion and deployment of ambulatory care clinical pharmacy services in Colorado. Ralph Altieri, University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences (United States)

16²⁵ – 16⁴⁰ Desk-based vs experimental thesis: preferences of pharmacy students at the University of Parma. Cristina Padula, University of Parma (Italy)

16⁴⁰ – 16⁵⁵ Discussion

18⁰⁰ **Welcome Reception**
 Museum of Pharmacy, 25 Floriańska str.

16th May – Auditorium Maximum JU – Medium Lecture Hall

8⁰⁰ – 9⁰⁰ **Registration**

2nd Session: A new approach to medical devices

Chairpersons: Kristien de Paepe (Belgium) and Joanna Szafranec (Poland)

9⁰⁰ – 9²⁵ **Ensuring pharmacists are prepared for the new era of treatment.**
Ruth Nemire, AACP, United States

9²⁵ – 9⁴⁰ Panel Discussion:
Jurate Svaricate, AESGP
Petr Horak, EAHP

Oral presentations:

Chairpersons: Christian Cavé (France) and Joanna Szafranec (Poland)

9⁴⁰ – 9⁵⁵ Integrated teaching on medical devices in the pharmacy curriculum:
experience at Lyon School of Pharmacy. Claire Gaillard, University of Lyon
(France)

9⁵⁵ – 10¹⁰ The Museum of History of Pharmacy of Seville: the patient, the student and
the new technologies united through the pharmaceutical heritage. Antonio
Ramos Carrillo, University of Seville (Spain)

10¹⁰ – 10²⁵ The first objective structured practical examination (OSPE) in the pharmacy
teaching in Poland. How we design an exam? Tomasz Kowalski, Jagiellonian
University Medical College (Poland)

10²⁵ – 10⁴⁰ Discussion

10⁴⁰ – 10⁵⁵ **Poster preview presentations**
Chairperson: Mateusz Kurek (Poland)

10⁵⁵ – 11¹⁰ Coffee break & poster session

3rd Session: Implementing interprofessional education in pharmacy education

Chairpersons: Andries Koster (The Netherlands) and Anna Krupa (Poland)

11¹⁰ – 11²⁵ **Widening the perspective on health care interprofessional education.**
Janusz Janczukowicz, Centre for Medical Education Lodz (Poland) and
Association for Medical Education in Europe (AMEE)

11²⁵ – 11⁴⁰ **Title to be announced.** Nejc Klopčič, Marta Simões, EPSA

11⁴⁰ – 11⁵⁵ Panel Discussion

Oral presentations

Chairperson: Daisy Volmer (Estonia) and Anna Krupa (Poland)

11⁵⁵ – 12¹⁰ Examples of practice-oriented methods and tools in undergraduate pharmacy
education. Radka Opatrilova, University of Veterinary and Pharmaceutical
Sciences Brno (Czech Republic)

12¹⁰ – 12²⁵ Institutionalization of interprofessional practice and education (IPE). Eric
Gilliam, University of Colorado Skaggs School of Pharmacy and
Pharmaceutical Sciences (United States)

12²⁵ – 12⁴⁰ Partnerships in education: an international post-graduate doctorate in
pharmacy. Janis Vella Szijj, Alan Lau, University of Malta (Malta)

12⁴⁰ – 12⁵⁵ Discussion

12⁵⁵ – 13¹⁰ **Poster preview presentations**
Chairperson: Mateusz Kurek (Poland)

13¹⁰ – 14⁰⁰ Lunch and poster session

14⁰⁰ – 14³⁰ **EAFF Partnership for Faculty Education and Research grant 2017:**
A virtual atlas of natural drugs. Slavomír Kurhajec, University of Veterinary
Medicine and Pharmacy, Košice (Slovakia)
Chairperson: Margarida Caramona (Portugal)

14³⁰ – 15⁰⁰ **EAFF General Assembly**
Open to observers

15⁰⁰ – 16⁰⁰ **Dean's forum: Creative pharmacy education**
Global Pharmacy Education, Ralph Altieri, FIP
Chairpersons: Lilian Azzopardi (Malta) and Dimitrios Rekkas (Greece)

Roundtable discussion:

Jurate Svarcaite, AESGP

Petr Horak, EAHP

Harriet Lewis, EIPG

Michal Byliniak, PGEU

Mike Rouse, ACPE

This session is open to all participants and stakeholders. A discussion to reflect on introducing innovative concepts related to precision medicine, medical devices and IT, interprofessional learning and big data in pharmacy education adopting creative education models.

17¹⁵ Departure for conference dinner

18⁰⁰ – 20⁰⁰ Visiting “Wieliczka” Salt Mine

20⁰⁰ Conference dinner “Wieliczka” Salt Mine

17th May – Auditorium Maximum JU – Small Lecture Hall

4th Session – Big data and artificial intelligence

Chairpersons: Jouni Hirvonen (Finland) and Aleksander Mendyk (Poland)

9⁰⁰ – 9³⁰ **Big data and artificial intelligence.**
Panorios Benardos, School of Mechanical Engineering, National Technical
University, Athens

9³⁰ – 9⁴⁰ Panel Discussion:
Michał Byliniak, PGEU

Oral presentations

Chairpersons: Teresa Garrigues (Spain) and Aleksander Mendyk (Poland)

9⁴⁰ – 9⁵⁵ 1st EPSA methodology booklet. Nejc Klopčič, EPSA

9⁵⁵ – 10¹⁰ Longitudinal changes of regulation of deep and stepwise learning in a six-year
undergraduate pharmacy programme. Andries Koster, Utrecht University
(The Netherlands)

10¹⁰ – 10²⁵ Impact of a serious pharmacy game on senior students' professional
competencies – a controlled trial. Denise Hope, Griffith University (Australia)

10²⁵ – 10⁴⁰ Implementation of a multidisciplinary escape room as innovative learning tool
at the faculty of pharmacy: farmaescape. Daniel Gutiérrez Praena, University
of Seville (Spain)

10⁴⁰ – 11⁰⁰ Discussion

11⁰⁰ – 11³⁰ Coffee break

11³⁰ – 12⁰⁰ Closing and future perspectives
Chairperson: José Guimarães Morais and Margarida Caramona (Portugal)

Lectures

Name: **Martin Seychell**

Position: Deputy Director-General in the Health and Food Safety's Directorate-General (SANTE)



Professional experience:

- Director Environment Protection, Malta Environment & Planning Authority
 - Maltese member on the Management Board of the European Environment Agency (EEA)
 - Responsible for coordinating technical and legal advice to the Office of the Prime Minister (OPM) in the formulation and development of the Maltese national position on EC legislative proposals directly or indirectly related to the environment
 - Responsible for liaison with line Ministries so as to ensure effective synergy between environmental and all other relevant polices. Advising the Ministry responsible for the environment (currently the Office of the Prime Minister) prior to and during high level meetings at European level, including the Environment Council. Regularly attending Environment Council meetings as part of the Ministerial delegation
 - Head of the Foodstuffs, Chemicals & Cosmetics Directorate, Malta Standards Authority, Ministry for Competitiveness & Communications
 - Technical Co-ordinator, Malta Standards Authority
 - Professional Officer, Malta Standards Laboratory, Department of Industry
 - Represented Malta on the 'Sherpa' group set up by the President of the European Commission to advise on GMO policy (2008)
 - Represented Malta in meetings of the ad hoc Council Working Party on REACH between 2004 and 2006
 - Represented Malta in meetings of the Council Working Party (Environment) dealing with proposals on mercury and soil
 - Between 2002 and 2004 formed part of the CEEC Task Force, set up by the European Association of Cosmetics Manufacturers (COLIPA) to assist accession countries in the implementation of the Cosmetic Products Directive
-

Name: **Theodoros N. Sergentanis, MD, PhD**

Position: Academic Fellow, Department of Clinical Therapeutics, “Alexandra” Hospital, Medical School, National and Kapodistrian University of Athens, Greece

Tutor, MSc in Management of Health Services, Hellenic Open University, Greece



Professional experience

- Research Fellow, Department of Hygiene, Epidemiology and Medical Statistics, Medical School, National and Kapodistrian University of Athens, Greece
 - Research Fellow, First Department of Propaedeutic Surgery, Hippokraton Hospital, Medical School, National University of Athens, Greece
 - Protocol Evaluation Committee, ELPEN Experimental, Research and Training Center, Greece
 - Awarded by the Academy of Athens for excellence in Medicine
 - Collaborations with universities and institutions: Karolinska Institutet, Johns Hopkins University, Moorfields Biomedical Research Centre and King's College Hospital NHS Foundation Trust, World Cancer Research Fund (WCRF), Institut Universitaire de Cancérologie (IUC), INSERM – Sorbonne Université, Université de Lausanne, Medizinische Universität Wien, University of Alabama
 - Member of the Athens Medical Society
 - Member of the Cochrane Collaboration
 - Member of the American College of Epidemiology
 - Author of more than 270 PubMed-indexed publications with more than 5000 citations
 - <https://scholar.google.com/citations?user=NXfZa6AAAAAJ&hl=el>
 - Reviewer in more than 40 international Journals
-

Name: **Ruth E. Nemire**

Position: AACCP, member and former staff
CEO at ASK Educational Games, LLC



Professional
experience

- CEO, ASK Educational Games, LLC, Developing educational tools for K-12 by incorporating practice of 21st century skills, and using math and reading as foundations for gaining knowledge of health, wellness, and health professions, Feb 2019 – Present.
- Senior Vice President, American Association of Colleges of Pharmacy (AACCP), Jan 2013 – Jan 2019.
- Executive Founding Dean and Professor, Fairleigh Dickinson University, Oct 2010 – Aug 2012.
- Consultant, Keck Graduate Institute, 2012.
- Touro College of Pharmacy, Associate Dean, Touro College of Pharmacy, Jul 2007 – Nov 2010.
- Pharmacist, Albertsons, 1994 – 2008.
- Director Community Engagement, NSU College of Pharmacy, Apr 1998 – Jul 2007.
- Director Center for Neurology Studies, Texas Tech University, 1994 – 1997.
- Faculty College of Medicine, University of Miami, 1992 – 1994.
- Pharmacist, Northwest Ohio Developmental Center, 1984 – 1989.
- Pharmacist, Dorseys Drugs Bowling Green, 1982 – 1988.
- Ohio Northern University in 1984 with B.S.Ph.
- The University of Toledo with Pharm.D. in 1992
- Nova Southeastern University with Ed.D, Higher Ed in 2009

Name: **Janusz Janczukowicz**

Position: Head of the Centre for Medical Education,
Vice Dean for Teaching and Assessment
Methodology – Medical University of Lodz,
Chair of the Best Evidence Medical
Education Collaborating Centre in Lodz,
Poland



Professional
experience

- International Association for Medical Education (AMEE) Executive Committee Member
 - AMEE Research Committee Deputy Chair
 - AMEE-Europe initiative lead
 - European Institute of Women's Health (EIWH) Board of Directors Member
 - Editorial Board of the Medical Teacher Journal Member
 - Advance- Higher Education UK Fellow
 - Global Teaching Excellence Award Strategy Group Member
 - ASPIRE Curriculum Panel Member
 - Association of Medical Schools in Europe (ASME) – auditor
 - University of Algarve External Advisory Board Member
 - Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education expert
 - Member of the organizing committee of the European Board of Medical Assessors Conferences
 - Medical Faculty Curriculum Committee member
 - Developer of the MD and DMD pre-clinical and clinical courses on professionalism, intercultural and social competence
 - Editor and co-author of the first Polish book on medical professionalism
 - Co-editor of the MedEdPublish Special Issue on Diversity (2018)
 - Editor of the "Professionalism and social competence" section of Polish Postgraduate Medicine Journal
-

Name: **Benardos Panorios**

Position: Assistant Professor,
National Technical University of Athens,
School of Mechanical Engineering, Section
of Manufacturing Technology, Greece



Professional
experience

- Assistant Professor, School of Mechanical Engineering, NTUA, 2018 – present.
- Assistant Professor, Department of Mechanical, Materials and Manufacturing Engineering, University of Nottingham, 2014 – 2018.
- Lecturer, Department of Mechanical, Materials and Manufacturing Engineering, University of Nottingham, 2014.
- Senior Researcher, School of Mining and Metallurgical Engineering, NTUA, 2009 – 2014.
- Contract Lecturer, School of Mechanical Engineering, NTUA, 2009
- Technical Consultant, ICAP SA, 2006 – 2009.
- Freelance Mechanical Engineer, 2003 – 2018.
- Researcher/ Research Associate, School of Mechanical Engineering, NTUA, 2001 – 2014.
- Thomaideio Award for the progress of science and arts, 2002, 2003, 2004, 2006
- Associate Fellow of the Higher Education Academy
- Member of the Technical Chamber of Greece
- Member of the Greek Mechanical and Electrical Engineers Society

Research interests

Computer Aided Manufacturing (CAM), Design of Experiments (DoE), Modelling and Optimisation of Manufacturing Processes and Systems, Robotic applications in Manufacturing Processes and Systems, Artificial Intelligence, Machine Learning, Machine Vision, Data Analytics, Industrial Internet of Things (IIoT)

Changing landscape in healthcare.

Martin Seychell, Deputy Director General DG Santé, European Commission, Brussels

The era of precision medicine.

Theodoros Sergentanis, School of Medicine, National and Kapodistrian University, Athens

Ensuring pharmacists are prepared for the new era of treatment.

Ruth Nemire, AACP, United States

Widening the perspective on health care interprofessional education.

Janusz Janczukowicz, Centre for Medical Education Lodz (Poland) and Association for Medical Education in Europe (AMEE)

Big data and artificial intelligence.

Panorios Benardos, School of Mechanical Engineering, National Technical University, Athens

Oral presentations

1st EPSA Methodology Booklet.

European Pharmaceutical Students' Association

Longitudinal changes of regulation of deep and stepwise learning in a six-year undergraduate pharmacy programme.

Koster AS

Integrated teaching on medical devices in the pharmacy curriculum: experience at Lyon School of Pharmacy (France).

Gaillard C, Späth HM, Hartmann D, Aulagner G, Armoiry X

Empowering pharmacy students to participate in the clinical implementation of pharmacogenetics.

Mifsud Buhagiar L, Serracino Inglott A, LaFerla G

Examples of practice-oriented methods and tools in undergraduate pharmacy education.

Opatrilova R, Kollar P, Firlova A, Ambrus T

Impact of a serious pharmacy game on senior students' professional competencies – a controlled trial.

Hope DL, Rogers GD, Grant GD, King MA

The Museum of History of Pharmacy of Seville (Spain): the patient, the student and the new technologies united through the pharmaceutical heritage.

Ramos A, Álvarez de Sotomayor M, Ruiz R

Implementation of a multidisciplinary escape room as an innovative learning tool at the faculty of pharmacy: FarmaEscape.

Gutiérrez-Praena D, Ríos-Reina R, Ruiz R, Talero E, Callejón R, Callejón RM, Casas M, de la Haba RR, García-Miranda P, Carrascal L, Guzmán-Guillén R, Sánchez-Hidalgo M

The first Objective Structured Practical Examination (OSPE) in the pharmacy teaching in Poland.

How we design an exam?

Dymek J, Gołda A, Polak W, Wiśniowska B, Kowalski T, Skowron A

Expansion and deployment of ambulatory care clinical pharmacy services in Colorado.

Moore G, Saseen J, Fish D, Altieri R

Institutionalization of Interprofessional Practice and Education (IPE).

Franson KL, Gilliam EH, Altieri RJ

Partnerships in education: an international post-graduate doctorate in pharmacy

Vella Szijj J, Attard Pizzuto M, Sammut Bartolo N, Wirth F, Grech L, Haaf-Mactal C, Pham J, Serracino-Inglott A, Lau A, Azzopardi LM

Desk-based vs. experimental thesis: preferences of pharmacy students at the University of Parma.

Padula C, Pescina S, Nicoli S, Santi

Poster preview presentations (Short oral presentations)

2nd session

Objective Structured Clinical Examination (OSCE) test for assessment of counselling competencies among pharmacy students and assistant pharmacists in Estonia.

Volmer D, Bobrova V, Petrova K, Tähnna J, Randmäe L.

Training to teach at the Faculty of Pharmacy of Valencia (Spain).

Ferrándiz ML, Garrigues TM, Pereda J

Interdisciplinary integration of chemistry knowledge as a factor of professional competence in the future Masters of Pharmacy.

Nizhenkovska I, Kuznetsova O, Narokha V

Intensive international exchange experience for undergraduate students: career paths for pharmacists in Spain and Belgium.

Pérez-García C, Otero P, Cos P, Martinet W, Hurtado C, de Pascual-Teresa B

High-fidelity simulation for competence development in undergraduate pharmacy education: closing the gap between communication and teamwork theory and competence.

O'Leary C, Hayden J, Condrón C, Sullivan C, Flood M

3rd session

A new pan-European initiative for the development of an interprofessional educational program on age-specific medicines.

Dimitrov M, Cvijić S, Petkova V, D'arcy D, Parojčić J, Breitzkreutz J

A student-engaging approach to teaching pharmaceutical terminology to pharmaceutical technology students.

Grech L, Azzopardi LM

Advanced clinical pharmacy exposure at paediatric oncology ward.

Falzon S, Galea N, Calvagna V, Grech L, Azzopardi LM

Relationship between educational environment, fulfilment of basic psychological needs and motivation of pharmacist trainees in workplace-based education.

Westein MPD, Koster AS, Burgt SME van der, Bouvy ML, Kusurkar RA

The education of future pharmacists in Bratislava is led in cooperation with the professional organization.

Snopková M, Mučaji P, Hřečka Dubničková M, Valentová J, Tóth J, Tesař T

Poster session

Advancements in pharmaceutical education

1. Simulated community pharmacy for training in patient-oriented competences.
Martín-Suárez A, Codesal Gervás T, Valles Martín E, Varas-Doval R, Teixeira Silva P, Álves Sánchez J, Caballero E, Muro Álvarez A
2. Enhancing patient safety through interactive education.
Attard A, Wirth F, Azzopardi LM, Serracino-Inglott A
3. Implementing problem-based learning into pharmacoconomics course for 4th year pharmacy students.
Skowron A, Polak W, Golda A, Dymek J
4. A student-engaging approach to teaching pharmaceutical terminology to pharmaceutical technology students.
Grech L, Azzopardi LM
5. Evaluation of using case studies to mobilise knowledge about toxicology.
Vella Szijj J, Serracino-Inglott A, Azzopardi LM
6. Students' perception of risk in pharmaceutical processes.
Attard Pizzuto M, Serracino-Inglott A, Azzopardi LM
7. Affective learning in a serious pharmacy game.
Hope DL, Rogers GD, Grant GD, King MA
8. Pharmaceutical care for children – comparison of the educational approach between Bulgaria and Serbia.
Petkova V, Cvijić S, Parojčić J, Dimitrov M
9. Interdisciplinary integration of chemistry knowledge as a factor of professional competence in the future Masters of Pharmacy.
Nizhenkovska I, Kuznetsova O, Narokha V
10. Patient oriented competencies and levels in Turkish national pharmacy core curriculum.
Gökbulut A, Özçelikay G
11. FIP renaissance.
Altiere RJ and Azzopardi LM
12. FIP Academic Institutional Membership – ten year anniversary and new directions.
Azzopardi LM, Altieri RJ

Cooperation for a better education

13. Innocampus Explora: multidisciplinary in science.
Gregorio JM, Piedras CT, Román LV, Carrasco NJ, Masiá LP, Romero RV, Pascual LF, Garrigues TM, Tomás CM, Rodríguez CZ, Beneito RD, Vallet AC, Sanz MLC, Puchades RI, Martí JBE, Cervera JP
14. A new pan-European initiative for the development of an interprofessional educational program on age-specific medicines.
Dimitrov M, Cvijić S, Petkova V, D'arcy D, Parojčić J, Breitzkreutz J
15. Prospects for the harmonization of educational programs on the specialty “Pharmacy” with the partner universities of Europe.
Ustenova GO, Turgumbayeva AA, Zhakipbekov KS
16. Faculty of pharmacy Erasmus mobility (Universidad Complutense de Madrid) 2010–2018: data and conclusions.
Gómez-Serranillos MP, Lozano R, Elorza B, Córdoba M, Escario J, Román J, Iglesias I
17. Intensive international exchange experience for undergraduate students: career paths for pharmacists in Spain and Belgium.
Pérez-García C, Otero P, Cos P, Martinet W, Hurtado C, de Pascual-Teresa B

Software / Databases

18. Evaluation of a PebblePad™ digitised resource in undergraduate pharmacy practice workshops.
Hope DL, Campbell C
19. High-fidelity simulation for competence development in undergraduate pharmacy education: closing the gap between communication and teamwork theory and competence.
O'Leary C, Hayden J, Condrón C, Sullivan C, Flood M
20. Simulated immersive consultations to enhance undergraduate non-prescription education.
Hope DL, Baumann-Birkbeck LM, Grant GD
21. The education and practice platform moves beyond.
Caramona MM, Costa FA, Martins AP, on Behalf of the Education & Practice Platform
22. Pharmacists competence to resolve the therapeutic challenge of the valsartan saga.
Muscat C, Attard A, Mifsud Buhagiar L, Serracino-Inglott A
23. Game based learning applied to nutrition and food science at the School of Pharmacy.
Aguiar MV, Hernández MT, Villaescusa L, Aberturas MR, Molpeceres J
24. Pilot survey of students of pharmacy training in pharmacies of open types for use of the homeopathy software.
Peychev Z, Peychev L, Gueorguiev S, Petkova-Gueorguieva E

25. Virtual Atlas of Natural Drugs.
Kurhajec S, Bačkorová M, Kubínová R

Clinical pharmacy

26. Developing clinical pharmacy competencies in the care of patients with cardiovascular disease.
Wirth F, Serracino-Inglott A, Azzopardi LM
27. Advanced clinical pharmacy exposure at paediatric oncology ward.
Falzon S, Galea N, Calvagna V, Grech L, Azzopardi LM
28. Opinions of decision-makers on the clinical development and assessment of antineoplastic agents.
Said D, Borg JJ, Attard-Pizzuto M, Serracino-Inglott A

Practical education

29. The education of future pharmacists in Bratislava is led in cooperation with the professional organization.
Snopková M, Mučaji P, Hrčka Dubničková M, Valentová J, Tóth J, Tesař T
30. Moving towards regulatory sciences through educational initiatives.
Attard A, Muscat C, Mifsud Buhagiar L, Azzopardi L, Serracino-Inglott A
31. How do you know your student is ready for practice?
Brunner JM, Thompson M, Altieri R
32. Implementation of a rubric for assessment the resolution of practical cases during Supervised Training Placement of pharmacy degree.
Sánchez-Hidalgo M, Orta MM, Muñoz N, De Rojas MA, Ojeda M, Sánchez Burson J, Ramos Carillo A, de Sotomayor MA

Examination

33. Can OSCEs be an indicator of students' progression of clinical and scientific competencies?
Hitch G, Hadley TE, Apampa B, Merewood J, Pettit M, Manfrin A
34. Objective Structured Clinical Examination (OSCE) test for assessment of counselling competencies among pharmacy students and assistant pharmacists in Estonia.
Volmer D, Bobrova V, Petrova K, Tähnas J, Randmäe L.
35. Development and assessment of Objective Structured Clinical Examination (OSCEs) in a newly introduced MPharm programme.
Hitch G, Hadley TE, Apampa B, Merewood J, Pettit M, Manfrin A

36. Analysis of marks in a biopharmaceutics and pharmacokinetics course to improve contents design and planning.
Molpeceres J, Aberturas MR, Villaescusa L, Gastelut J, Aguilar MV

Pharmacy students

37. Pharmacy students' activity and expectations on the example of Polish Pharmaceutical Students' Association at Jagiellonian University Medical College.
Guzy P, Klaś K, Klimczyk A
38. Evaluation of a Pharmacy Students Research Symposium.
Vella Szijj J, Wirth F, Sammut Bartolo N, Attard Pizzuto M, Grech L, Serracino-Inglott A, Azzopardi LM
39. Celebration of the III Meeting on Toxicology and Society: Drugs of Abuse and Molecular Toxicology (Toxicology Forum and Olympiad).
Guzmán-Guillén R, Hinojosa MG, Medrano-Padial C, Díez-Quijada L, Catunescu G, Merchán MM, Llana-Ruiz-Cabello M, Puerto M, Prieto AI, Pichardo S, Moreno IM, Jos A, Cameán AM, Gutiérrez-Praena D
40. Patient-oriented final projects published in FarmaJournal in 2018.
Caballero E, Muro A, Martín-Suárez AM, Morales AI, Álvarez R

Postgraduate/professional education

41. Introduction to teaching – a short course with the aim to build pedagogic confidence in PhDs and post-docs.
Bengtsson J, Johansson H, Holmbäck U
42. Training to teach at the Faculty of Pharmacy of Valencia (Spain).
Ferrándiz ML, Garrigues TM, Pereda J
43. Coaching in pharmaceutical sciences.
Moutinho MGM, Costa IM, Cavaco-Silva P, Gomes P
44. Mentoring doctorate of pharmacy students: an interprofessional collaboration.
Grech L, Coleiro B, Azzopardi LM
45. Relationship between educational environment, fulfilment of basis psychological needs and motivation of pharmacist trainees in workplace-based education.
Westein MPD, Koster AS, Burgt SME van der, Bouvy ML, Kusurkar RA

Varia

46. Evaluation of the consumption of medicinal plants for the treatment of affections of the digestive system in the community of Madrid, Spain.
Sánchez M, González-Burgos E, Iglesias I, Lozano, R, Gómez-Serranillos MP
47. Folia Pharmaceutica Cassoviensia – a new scientific pharmaceutical journal at the University of Veterinary Medicine and Pharmacy in Košice, Slovakia.
Faixova Z, Pisl J, Fedorova M, Mojzisova J

Abstracts

Oral presentations

Abstracts

Oral presentations

1st EPSA METHODOLOGY BOOKLET	44
LONGITUDINAL CHANGES OF REGULATION OF DEEP AND STEPWISE LEARNING IN A SIX-YEAR UNDERGRADUATE PHARMACY PROGRAMME.....	45
INTEGRATED TEACHING ON MEDICAL DEVICES IN THE PHARMACY CURRICULUM: EXPERIENCE AT LYON SCHOOL OF PHARMACY (FRANCE).....	46
EMPOWERING PHARMACY STUDENTS TO PARTICIPATE IN THE CLINICAL IMPLEMENTATION OF PHARMACOGENETICS.....	48
EXAMPLES OF PRACTICE-ORIENTED METHODS AND TOOLS IN UNDERGRADUATE PHARMACY EDUCATION	50
IMPACT OF A SERIOUS PHARMACY GAME ON SENIOR STUDENTS' PROFESSIONAL COMPETENCIES – A CONTROLLED TRIAL	51
THE MUSEUM OF HISTORY OF PHARMACY OF SEVILLE (SPAIN): THE PATIENT, THE STUDENT AND THE NEW TECHNOLOGIES UNITED THROUGH THE PHARMACEUTICAL HERITAGE.	53
IMPLEMENTATION OF A MULTIDISCIPLINARY ESCAPE ROOM AS AN INOVATIVE LEARNING TOOL AT THE FACULTY OF PHARMACY: FARMAESCAPE	55
THE FIRST OBJECTIVE STRUCTURED PRACTICAL EXAMINATION (OSPE) IN THE PHARMACY TEACHING IN POLAND. HOW WE DESIGN AN EXAM?.....	57
EXPANSION AND DEPLOYMENT OF AMBULATORY CARE CLINICAL PHARMACY SERVICES IN COLORADO.....	59
INSTITUTIONALIZATION OF INTERPROFESSIONAL PRACTICE AND EDUCATION (IPE)	61
PARTNERSHIPS IN EDUCATION: AN INTERNATIONAL POST-GRADUATE DOCTORATE IN PHARMACY	63
DESK-BASED vs EXPERIMENTAL THESIS: PREFENCES OF PHARMACY STUDENTS AT THE UNIVERSITY OF PARMA.....	65

1st EPSA METHODOLOGY BOOKLET

European Pharmaceutical Students' Association¹

¹ EPSA, Brussels, Belgium

INTRODUCTION

The Methodology Booklet is an EPSA project aiming to collect the European pharmaceutical students' and recent graduates' opinion on teaching methodologies utilised by faculties of pharmacy in Europe [1].

MATERIALS AND METHODS

The opinion was collected through a survey of 80 questions, divided into several topics. The survey was opened for three months, between March 2018 and May 2018. A similar survey had been conducted in 2014 and responses recorded then consulted as well. 1478 respondents from 31 countries answered the current survey.

The survey covered the areas of the curricula timetable, number of students per class, comparison of different teaching methodologies, the distribution of breaks, types of knowledge transfer, the teaching tools that are utilised, the evaluation strategies, the collection of outcomes and feedback as well as student-teacher communication, soft skills, mobility, the topic of mandatory internship and the possible unification of the European pharmaceutical curricula. In addition to this, the respondents provided their opinion on the benefit of different methodologies and future prospects were collected and recorded [1].

RESULTS AND DISCUSSION

In terms of the possibility to unify the pharmaceutical curricula in Europe, respondents wish for:

- Overall mobility of pharmaceutical students and pharmacists throughout Europe;
- Easier possibility to work throughout Europe, and unified evaluation of qualification;
- Comparative quality of educational programmes;
- A Soft Skills educational programme;
- An e-Health educational programme;
- Comparable competences between pharmacists;
- Comparable standards of education and health care;
- No need of nostrification;
- Comparative health care systems and quality throughout Europe [1].

CONCLUSIONS

The aim of this booklet is to present the opinion of the European pharmaceutical students and recent graduates on the teaching methodologies currently utilised by the European faculties of pharmacy. With this, we hope to assist the educators and policy makers to continue to evolve and improve the European pharmaceutical education. In five year, a survey, updated based on the feedback received to this booklet, will be released again to assess the development of the European pharmacy education and to strive to continuously improve it, taking into account the ever-evolving health care spectrum [1].

REFERENCES

1. EPSA. 1st EPSA Methodology Booklet. 2018;

LONGITUDINAL CHANGES OF REGULATION OF DEEP AND STEPWISE LEARNING IN A SIX-YEAR UNDERGRADUATE PHARMACY PROGRAMME

Koster AS

Dept. Pharmaceutical Sciences, Utrecht University, the Netherlands

INTRODUCTION

In the Netherlands the pharmacy licensing degree is obtained after a 3-year bachelor plus a 3-year master programme. The Dept. of Pharmaceutical Sciences uses an educational model that is aimed at the development of deep and self-regulating learning, but it is unknown whether this objective is reached. The aim of this study was to assess longitudinal changes in processing and regulation strategies of students' learning during their progression in the curriculum.

MATERIALS AND METHODS

Processing strategies (deep *versus* stepwise), regulation strategies (self- *versus* external), and conceptions of learning (constructivist *versus* reproductive) were measured with relevant 5-point Likert scales from the Inventory of Learning Styles [1] between 2005 and 2014. Longitudinal data are reported here for students of which data are available for year 1 and year 5 ($n = 30$, mean \pm sd). Effect sizes and a paired t-tests were used to assess statistical significance. Relationships between conceptions of learning, regulation strategies and processing strategies were analyzed using path analysis

RESULTS AND DISCUSSION

Deep processing increased between year 1 and 5 from 2.79 ± 0.63 to 3.57 ± 0.64 ($p = 0.003$, effect size 1.2) and self-regulation increased from 2.55 ± 0.64 to 3.03 ± 0.72 ($p < 0.01$; effect size 0.7). In contrast, stepwise processing and external regulation did not change significantly ($p > 0.70$; effect sizes < 0.1) between year 1 and 5 for the same students. The use of deep processing strategies is mediated by self-regulation and depends on having a constructivist conception of learning. The use of stepwise processing strategies, in contrast, is mediated by self- and external regulation and depends on having a reproductive conception of learning. In year-5 of the programme deep processing becomes partly dependent on external regulation.

CONCLUSIONS

An increase in deep processing and self-regulation strategies of students was observed between year-1 and year-5 of the curriculum. In contrast, stepwise processing and external regulating of learning did not change significantly. This suggests that the six-year programme effectively stimulates the development of deep and self-regulated learning strategies in pharmacy students.

REFERENCES

1. Vermunt JD, Vermetten YJ. Patterns in student learning: Relationships between learning strategies, conceptions of learning, and learning orientations. *Educ Psychol Rev* 2004;16:359-384.

INTEGRATED TEACHING ON MEDICAL DEVICES IN THE PHARMACY CURRICULUM: EXPERIENCE AT LYON SCHOOL OF PHARMACY (FRANCE)

Gaillard C¹, Späth HM¹, Hartmann D¹, Aulagner G², Armoiry X¹

¹ Public Health Department, Lyon School of Pharmacy (ISPB), Claude Bernard University Lyon 1, University of Lyon, France

² Hospices Civils de Lyon, Central Pharmacy Department, Lyon, France

INTRODUCTION

Medical devices make an essential contribution to healthcare and are daily used by health professionals in both community and hospital settings. From condoms to syringes and catheters, crutches to hip joints and in-vitro diagnostic devices (IVD) that monitor patients with diabetes, medical devices encompass an extremely wide range of health products, and are crucial in diagnosing, preventing, monitoring and treating illness, and overcoming disabilities. Although their regulation, their methodology of clinical investigation, their use and their surveillance are noticeably different from medicines, very few health schools (pharmacy, medicine, and other health schools) include courses about the specificity of medical devices. The post-market surveillance of medical devices safety mostly rely on the notification of incidents, which is legally placed under the responsibility of health professionals (1). Hence, it is essential to get knowledge in this field, especially as a matter of public health. Here, we aimed to report the courses taught in our institution.

MATERIALS AND METHODS

We have comprehensively described the courses in place at Claude Bernard University Lyon 1 (UCBL1 – Lyon France) in relation to medical devices training with limitation to those offered to Pharmacy students from Lyon School of Pharmacy (*Institut des Sciences Pharmaceutiques et Biologiques* [ISPB]). ISPB, which is part of UCBL1, has a total of 2,200 students, of which 1200 are pharmacy students (PharmD candidates), 800 are MSc students or students under continuous training programs, and 200 are pharmacy residents.

We have presented the courses from both a qualitative (nature of program: basic/advanced, module structure, method of teaching, course details) and a quantitative (number of students, number of teaching hours) perspective. We have also described the academic team responsible for the dispensing of these courses. Advanced courses related to the sterilisation of reusable medical devices were not described.

Last, we have undertaken a satisfaction survey conducted among students registered in one of the advanced medical devices related program (MSc) available at UCBL1.

We report the results narratively. Tables and figures will be presented during the conference.

RESULTS AND DISCUSSION

As of March 2019, Lyon School of Pharmacy has two staff members dedicated to the training of medical devices, one being Clinical Professor with a background in hospital pharmacy, the other being Associate Professor (Senior lecturer) with a background of engineer. Both also exert research activities within a laboratory specialised in conception and application of materials in health.

The core basic module on medical devices takes place during the fourth year of the curriculum. It is made of 17 hours of courses under traditional didactic lecture-type teaching format and four hours of practical workshops. Lectures focus on fundamentals in medical devices and IVD, including regulation, classification, conception (biomaterials), sterilisation, biologic and clinical evaluation, market access, post-market safety surveillance, and an overview on e-technologies. Practical workshops are interactive sessions during which students get a presentation on most commonly

medical devices used for urinary, respiratory, and alimentary tracts, as well as a training on the labelling of medical devices.

An advanced training module is offered to students who aim to work as community pharmacists. The module has a total of 20 hours of practical workshops aimed to give practical knowledge on most commonly dispensed medical devices in ambulatory care. The module is combined with an advanced qualifying course for pharmacists about ambulatory care orthopaedic medical devices which has a total of 120 hours with mixed methods of training (lecture type/practical workshop).

Consistent with the new European regulation (2,3), pharmacy students or pharmacists can follow a master training for the role of Person Responsible for Regulatory Compliance (PRRC) who will be required within medical devices manufacturers and distributors. The master, which is also proposed to students with a scientific background including engineers, comprises a volume of 150 hours combined with a placement within manufacturers.

Last, another advanced module of 60 hours is proposed for hospital pharmacy residents on both basic and practical knowledge on medical devices placed under the responsibility of French hospital pharmacists.

We set up a satisfaction survey among students during 2018/2019. This survey will be completed by the end of March 2019 and its results will be presented during the conference.

CONCLUSIONS

Medical device-related courses are well structured within Lyon School of Pharmacy, which can be seen as a recognition of the important role these health products play in health together with the role of pharmacist with regards to medical devices. The emergence of this program has been facilitated by French law, which has placed the management of a number of medical devices under the strict responsibility of pharmacists especially in hospitals (4). It is expected that the program is expanded owing to the growing part of medical devices being used when conventional pharmacologic treatment fail or are ineffective.

REFERENCES

1. Code de la santé publique. Article R5212. Available from: https://www.legifrance.gouv.fr/affichCode.do?jsessionid=07938197979C2DD9ECD5BAA5025E44D8.tplgfr31s_3?idSectionTA=LEGISCTA000006190748&cidTexte=LEGITEXT000006072665&dateTexte=20190314
2. Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC (Text with EEA relevance). OJ L, 32017R0745 May 5, 2017. Available from: <http://data.europa.eu/eli/reg/2017/745/oj/eng>
3. Regulation (EU) 2017/746 of the European Parliament and of the Council of 5 April 2017 on in vitro diagnostic medical devices and repealing Directive 98/79/EC and Commission Decision 2010/227/EU (Text with EEA relevance). OJ L, 32017R0746 May 5, 2017. Available from: <http://data.europa.eu/eli/reg/2017/746/oj/eng>
4. Code de la santé publique. Article L5126-1. Available from: <https://www.legifrance.gouv.fr/affichCodeArticle.do?cidTexte=LEGITEXT000006072665&idArticle=LEGIARTI000006690064&dateTexte=&categorieLien=cid>

EMPOWERING PHARMACY STUDENTS TO PARTICIPATE IN THE CLINICAL IMPLEMENTATION OF PHARMACOGENETICS

Mifsud Buhagiar L.^{1,2}, Serracino Inglott A.^{1,2}, LaFerla G.³

¹ *Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Msida, Malta*

² *Malta Medicines Authority, Malta Life Sciences Park, San Ġwann, Malta*

³ *Department of Surgery, Faculty of Medicine and Surgery, University of Malta, Msida, Malta*

INTRODUCTION

Education in pharmacotherapy, coupled with knowledge in pharmacokinetics, pharmacogenomics and related informatics, empowers pharmacy students to play a leading role in the clinical implementation of pharmacogenetics. Practice-based resources and training are necessary to support this role and make the integration of pharmacogenetics in patient care a working reality [1].

MATERIALS AND METHODS

Pharmacy students were included in a pharmacist-led pharmacogenetics pilot project that was carried out at Mater Dei Hospital, Malta, to evaluate the prospect of clinical implementation, using amitriptyline, an antidepressant which has actionable genotype-guided dosing recommendations, as a teaching example [2]. Following ethics approval, twelve psychiatrists and one pain management consultant were invited to brief their patients about prospective participation, nine of whom endorsed the proposal and referred patients to the responsible pharmacist. The cohort included forty-four out-patients receiving amitriptyline, recruited over six months. Liaison with the departments of Psychiatry, Anaesthesia, Pathology, Cardiology, and Pharmacy within the state hospital and collaboration with laboratories, both local and overseas, facilitated extensive data collection on each subject, particularly: medical history, treatment protocol and health outcomes, potential drug interactions and reported adverse events, electrographic examination, parent-drug-to-metabolite concentration ratios and genotype for CYP2D6 and CYP2C19. The approach adopted was intended to enable the pharmacy students to learn how to collate both genetic and environmental factors for the evaluation of an individualized pharmacotherapeutic plan. Students were also shown how to run a SWOT analysis for the case example under study, as summarized in Tab. 1, to identify the strong points, as well as the necessitated developments, for prospective clinical implementation of pharmacogenetics, spearheaded by pharmacists.

RESULTS AND DISCUSSION

The practical route identified in this pilot, taking into consideration student involvement and the limitations within the IT framework particularly with respect to electronic health records, clinical decision support structures and communications strategies, was to make results and interpretation notes available directly to the clinicians on a case-by-case basis, highlighting the data of relevance to avoid alert fatigue. Teaching students how to run preliminary educational sessions, targeting practitioners and patients, which explain the rationale of the protocol and significance of the outcomes, serves to induct students in implementing a streamlined approach. Personal genome testing may be offered to students to induce motivation and develop hands-on understanding. Establishing a pharmacist-led PGx oversight committee, including students to collaborate with members from relevant units such as informatics, molecular diagnostics, clinicians, senior nursing staff and administration, is proposed to enable management of the work-flow while determining timeframes and key performance indicators, for quality assurance purposes, cost-analysis calculations and presentation to institutional administration.

Tab. 1: SWOT Analysis

Strengths
<ul style="list-style-type: none"> - Experience proves promising with examples of successful implementation of pharmacogenetic pilot programmes emerging in the literature. - Advances in the field and evolving evidence should mitigate clinician resistance by allowing enhanced patient care efficiency and limited provider burden. - Combining genetic information with clinical data, such as patient-specific factors that can impact pharmacokinetic parameters, may improve the safety and effectiveness of medication therapy.
Weaknesses
<ul style="list-style-type: none"> - Lack of infrastructure, technology and expertise in pharmacy informatics. - Ethical issues and logistical considerations in genetic testing and follow-up. - Relevant data may be fragmented and not completely accessible, whereby, as an example, patients may have their treatment plan revised by practitioners outside the hospital setting.
Opportunities
<ul style="list-style-type: none"> - Demonstration of PGx benefits in real-world settings supports incorporation into routine clinical care. - Interdisciplinary interactive educational models, practice-based examples and ‘train-the-trainer’ initiatives shall support healthcare professionals to accurately apply pharmacogenetic data to drug-therapy selection, dosing, and monitoring. - Establishing an interdisciplinary networking forum is foreseen to expand engagement in pharmacogenetics.
Threats
<ul style="list-style-type: none"> - Knowledge and perceptions of health care professionals contrast on the value of pharmacogenetics to optimize medication use and implement precision pharmacotherapy. - Limited funding is made available since pharmacogenetics may not be perceived as a priority within the institution. - Difficulty may be encountered in assessing the pharmacoeconomic aspect and establishing cost-effectiveness to advocate pharmacist-led clinical pharmacogenetics practice models that are financially sustainable.

CONCLUSIONS

The outcomes call for expansions in clinical support and technology infrastructure as well as research and education. This project serves as an example of how a case study could be used to expose students to basic principles in innovative pharmacy practice such as the use of SWOT analysis evaluating the implementation of pharmacogenetics in a day-to-day scenario. Developed competence and confidence in pharmacogenetic services among students may enable this aspect of precision pharmacotherapy management to be extended to community pharmacy practice.

REFERENCES

1. Owusu-Obeng A, Weitzel KW, Hatton RC, Staley BJ, Ashton J, Cooper-Dehoff RM et al. Emerging roles for pharmacists in clinical implementation of pharmacogenomics. *Pharmacotherapy* 2014;34(10):1102-12.
2. Hicks JK, Sangkuhl K, Swen JJ, Ellingrod VL, Müller DJ, Shimoda K et al. Clinical pharmacogenetics implementation consortium guideline (CPIC) for CYP2D6 and CYP2C19 genotypes and dosing of tricyclic antidepressants: 2016 update. *Clin Pharmacol Ther* 2017;102(1):37-44.

EXAMPLES OF PRACTICE-ORIENTED METHODS AND TOOLS IN UNDERGRADUATE PHARMACY EDUCATION

Opatrilova R.¹, Kollar P.¹, Firlova A.¹, Ambrus T.¹

¹ Faculty of Pharmacy, University of Veterinary and Pharmaceutical Sciences Brno, Czech Republic

INTRODUCTION

In the undergraduate education of students, our Faculty of Pharmacy places great emphasis on forms and methods of teaching with a strong focus on pharmaceutical practice and patient care. Several methods and tools of teaching have been introduced and successfully implemented to our 5-years Master's degree programme Pharmacy in recent years.

MATERIALS AND METHODS

Presentation of selected examples of practice- and patient-oriented teaching methods and tools based on interactive applications, information technologies and student's internships used in different compulsory and elective courses across the Faculty.

RESULTS AND DISCUSSION

At the Faculty of Pharmacy in Brno, the Master's degree programme Pharmacy includes compulsory and elective internships in pharmacies, hospitals and other pharmaceutical and healthcare facilities in every years of study. The administration and evaluation of these practical trainings and internships realized outside the faculty is carried out through the e-learning management system Moodle. System Moodle is also successfully applied as a tool in contact teaching in traditional courses oriented to pharmacy practice and pharmaceutical care. An important facility for managed practical education is our own Faculty Pharmacy, situated at the university campus. Several practical seminars, focused on pharmacy communication, counselling activities, health promotion, individual medicinal product compounding, etc. are taught there, using the counselling room, dispensation atelier designed for training, audio-visual presentations, close-circuit television.

CONCLUSIONS

Application of practice- and patient-oriented teaching activities means incessant professional challenge for teachers and the faculty management. However, these efforts are in annual evaluations of educational process highly regarded by our pharmacy students, and the positive feedback from employers of our graduates is also motivating to continue in this trend.

IMPACT OF A SERIOUS PHARMACY GAME ON SENIOR STUDENTS' PROFESSIONAL COMPETENCIES – A CONTROLLED TRIAL

Hope DL¹, Rogers GD², Grant GD¹, King MA¹

¹ School of Pharmacy and Pharmacology, Quality Use of Medicines Network and Menzies Health Institute Queensland, Griffith University, Gold Coast, Australia

² School of Medicine and Griffith Health Institute for the Development of Education and Scholarship (Health IDEAS), Griffith University, Gold Coast, Australia

INTRODUCTION

During development of a new Australian Bachelor of Pharmacy (BPharm) program, a capstone activity was sought to assist final year students to develop their professional confidence and capabilities. A full-time extended immersive pharmacy simulation game was implemented in the final semester of the program, adapted from GIMMICS [1], from the University of Groningen, Netherlands. The serious game involved students competitively running simulated pharmacies for three weeks and delivered clinical cases scaffolded over time. The capstone nature of the game was based on a spiral curriculum, where topics were revisited and scaffolded at increasing levels of difficulty, new learning connected to previous learning, and students' capabilities were enhanced over time [2]. The game engaged participants, encouraged collaboration and teamwork, and aimed to motivate and challenge students. It provided an opportunity to undertake repeated practice in a safe environment, without risk of patient harm. Institutional program change from a 4.5-year articulated Bachelor of Pharmaceutical Science/Master of Pharmacy (MPharm) program to a 4-year BPharm program enabled the comparison of MPharm students, who did not participate in the serious game, with the BPharm students who experienced the intervention. The research aimed to evaluate the serious game through comparison of self-assessed professional competencies between these two groups of students.

MATERIALS AND METHODS

A controlled trial was conducted across three years (2016 to 2018), with natural experimental groups for intervention and comparison recruited from the BPharm and MPharm programs respectively. The BPharm 'intervention' students were invited to self-evaluate their professional competencies before and after participating in the extended immersive simulated pharmacy game. The MPharm 'comparison' students, who did not participate in the game, were invited to self-evaluate their competencies at the start and end of their final semester of study. Pre- and post-questionnaires were linked to enable measurement of individual change. The online self-assessment tool was developed from Australia's National Competency Standards Framework for Pharmacists [3]. Participants were asked to rate themselves on a 5-point Likert Scale ('not at all competent' to 'very competent') against the 26 competency standards of the Framework, across five domains: Professionalism and Ethics; Communication and Collaboration; Medicines Management and Patient Care; Leadership and Management; and Education and Research. Data were analysed using paired t-tests and Wilcoxon matched-paired tests. Institutional ethical clearance was obtained (GU Ref No: 2016/594).

RESULTS AND DISCUSSION

During the trial, 85 (90.4%) BPharm intervention students and 42 (84.0%) MPharm comparison students participated by completing pre- and post- self-assessments of professional competencies (Table 1). Participation in the serious game was associated with statistically significant improvement ($p < 0.05$) in students' perceptions of their professional competencies for eight of the 26 standards of the 2016 National Competency Standards Framework for Pharmacists in Australia, including 'Support Quality Use of Medicines' and 'Promote Health and Wellbeing', and for three of the five

Domains (Figure 1). The cumulative change for all competencies was statistically significant ($p < 0.01$).

Table 1: BPharm Intervention and MPharm Comparison Groups Participation

Year	BPharm Enrolled N	BPharm Game n (%)	MPharm Enrolled N	MPharm No Game n (%)
2016	27	26 (96.3)	–	–
2017	34	28 (82.4)	34	29 (85.3)
2018	33	31 (93.9)	16	13 (81.3)

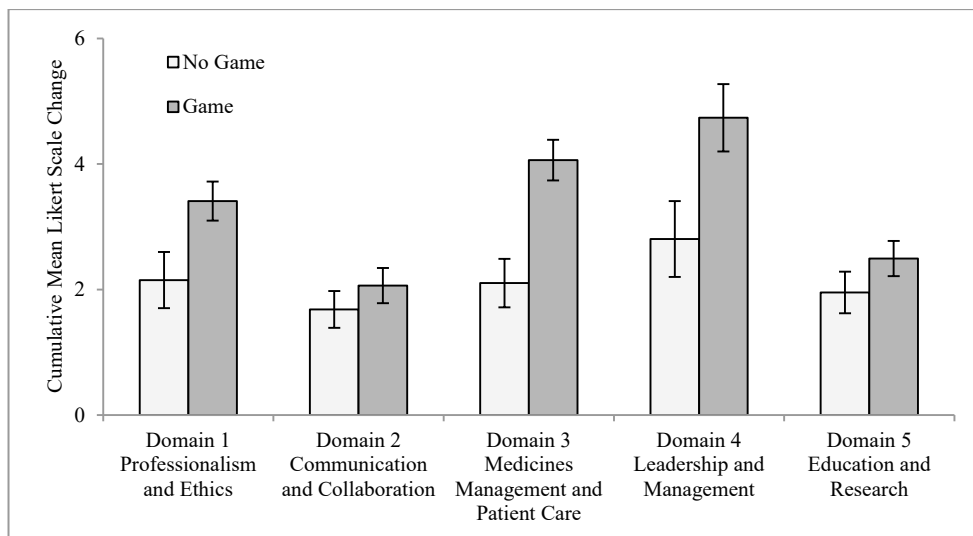


Figure 1: Cumulative Mean Change in Scores ±95% Confidence Interval by Competency Domain

CONCLUSIONS

Self-assessment in health care professionals is an important skill necessary for lifelong learning and professional development, from student to qualified professional [4]. While published research has suggested that health professionals have limited ability to self-assess [5], it is an important mainstay of professional practice. Participation by final semester pharmacy students in an extended immersive pharmacy simulation game significantly improved their self-assessed professional competencies, compared to senior students who did not participate. The competency domains enhanced most by the serious game were professionalism and ethics, medicines management and patient care, and leadership and management.

REFERENCES

- Sillius, A. and J.J. Van Der Werf. *GIMMICS: How to organize, manage and control a pharmacy practice game*. E-Learning: Design, Development and Delivery 2005; Available from: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.576.5446&rep=rep1&type=pdf>.
- Harden, R.M., *What is a spiral curriculum?* Medical Teacher, 1999. 21(2): p. 141-143.
- Pharmaceutical Society of Australia. *National Competency Standards Framework for Pharmacists in Australia*. 2016; Available from: <https://www.psa.org.au/wp-content/uploads/2018/06/National-Competency-Standards-Framework-for-Pharmacists-in-Australia-2016-PDF-2mb.pdf>.
- Motycka, C.A., et al., *Self-assessment in pharmacy and health science education and professional practice*. American Journal of Pharmaceutical Education 2010. 74(5): p. 85.
- Austin, Z. and P.A. Gregory, *Evaluating the accuracy of pharmacy students' self-assessment skills*. American Journal of Pharmaceutical Education 2007. 71(5): p. 89.

THE MUSEUM OF HISTORY OF PHARMACY OF SEVILLE (SPAIN): THE PATIENT, THE STUDENT AND THE NEW TECHNOLOGIES UNITED THROUGH THE PHARMACEUTICAL HERITAGE.

Ramos A¹, Álvarez de Sotomayor M¹, Ruiz R¹

¹ Faculty of Pharmacy, University of Seville, C/Profesor García González 2, 41012 Seville, Spain.

INTRODUCTION

The poster focuses on possibilities of the use of digital technology to drive the Museum of History of Pharmacy of Seville (Spain) and our engagement with the society and the pupils of the Faculty of Pharmacy of Seville, on the framework between cultural heritage, the digital technology and the the relationship between the pharmacy and the patient.

History, patient and pharmacy intertwined in a Museum.

We pretend to create new experiences for audiences and students, exploring the boundaries of new technology and internet tools and thinking of creative ways to apply it [1,2].

MATERIALS AND METHODS

- The study of the heritage exhibited in the Museum of History of Pharmacy of Seville.
- The study of secondary bibliographic sources on museology and Science Museums.
- The employment of new technologies as tool for scientific dissemination.

RESULTS AND DISCUSSION

The pharmacy, as well as a profession and a science intended primarily for drug preparation and the restoration or maintenance of public health, is also beauty. Beauty of a local and utensils by which professionals have been able to exercise their work over the centuries.

In this museum we show an overview of the professional and scientific activity of pharmacists in the nineteenth and earlytwentieth centuries, at a time when the industrial revolution would change, as in many other disciplines, aesthetics and dynamics of the pharmaceutical world. This Museum is a collection of tools designed to achieving the welfare of the individual, to the fight against the disease. The link between the pharmaceutical profession and the student (and society in general) through the Museum can be improved by using:

- Live broadcast of the experience of the visit.
- Social networking services: facebook, twitter, instagram, web page.
- Games for facebook and competitions.
- Youtube channel.
- Touchscreens.
- Podcasts and sound files.
- Information in several languages.
- Apps.
- QR codes.

CONCLUSIONS

1. The union of the History, Humanities and Science through the Museum of History of the Pharmacy of Seville make the student more complete in his future relationship with the patient.
2. Student learning is favored with the use of new Technologies applied to the Museum.
3. The promotion of the scientific heritage of universities through technology is possible.
4. The social perception of the importance of the pharmacist in health is favored by the Museum
5. The university must support this museum of Pharmacy in its efforts to make thrive within a digital environment with economic contribution and professional staff, reviewing the results of the project.

REFERENCES

1. <https://institucional.us.es/museohistfarm/museo/>
2. https://issuu.com/asdevargas/docs/los_museos_en_la_era_digital.
3. <https://www.ne-mo.org/reading-corner/museums-in-a-digital-world.html>
4. Ramos A, Ruiz R. El Museo de Historia de la Farmacia como instrumento de investigación y educación superior: contribuciones respecto al Laboratorio Municipal de Sevilla. *Ars Pharmaceutica*, 2014; 55 (4):22-29.
5. Ruiz R, Ramos A. Museo de Historia de la Farmacia de Sevilla. Una colección universitaria docente y de divulgación científica. *Cabás*, 2017; (17): 50-67

IMPLEMENTATION OF A MULTIDISCIPLINARY ESCAPE ROOM AS AN INOVATIVE LEARNING TOOL AT THE FACULTY OF PHARMACY: FARMAESCAPE

Gutiérrez-Praena D, Ríos-Reina R, Ruiz R, Talero E, Callejón R, Callejón RM, Casas M, de la Haba RR, García-Miranda P, Carrascal L, Guzmán-Guillén R, Sánchez-Hidalgo M

Faculty of Pharmacy, University of Sevilla. C/Profesor García González 2, 41012 Sevilla, Spain.

INTRODUCTION

The implementation of gamification in the field of education is a tool that can be used in order to develop new skills, improve motivation, cohesion and leadership among students. It is demonstrated that when we play dopamine is generated and our brain system is activated, making people live and share experiences and generate actions that make us learn [1]. Escape rooms offer a creative way to get students engaged with material and excited about concepts and problem solving. Through this new learning tool we can transform students into the protagonists of a real story of escapism in which they have to show skills or handle concepts according to the educational stage in which they find themselves [2]. In this line, the objective of this project was to design and implement a multidisciplinary escape room in a simulated laboratory as an innovative educational tool to promote communication, teamwork focused on resolving problems as well as to increase motivation among students for learning and strengthening the knowledge of the fundamental principles acquired during the different degrees taught at the Faculty of Pharmacy.

MATERIALS AND METHODS

A total of 19 subjects, one hundred and forty-five students from 4th-5th course across three degrees (Degree in Pharmacy, Degree in Optics and Optometry and Double Degree in Pharmacy and Optics and Optometry) and 12 lectures piloted this voluntary activity. Teams of five participants were provided with a fictitious case in a simulated research laboratory environment. Within a 60-minute time limit, students needed to use objects and do experimental determinations in the room to solve a series of puzzles and enigmas to successfully get the key and escape from the room. Teacher as a game master handed to students a walkie-talkie, to call him if they needed a clue.

RESULTS AND DISCUSSION

A facilitated debrief following the activity allowed participants to reflect on their communication skills and teamwork during the experience. Feedback from students was collected on a five-point Likert scale and revealed the value of the escape room in academia encouraging teamwork, facilitating communication, and promoting motivation for learning.

CONCLUSIONS

Educational escape rooms can be used to provide an enjoyable student experience that immerses them as active participants in the learning environment improving the critical thinking and the creative imagination of the students, developing communication skills, teamwork and working near to the work world.

ACKNOWLEDGEMENTS

We gratefully acknowledge the financial support from Faculty of Pharmacy and III Plan Propio de Docencia of the University of Seville.

Follow us on: @farmaescape.

REFERENCES

1. Martín A, Díaz D, Monserrat S, Reyes E. “Experiencias de aplicación de estrategias de gamificación a entornos de aprendizaje universitario”. *ReVisión*. 2014; 7(2).
2. Cain J. Exploratory implementation of a blended format escape room in a large enrollment pharmacy management class. *Curr Pharm Teach Learn*. 2019; 11(1):44-50.

THE FIRST OBJECTIVE STRUCTURED PRACTICAL EXAMINATION (OSPE) IN THE PHARMACY TEACHING IN POLAND. HOW WE DESIGN AN EXAM?

Dymek J¹, Gołda A¹, Polak W¹, Wiśniowska B¹, Kowalski T¹, Skowron A¹

¹ *Department of Social Pharmacy, Faculty of Pharmacy, Jagiellonian University Medical College, Kraków, Poland*

INTRODUCTION

Recently, pharmacy education has undergone a radical change to improve students' skills necessary to provide pharmaceutical services according to the professional standards. One of the important elements of the pharmacy curriculum is to teach and improve student's practical and interpersonal skills e.g. solving drug problems problem-solving. OSPE (Objective Structured Practical Examination) is one of a wide family of structured and objectified examinations assessing practical, clinical, communication competencies. We developed standardized OSPE at the Faculty of Pharmacy, Jagiellonian University Medical College in Poland as a final exam in Pharmaceutical Care course for 5th year pharmacy students and we described the process of its introduction/implementation. It is a first OSPE in postgraduate pharmacy teaching in Poland. The aim of the study is to describe the OSPE designing and implementation.

MATERIALS AND METHODS

OSPE was designed and implemented in accordance with the education standards for the field of pharmacy. Examination blueprint was developed to map learning objectives with the tasks included into the stations. It was assumed that all learning objectives related to the Pharmaceutical Care course should be covered by the exam and one station might have assessed more than one learning outcomes. Then draft scenarios were produced for 6 stations. The documentation for each station included checklists, scenarios for the standardized patients and instructions for the students. Checklists were developed on the basis of/using UCAN tools and tOSCE for iPad software. Each scenario included at least two different versions. Scenarios and checklists were validated. The examiners undergone training to establish a uniform assessment. The pass mark for each station was 50%. Students had to pass all stations to get a positive grade.

RESULTS AND DISCUSSION

OSPE consisted of 6 stations including 4 stations with standardised patients. Standardised patients were used in stations: pharmaceutical interview, patient counselling, providing information about the medicine, providing information about the medical device. The duration of each of these stations was 15 minutes. Another two stations assessing identification and resolution of drug-related problems included written or electronic documentation without simulated patient; each of these stations lasted 30 minutes. OSPE was implemented in January and February 2019 and lasted 6 days. 109 students of Faculty of Pharmacy were assessed in blocks of 2–2.5 hours by 10 examiners. Each student was identified by ID card and individual QR code. 5 stations were marked on the spot.

CONCLUSIONS

From teacher's perspective, it seems that OSPE exam in comparison to the other traditional methods of assessment can evaluate a lot of more learning outcomes including social and professional skills. Appropriately designed stations make it possible to perform professional activities that reflect the real situations in pharmacy. According us OSPE is efficient tool to assess the objective outcomes pharmacy students.

Results can be used as a tool for evaluating lessons and may be considered valuable for further development and enhancement of OSPE.

The authors wish to thank to the members of the Department of Medical Education at Jagiellonian University Medical College for their support and help throughout the performance of the exam.

REFERENCES

1. Kowalski T, Skowron A, Nowakowski M. The Role and Suitability of the Objective Structured Practical Examination in Pharmacy Education in Poland. *Indian J of Pharmaceutical Education and Research*. 2019;53(2):186–91.
2. Skowron A, Dymek J, Gołda A, Polak W. Are we ready to implement competence-based teaching in pharmacy education in Poland? *Pharmacy (Basel)*. 2017 Jun; 5(2):25.

EXPANSION AND DEPLOYMENT OF AMBULATORY CARE CLINICAL PHARMACY SERVICES IN COLORADO

Moore G, Saseen J, Fish D, Altieri R

University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences, USA

INTRODUCTION

The University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences has grown substantially over the past decade in the area of Ambulatory Care Clinical Pharmacy services. We describe the background for that growth, services provided by clinical pharmacy faculty members, and training opportunities that growth has provided.

MATERIALS AND METHODS

We conducted a retrospective analysis of the Ambulatory Care Clinical Pharmacy program at the University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS) from the period of January 1, 2009 to January 1, 2019. We assessed number of new positions created, total number of Full Time Equivalents (FTEs), number of post-graduate year 2 (PGY2) Ambulatory Care pharmacy residents trained.

RESULTS AND DISCUSSION

Numerous studies have demonstrated improved patient outcomes when pharmacists are members of the patient care team.^{1,2} In 2009, the Patient Protection and Affordable Care in the United States recognized the expanding role of the clinical pharmacists relating to medication management and patient safety.³ Since that time, the Ambulatory Care Clinical Pharmacy program within the University of Colorado SSPPS experienced substantial growth in a variety of primary care clinics. As shown in Figure 1, the number of positions grew from five positions in 2009 to 20 positions in 2019.

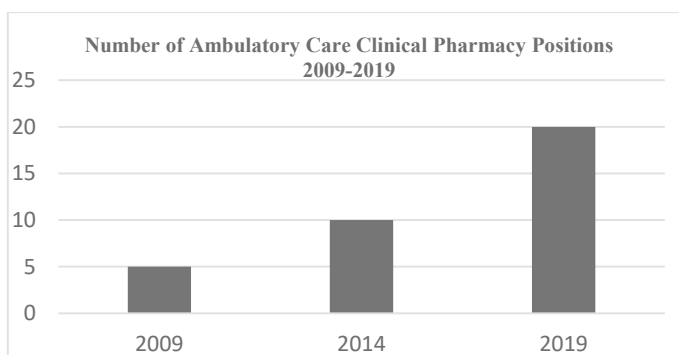


Fig. 1: Ambulatory Care Clinical Faculty Members 2009–2019

These clinics include primary care clinics affiliated with the University of Colorado and its health system affiliate, the University of Colorado Health, as well as primary care clinics serving underserved and uninsured persons, pediatrics, and geriatric populations. Not represented in these numbers are an additional eight faculty members providing specialty clinical pharmacy services, such as oncology, neurology and behavioral health consultations, in outpatient clinics. Routine services

offered at each of the primary clinics include chronic disease state management for diseases such as diabetes, hypertension, and dyslipidemia, complex medication management issues, and population health services.

The number of patients cared for at each clinic varies across each location, but the number of documented interventions and unique patient visits is substantial. For example, two clinical pharmacy members providing care to two underserved communities adjacent to the Denver metropolitan area documented 7,163 interventions in 3,229 unique patients during a two-year time frame. In every clinic, we have demonstrated improved health outcomes through clinical pharmacy services.

A significant benefit related to this growth is increased training opportunities and outreach by SSPPS. Since 2009, 29 PGY2 ambulatory care pharmacy residents have been trained. Every fourth year pharmacy student enrolled at SSPPS has participated in at least one ambulatory care clinical pharmacy experiential six-week rotation. This equates to over 1,500 pharmacy students trained in ambulatory care clinics where pharmacy faculty members practice to the top of their scope of licensure.

SSPPS clinical pharmacy faculty members have also provided training to international pharmacists seeking to develop ambulatory care clinical pharmacy models. Through a partnership with Qatar Primary Health Care Cooperative, 20 pharmacists from Qatar were trained to provide ambulatory care clinical pharmacy services throughout a 19 week program that included instruction, OSCE evaluation and practical clinical training in Qatar primary care clinics.

CONCLUSIONS

The recognition of value that clinical pharmacy services offer in chronic medication management, coupled with changes in the U.S. healthcare system has resulted in significant growth of Ambulatory Care Clinical Pharmacy practice at the University of Colorado SSPPS. We have documented improvement in chronic disease outcome measures and training of pharmacy PGY2 residents, pharmacy students, as well as international pharmacists.

REFERENCES

1. Chisholm-Burns MA, Kim Lee J, Spivey CA, et al. US pharmacists' effect as team members on patient care: systematic review and meta-analyses. *Medical care* 2010;48:923–33.
2. Carter BL, Coffey CS, Ardery G, et al. Cluster-randomized trial of a physician/pharmacist collaborative model to improve blood pressure control. *Circulation Cardiovascular quality and outcomes* 2015;8:235–43.
3. American College of Clinical Pharmacy (2014). Health Reform Bill Becomes Law: Includes Key Clinical Pharmacy Provisions. Available from <http://www.accp.com/announcements/healthreform.aspx>. Accessed March 12, 2019.

INSTITUTIONALIZATION OF INTERPROFESSIONAL PRACTICE AND EDUCATION (IPE)

Franson KL, Gilliam EH, Altieri RJ

University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences, Aurora, Colorado, United States

INTRODUCTION

The Anschutz Medical Campus had a longstanding, required interprofessional ethics course [1]. Based in part on the success of this program, the University built an interprofessional campus with the desire to become a centre of interprofessional practice. Interprofessional collaborative practice contributes to optimal patient care, reduces health system errors, and has the potential to reduce health care cost [2]. Therefore, health profession programs are charged with developing competent interprofessional collaborative health care providers. A longitudinal IPE curriculum provides learners opportunities to develop and refine the knowledge, skills and behaviours necessary for collaborative practice. Our objective was to create an organizational structure to oversee IPE for over 700 students in 7 degree programs on campus (Pharmacy, Dentistry, Medicine, Nursing, Physical Therapy, Physician Assistant and Public Health).

MATERIALS AND METHODS

Stage 1 (Multiple start-ups): The university received funding from multiple sources to build our longitudinal IPE didactic and clinical curricula. The IPE office was created to meet grant demands. Each effort had different leaders and team members. The process and leadership were not fully interprofessional or inclusive.

Stage 2 (Consolidation and coordination): The Campus Deans convened a Governing Board that constructed a cross-program leadership model. IPE is run by an IPE Council (consisting of the IPE Director and Assistant Directors) with programing overseen by didactic and practice directors. The office is supported by an Educational Coordinator, Administrative Assistant, and Instructional Designer. The Governing Board also created a cross-school funding model for the IPE program to move forward irrespective of external funding. This model requires both financial and personnel support from the Deans.

Stage 3 (Longitudinal development of learners): The longitudinal IPE curriculum includes early interprofessional experiences, didactic training (basic science of teaming, values/ethics and quality/safety) [3], simulation based TeamSTEPPS[®] training, and collaborative clinical education opportunities [4]. Our learners develop strategies for effective team communication, understand team member's roles and responsibilities, understand the values/ethics of high quality care, and contribute to ongoing quality improvement.

RESULTS AND DISCUSSION

New interprofessional practice experiences were developed at safety net clinics and retail-community health centers; and primary health care provider clinics. Pharmacy students reported an average of 10.55 direct patient encounters (seeing patients, follow-up communications); up to 28.1 indirect patient encounters (reviewing patient charts) and 3.5 non-patient care activities (time engaged with interprofessional preceptor) per day. In addition, a culture has been created in which campus efforts or start-ups are interprofessional from the beginning. Cross-campus examples include the initiation of 1) an interprofessional student-run free clinic; 2) an extracurricular public health competition with

interprofessional teams and 3) the initiation of an interprofessional team-based quality and safety program in the university hospital.

CONCLUSIONS

When the governance and funding of our IPE program were institutionalized in a fully interprofessional model, it created an organizational context for interprofessional efforts across education and practice activities.

REFERENCES

1. Yarborough M, Jones T, Cyr TA, Phillips S, Stelzner D. Interprofessional Education in ethics and an academic health sciences center. *Acad. Med.* 2000;75:793–800.
2. Kahaleh AA, Danielson J, Franson KL, Nuffer WA, and Umland EM. An Interprofessional Education Panel on Development, Implementation, and Assessment Strategies. *American Journal of Pharmaceutical Education* 2015 Aug 25;79(6):78.
3. Madigosky WS, Franson KL, Glover JJ, Earnest E. Interprofessional Education and Development (IPEd): A longitudinal team-based learning course introducing teamwork/collaboration, values/ethics, and safety/quality to health professional students. *Journal of Interprofessional Education & Practice.* 2019 <https://doi.org/10.1016/j.xjep.2018.12.001>.
4. Franson KL & Gilliam EH. Overcoming Barriers to Interprofessional Practice / Education through Legislative Reform: A University of Colorado Case Study. *Journal of Interprofessional Education & Practice.* 2018 <https://doi.org/10.1016/j.xjep.2018.08.006>.

PARTNERSHIPS IN EDUCATION: AN INTERNATIONAL POST-GRADUATE DOCTORATE IN PHARMACY

Vella Sziji J¹, Attard Pizzuto M¹, Sammut Bartolo N¹, Wirth F¹, Grech L¹, Haaf-Mactal C²,
Pham J², Serracino-Inglott A¹, Lau A², Azzopardi LM¹

¹*Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Malta*

²*College of Pharmacy, University of Illinois at Chicago USA*

INTRODUCTION

The department of Pharmacy at the University of Malta offers a three-year postgraduate professional Doctorate in Pharmacy programme in collaboration with the University of Illinois at Chicago (UIC) in the USA. Students following the unique programme develop advanced scholarly-professional competencies in patient-centred pharmaceutical aspects related to clinical pharmacy services, innovative medicines, and patient safety. The programme started in 2014. There are 35 pharmacists who are currently enrolled and 31 alumni from this Level 8 doctorate programme. Demographic data of students currently enrolled in this programme and of graduates was analysed.

MATERIALS AND METHODS

Data was collected from the profile information which students submit on admission to the course and from student files.

RESULTS AND DISCUSSION

Twelve students out of the 35 currently enrolled in the programme are male. The student's age ranges from 23 to 49 years. The students come from 12 different countries. Fifteen students come from Malta, 6 from the Philippines, 4 from Italy and 2 from Spain. One student comes from Estonia, 1 from India, 1 from Jordan, 1 from Lebanon, 1 from Oman, 1 from Serbia, 1 from Turkey and 1 from the United Kingdom. Prior to starting the Doctorate programme, 10 students had just completed their first degree in pharmacy, 7 pharmacists worked in hospital, 4 pharmacists held academic posts, 4 pharmacists worked in community pharmacies and 3 pharmacists worked in pharmaceutical regulatory affairs. Two pharmacists worked as medical representatives, 1 worked in research, 1 worked with a governmental institution, 1 worked in a laboratory, 1 worked as a teacher and 1 worked in industry before joining the programme.

Twelve pharmacists out of the 31 graduates are male. The graduates' age ranges from 27 to 51 years. Twenty five graduates come from Malta, 1 from Germany, 1 from India, 1 from Ireland, 1 from Libya, 1 from Spain and 1 from Uganda. These graduates are now working in different pharmaceutical sectors, holding influential managerial roles. Eleven graduates work in regulatory, 9 work in community, 7 work in hospital, 3 work in academia and 1 works in industry.

CONCLUSIONS

According to the International Pharmaceutical Federation Workforce Development Goals¹, there is a need to strengthen academic capacity, pharmacists professional advancement and systems and policy-service development. A focus is to support the development of a flexible, competence-based workforce with a framework that allows for pharmacists to develop into advanced clinical practitioners through advanced practitioner development programmes. The establishment of these partnerships between two pharmacy academic institutions is contributing to development of an advanced pharmacist workforce coming from diverse settings with the potential of the influence spreading back to different countries.

REFERENCE

1. International Pharmaceutical Federation. Pharmaceutical Workshop Development Goals. The Netherlands: FIP. 2016

DESK-BASED vs EXPERIMENTAL THESIS: PREFERENCES OF PHARMACY STUDENTS AT THE UNIVERSITY OF PARMA

Padula C, Pescina S, Nicoli S, Santi P

Department of Food and Drug, University of Parma, Italy

INTRODUCTION

In Italy, the Degree Course in Pharmacy is a single-cycle course with a duration of 5 years for a total of 300 ECTS (European Credit Transfer System) the student has to acquire to achieve the degree. To be admitted to the final examination, students are required to produce an original elaborate under the supervision of a professor or a tutor; 15 or 27 ECTS are awarded for thesis preparation. The difference in the number of ECTS awarded depends on the type of dissertation chosen by the student: desk-based thesis (collection and processing of bibliographic materials) or experimental thesis (internship in a research laboratory of the Department or of other Public or Private Institutions). The contribution of the final examination to the final grade is up to 3 points for desk-based thesis and up to 6 points for experimental thesis (over 110).

MATERIALS AND METHODS

Data were collected from the University Library database and Student Office of the Department of Food and Drug of the University of Parma and covered a 5 year period (2014–2018). Among others, the number of graduates, type of thesis and academic disciplines involved were considered.

RESULTS AND DISCUSSION

In the period considered, an average of 70% of students preferred the bibliographic work to the experimental one, although in the last 3 years there has been a gradual increase of the experimental thesis that has grown from 23 to 33%. The number of students that did their internship abroad, within Erasmus mobility, is still limited.

In the case of desk-based thesis, the academic disciplines more represented are, on average, pharmacology and pathology while in the case of experimental thesis, student's preferences go to pharmacology and pharmaceutical technology.

CONCLUSIONS

The conclusion of this survey indicates that Pharmacy students prefer desk-thesis, over experimental thesis, although the tendency is changing.

The thesis rules will change starting from next year: the number of ECTS allocated for experimental thesis will be lower (19) and a new type of experimental thesis, the so called practical-professional, will be introduced.

Abstracts

Poster session

Poster session

Advancements in pharmaceutical education.....	72
SIMULATED COMMUNITY PHARMACY FOR TRAINING IN PATIENT-ORIENTED COMPETENCES.....	72
ENHANCING PATIENT SAFETY THROUGH INTERACTIVE EDUCATION.....	74
IMPLEMENTING PROBLEM-BASED LEARNING INTO PHARMACOECONOMICS COURSE FOR 4TH YEAR PHARMACY STUDENTS.....	75
A STUDENT-ENGAGING APPROACH TO TEACHING PHARMACEUTICAL TERMINOLOGY TO PHARMACEUTICAL TECHNOLOGY STUDENTS.....	76
EVALUATION OF USING CASE STUDIES TO MOBILISE KNOWLEDGE ABOUT TOXICOLOGY	77
STUDENTS' PERCEPTION OF RISK IN PHARMACEUTICAL PROCESSES.....	78
AFFECTIVE LEARNING IN A SERIOUS PHARMACY GAME	79
PHARMACEUTICAL CARE FOR CHILDREN – COMPARISON OF THE EDUCATIONAL APPROACH BETWEEN BULGARIA AND SERBIA	81
INTERDISCIPLINARY INTERGRATION OF CHEMISTRY KNOWLEDGE AS A FACTOR OF PROFESSIONAL COMPETENCE IN THE FUTURE MASTERS OF PHARMACY	83
PATIENT ORIENTED COMPETENCIES AND LEVELS IN TURKISH NATIONAL PHARMACY CORE CURRICULUM	85
FIP RENAISSANCE.....	87
FIP ACADEMIC INSTITUTIONAL MEMBERSHIP – TEN YEAR ANNIVERSARY AND NEW DIRECTIONS	90
Cooperation for a better education.....	91
INNOCAMPUS EXPLORA: MULTIDISCIPLINARITY IN SCIENCE	91
A NEW PAN-EUROPEAN INITIATIVE FOR THE DEVELOPMENT OF AN INTERPROFESSIONAL EDUCATIONAL PROGRAM ON AGE-SPECIFIC MEDICINES	93
PROSPECTS FOR THE HARMONIZATION OF EDUCATIONAL PROGRAMS ON THE SPECIALTY “PHARMACY” WITH THE PARTNER UNIVERSITIES OF EUROPE	95
FACULTY OF PHARMACY ERASMUS MOBILITY (UNIVERSIDAD COMPLUTENSE DE MADRID) 2010–2018: DATA AND CONCLUSIONS	97
INTENSIVE INTERNATIONAL EXCHANGE EXPERIENCE FOR UNDERGRADUATE STUDENTS: CAREER PATHS FOR PHARMACISTS IN SPAIN AND BELGIUM.....	99
Software / Databases.....	101
EVALUATION OF A PEBBLEPAD™ DIGITISED RESOURCE IN UNDERGRADUATE PHARMACY PRACTICE WORKSHOPS.....	101
HIGH-FIDELITY SIMULATION FOR COMPETENCE DEVELOPMENT IN UNDERGRADUATE PHARMACY EDUCATION: CLOSING THE GAP BETWEEN COMMUNICATION AND TEAMWORK THEORY AND COMPETENCE ..	103
SIMULATED IMMERSIVE CONSULTATIONS TO ENHANCE UNDERGRADUATE NON-PRESCRIPTION EDUCATION ..	105
THE EDUCATION AND PRACTICE PLATORM MOVES BEYOND.....	107
PHARMACISTS COMPETENCE TO RESOLVE THE THERAPEUTIC CHALLENGE OF THE VALSARTAN SAGA.....	109

GAME BASED LEARNING APPLIED TO NUTRITION AND FOOD SCIENCE AT THE SCHOOL OF PHARMACY.....	111
PILOT SURVEY OF STUDENTS OF PHARMACY TRAINING IN PHARMACIES OF OPEN TYPES FOR USE OF THE HOMEIPATHY SOFTWARE	113
VIRTUAL ATLAS OF NATURAL DRUGS.....	114
Clinical pharmacy.....	115
DEVELOPING CLINICAL PHARMACY COMPETENCIES IN THE CARE OF PATIENTS WITH CARDIOVASCULAR DISEASE.....	115
ADVANCED CLINICAL PHARMACY EXPOSURE AT PAEDIATRIC ONCOLOGY WARD.....	117
OPINIONS OF DECISION-MAKERS ON THE CLINICAL DEVELOPMENT AND ASSESSMENT OF ANTINEOPLASTIC AGENTS.....	118
Practical education	120
THE EDUCATION OF FUTURE PHARMACISTS IN BRATISLAVA IS LED IN COOPERATION WITH THE PROFESSIONAL ORGANIZATION.....	120
MOVING TOWARDS REGULATORY SCIENCIES THROUGH EDUCATIONAL INITIATIVES.....	122
HOW DO YOU KNOW YOUR STUDENT IS READY FOR PRACTICE?	123
IMPLEMENTATION OF A RUBRIC FOR ASSESSMENT THE RESOLUTION OF PRACTICAL CASES DURING SUPERVISED TRAINING PLACEMENT OF PHARMACY DEGREE.	125
Examination.....	127
CAN OSCES BE AN INDICATOR OF STUDENTS' PROGRESSION OF CLINICAL AND SCIENTIFIC COMPETENCIES?	127
OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCE) TEST FOR ASSESSMENT OF COUNSELLING COMPETENCIES AMONG PHARMACY STUDENTS AND ASSISTANT PHARMACISTS IN ESTONIA.....	129
DEVELOPMENT AND ASSESSMENT OF OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCES) IN A NEWLY INTRODUCED MPHARM PROGRAMME.....	131
ANALYSIS OF MARKS IN A BIOPHARMACEUTICS AND PHARMACOKINETICS COURSE TO IMPROVE CONTENTS DESIGN AND PLANNING.....	133
Pharmacy students	135
PHARMACY STUDENTS' ACTIVITY AND EXPECTATIONS ON THE EXAMPLE OF POLISH PHARMACEUTICAL STUDENTS ASSOCIATION AT JAGIELLONIAN UNIVERSITY MEDICAL COLLEGE.....	135
EVALUATION OF A PHARMACY STUDENTS RESEARCH SYMPOSIUM.....	137
CELEBRATION OF THE III MEETING ON TOXICOLOGY AND SOCIETY: DRUGS OF ABUSE AND MOLECULAR TOXICOLOGY (TOXICOLOGY FORUM AND OLYMPIAD)	138
PATIENT-ORIENTED FINAL PROJECTS PUBLISHED IN FARMAJOURNAL IN 2018.	139
Postgraduate/professional education.....	140
INTRODUCTION TO TEACHING – A SHORT COURSE WITH THE AIM TO BUILD PEDAGOGIC CONFIDENCE IN PHDS AND POST-DOCS.....	140
TRAINING TO TEACH AT THE FACULTY OF PHARMACY OF VALENCIA (SPAIN).....	142
COACHING IN PHAMACEUTICAL SCIENCES	144
MENTORING DOCTORATE OF PHARMACY STUDENTS: AN INTERPROFESSIONAL COLLABORATION.....	146

RELATIONSHIP BETWEEN EDUCATIONAL ENVIRONMENT, FULFILMENT OF BASIS PSYCHOLOGICAL NEEDS AND MOTIVATION OF PHARMACIST TRAINEES IN WORKPLACE-BASED EDUCATION	147
Varia	149
EVALUATION OF THE COSUMPTION OF MEDICINAL PLANTS FOR THE TREATMENT OF AFFECTIONS OF THE DIGESTIVE SYSTEM IN THE COMMUNITY OF MADRID, SPAIN	149
FOLIA PHARMACEUTICA CASSOVIENSIA – A NEW SCIENTIFIC PHARMACEUTICAL JOURNAL AT THE UNIVERSITY OF VETERINARY MEDICINE AND PHARMACY IN KOŠICE, SLOVAKIA.....	151

Advancements in pharmaceutical education

SIMULATED COMMUNITY PHARMACY FOR TRAINING IN PATIENT-ORIENTED COMPETENCES

Martín-Suárez A^{1,2}, Codesal Gervás T^{1,3}, Valles Martín E^{1,3}, Varas-Doval R^{1,4}, Teixeira Silva P¹, Álves Sánchez J^{1,5}, Caballero E², Muro Álvarez A^{1,2}

¹*Pharmaceutical Care Classroom, University of Salamanca (AUSAF). Spain*

²*Decanato of the Faculty of Pharmacy, University of Salamanca. Spain*

³*Community pharmacist, Castilla y León. Spain*

⁴*General Pharmaceutical Council of Spain (CGCOF). Spain*

⁵*Pharmacy Degree student, University of Salamanca. Spain*

INTRODUCTION

Simulated environments are widely used in health sciences to develop professionals' knowledge, skills and attitudes [1–3]. They have also been shown to enhance pharmacists' communication, critical thinking, decision-making and teamwork skills [4,5]. The aim of this project was to install a simulated pharmacy in the Faculty of Pharmacy to be used as a teaching tool to train undergraduate and postgraduate students.

MATERIALS AND METHODS

The simulated pharmacy project has taken place over two academic years (2017/18 – 2018/19). In this period, the classroom has been equipped with sufficient infrastructure and materials to carry out activities patient-oriented related to pharmaceutical professional practice.

Project team

A working group of students, pharmacists and teachers was established to carry out the project.

Project stages

The project was structured in the following stages:

- Define the characteristics and design the facilities.
- Seek funding and build the pharmacy.
- Equip the pharmacy with furniture, equipment, tools and other necessary products.
- Analyse the skills that could be acquired in the pharmacy and design the activities.
- Organize training activities in the pharmacy.

RESULTS AND DISCUSSION

A facility that simulates a community pharmacy has been installed and put into operation. It has the necessary equipment to perform professional tasks:

- Computer with a pharmacy management program, devices for reading electronic prescriptions, scale, blood pressure monitor, etc.
- Stock of medicines and other health products.
- Computers for students and other technical and audiovisual media to facilitate teaching.
- Technical documentation and reference books.
- Pharmacy counter and consultation room.



Fig. 1: External view of the simulated pharmacy and the different activities carried out therein by undergraduate students.

During the current academic year 2018/19, the simulated pharmacy has been used to carry out practical activities in three subjects of the Pharmacy Degree — “Pharmaceutical Care”, “Pharmacy Management” and “Legislation and Professional Ethics” — using role-play techniques.

Likewise, several voluntary workshops were organized for students to practise patient-oriented competences and integrate knowledge previously acquired in various subjects (“Pharmaceutical Care”, “Pharmacy Management”, “Legislation and Professional Ethics”, “Drug Interactions”, “Dermopharmacy”, and “Clinical Pharmacy”). A questionnaire, self-efficacy as perceived by students and a questionnaire for teacher and student satisfaction with the experience were evaluated and very high scores were obtained.

CONCLUSIONS

A simulated pharmacy has been installed in the Faculty as a teaching tool, which allows us to train students in patient-oriented competences by recreating common situations in a community pharmacy.

REFERENCES

2. Motola I, Devine LA, Chung HS, Sullivan JE, Issenberg SB. Simulation in healthcare education: a best evidence practical guide. AMEE Guide No. 82. *Med Teach* 2013;35(10):e1511-e1530.
3. Crea KA. Practice skill development through the use of human patient simulation. *Am J Pharm Educ* 2011;75(9):188.
4. Hasan SS, Chong DW, Se WP, Kumar S, Ahmed SI, Mittal P. Simulation-based instruction for pharmacy practice skill development: A review of the literature. *Archives of Pharmacy Practice* 2017;8(2):43.
5. Veettil SK, Rajiah K. Use of simulation in pharmacy practice and implementation in undergraduate pharmacy curriculum in India. *Int.J.Pharm.Pharm.Sci* 2016;8(7):1–5.
6. Lloyd M, Watmough S, Bennett N. Simulation-based training: applications in clinical pharmacy. *Clinical Pharmacist* 2018;10(9):3–10.

FINANCIAL SUPPORT AND/OR ACKNOWLEDGMENTS

We would like to thank COFARES, General Pharmaceutical Council of Spain, CINFA Lab for their support.

ENHANCING PATIENT SAFETY THROUGH INTERACTIVE EDUCATION

Attard A^{1,2}, Wirth F¹, Azzopardi LM¹, Serracino-Inglott A^{1,2}

¹ *Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Msida, Malta*

² *Malta Medicines Authority, San Gwann, Malta*

INTRODUCTION

The pharmacist translates science to regulated practice in a patient-centred scenario. This research attempts to answer the question: could the evaluation of community pharmacy practice enhance patient safety by carrying out the assessment in an interactive educational way?

MATERIALS AND METHODS

The methodology involved: (1) retrospective analysis of community pharmacy regulatory audit (CPRA) reports to extract features that could lead to identification of deficiencies related to patient safety in community pharmacy practice, (2) development and validation of an updated CPRA tool, (3) identification of desirable improvements to the CPRA, and (4) interactive educational discussions with the pharmacists. These steps were carried out using case studies.

RESULTS AND DISCUSSION

A total of 512 CPRA reports were analysed. The developed tool was implemented during CPRAs in 85 pharmacies. Seven case studies were identified and evaluated including four dispensing problems (errors, near misses, lack of proper prescription, unsupervised pharmacy staff), two inventory deficiencies (expired items, inappropriate storage temperature) and one equity of treatment between private and government sponsored patients. Concordance through interactive educational discussions was reached with the pharmacist and 46 corrective and preventive actions with a patient centred focus were taken to address the deficiencies.

CONCLUSIONS

Interactive evaluation helps towards promoting patient safety by identifying errors, near-misses, inappropriate prescriptions, unsupervised pharmacy staff, expired items, inappropriate storage of medicines and treatment inequity. The educational interaction evolved in instituting methods to prevent recurrence of these patient safety issues. These real case scenario case studies could be used as a tool to teach in pharmacy practice patient safety interventions.

IMPLEMENTING PROBLEM-BASED LEARNING INTO PHARMACOECONOMICS COURSE FOR 4TH YEAR PHARMACY STUDENTS

Skowron A¹, Polak W¹, Gołda A¹, Dymek J¹

1 Department of Social Pharmacy, Faculty of Pharmacy, Jagiellonian University Medical College, Kraków, Poland

INTRODUCTION

Problem-based learning (PBL) is one of the educational methods which focuses on the students as the managers of a learning process. The starting point is a problem or a scenario presented in a context that reflects future professional environment and stimulates the advancement of a specific knowledge and skills required by the curriculum. PBL enhances also interpersonal skills such as active listening, motivation, responsibility, teamwork, communication and conflict management.

The aim of this abstract is to present a process of implementing PBL method into a pharmacoeconomics course for undergraduate pharmacy students.

MATERIALS AND METHODS

Pharmacoeconomics course was intended for 4th year pharmacy students in the second term and consisted of 30 contact hours per student. Students were not familiar with PBL as it was the first course using this method. 7 steps process was proposed to the students: 1) identifying the problem; 2) exploring pre-existed knowledge; 3) brainstorming; 4) brainstorming summary; 5) identifying learning issues; 6) self-study / individual learning; 7) sharing knowledge with other members of the group and discussion. The online forums for each group on the official university e-learning platform (pegaz.uj.edu.pl) were created to enhance communication between sessions among group members. Individual contribution of the student (regarding to the performed role: a member, a secretary or a leader), quality of shared knowledge and illustrative materials were assessed by the tutor during each session by the standardised questionnaire and were marked for continuous evaluation based on a weighted average of grades for above-mentioned components. Final mark was calculated as an average of grade for continuous evaluation and a grade for the final test.

RESULTS AND DISCUSSION

There were 3 scenarios developed to cover all of expected learning outcomes. Each scenario was discussed by the students during 3 following sessions. Scenarios were based on the potential fields of professional activity of a pharmacist and included slight hints to guide students through the case and stimulate achievement of the learning outcomes.

Students had classes 2 times a week, each session lasted maximum of 135 minutes, however it was a leader who decided about the end time of the session. Groups had 11–13 students each. Each PBL session should have consisted of 7 steps and was directed by a leader assisted by a secretary. A leader and a secretary were volunteers from the group and changed in every session. The role of a tutor was limited to the facilitating of the small group discussions whenever necessary.

CONCLUSIONS

According to the tutors, PBL seems to be an appropriate method for 4th year pharmacy students for pharmacoeconomics course. Students were able to find reliable information and share their knowledge with other group members. Nevertheless, some uncertainty was observed among students as this was the first time they worked with this method.

A STUDENT-ENGAGING APPROACH TO TEACHING PHARMACEUTICAL TERMINOLOGY TO PHARMACEUTICAL TECHNOLOGY STUDENTS

Grech L¹, Azzopardi LM¹

¹ *Department of Pharmacy, University of Malta, Malta*

INTRODUCTION

The pharmaceutical technology course is a first cycle Bachelor programme that provides scientific, evidence-based knowledge and skills required during the processes of medication development, assessment, distribution, compounding and dispensing. Following completion of the course, pharmaceutical technologists can work within industry, hospital, community and regulatory settings taking up roles related to pharmaceutical processes. Within the course, one aim is to establish pharmaceutical literacy amongst the candidates so that they are able to follow drug datasheets and are familiar with terminology employed in the classification and regulation of medicinal products.

METHOD

A series of 10 lectures with a duration of two hours are allocated for teaching pharmaceutical terminology. The topics cover a basic introduction to terminology with attention to word building, routes of administration, drug formulations, regulatory aspects focusing on clinical trials, marketing authorisations and competent authorities, reference resources and product literature, pharmacovigilance and medication errors, point of care testing and laboratory investigations. The delivery method and presentation of the material is through a student engaging approach.

RESULTS

In order to achieve a student-engaging approach, current articles in journals in relation to topics to be discussed during the lectures were uploaded on the students' virtual learning environment platform prior to the lecture. Each lecture consisted of material delivered using practical hands on examples and photos in relation to equipment and time for group discussion and student reflection from the papers. A session to review a clinical trial pharmacy file was scheduled. An interactive quiz was held at the end of each lecture.

CONCLUSIONS

The redesigned module is more student engaging and interactive than having the set of lectures delivered only. Whilst gathering the required knowledge, students are also encouraged to develop soft skills such as communication, discussion and working in groups. These are skills which are required during their professional career.

EVALUATION OF USING CASE STUDIES TO MOBILISE KNOWLEDGE ABOUT TOXICOLOGY

Vella Sziji J, Serracino-Inglott A, Azzopardi LM

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Msida, Malta

INTRODUCTION

Students reading for a pharmacy degree follow a study unit in Pharmaceutical Analysis (4 ECTS) which includes a focus on toxicology. The study unit is offered in the third year of studies and consists of 15 hours of lectures and tutorials related to toxicology and 15 hours of lectures and tutorials related to pharmaceutical analysis and bioanalysis. Subjects covered during the toxicology lectures include measurement of toxicity, treatment following poisoning, drugs of abuse and drug testing. At the end of the lectures, six case studies are discussed with students, to support students to apply knowledge gained during the lectures to practical scenarios. The aim of the study was to evaluate student perception of the toxicology case studies.

MATERIALS AND METHODS

A questionnaire was distributed to all third year students following the toxicology module. Students were asked to rate on a 5-point Likert scale from 'strongly agree' to 'strongly disagree' if the case studies presented were clear, whether discussion and working out of case studies was of help in strengthening and applying the knowledge gained from the toxicology lectures. Students were also asked whether they would recommend the use of the case studies as a learning aid if given a choice and whether they would recommend the use of similar case studies as a learning aid for chapters of this credit which are related to pharmaceutical analysis and bioanalysis.

RESULTS AND DISCUSSION

All third year students (20 female, 6 male; age range 20–25 years) completed the evaluation. Twenty students strongly agreed and 6 students agreed that the case studies presented were clear and 22 students strongly agreed and 4 students agreed that discussion and working out of case studies was of help in strengthening and applying the knowledge gained from the toxicology lectures. Twenty students strongly agreed and 6 students agreed that the case studies helped to apply knowledge gained during lectures in real life scenarios. Twenty five students strongly agreed and 1 student agreed that they would recommend the use of these case studies as a learning aid if given a choice and 24 students strongly agreed and 2 students agreed that they would recommend the use of similar case studies as a learning aid for other chapters of this credit.

CONCLUSIONS

The toxicology case studies were evaluated positively by students. Case studies for the other chapters of this study unit related to pharmaceutical analysis and bioanalysis will be discussed in the future.

STUDENTS' PERCEPTION OF RISK IN PHARMACEUTICAL PROCESSES

Attard Pizzuto M, Serracino-Inglott A, Azzopardi LM.

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Msida, Malta

INTRODUCTION

Pharmaceutical processes are incorporating aspects which consider risk assessment and risk mitigation. An understanding of the perception of risk by pharmacy students contributes to the development of activities in curricula that provide skills and competences to pharmacy graduates that make them prepared to contribute to risk analysis and handling in pharmaceutical processes. The aim of this study was to evaluate the perception of risk in pharmacy amongst pharmacy students.

MATERIALS AND METHODS

Two two-hour tutorials about risk in pharmaceutical processes were given to final year pharmacy students, enrolled in the Master of Pharmacy programme. Before the initiation of the first tutorial, students were asked to describe their perception of the term 'risk in pharmacy'. Students were provided with a documentation sheet listing various pharmaceutical scenarios and were asked to rate the level of their perceived risk in each case on a 5-point Likert scale, ranging from 1 'Most risky' to 5 'Not risky at all'. After the end of the second tutorial, students were asked whether their perception of impact of risk in different pharmaceutical processes changed after having been exposed to the subject.

RESULTS AND DISCUSSION

Twenty-three students out of the 25 enrolled in the programme during the academic year 2018–2019 participated in the first tutorial, of which 17 students participated in the second tutorial. When asked about the perception of the term 'risk in pharmacy', 14 students claimed that risk in pharmacy can be exemplified by the occurrence of a dispensing error due to the dispensing process being fast, due to look alike sound-alike drugs or due to similarly-packed medicines being stored next to each other. Dispensing the wrong drug because the prescription is illegible was the pharmaceutical scenario associated with most risk having achieved a rating of '1' from 20 students. Knowledge, after the second tutorial, increased with respect to the understanding of risk in pharmacy and perception of the impact of risk in pharmaceutical processes. The interest to read more about risk in pharmacy also increased after the second tutorial.

CONCLUSIONS

Inferences derived from this study show a positive measurable outcome on students' understanding of risk in different pharmaceutical processes following these tutorials.

AFFECTIVE LEARNING IN A SERIOUS PHARMACY GAME

Hope DL¹, Rogers GD², Grant GD¹, King MA¹

¹ School of Pharmacy and Pharmacology, Quality Use of Medicines Network and Menzies Health Institute Queensland, Griffith University, Gold Coast, Australia

² School of Medicine and Griffith Health Institute for the Development of Education and Scholarship (Health IDEAS), Griffith University, Gold Coast, Australia

INTRODUCTION

Health professional students, including pharmacy students, are expected to acquire strong professional values, adopt a personal practice philosophy and develop self-directed and lifelong learning habits [1, 2]. Internalisation of attitudes, behaviours and values are characteristics of the affective learning domain, recognised as a major learning domain in Bloom's Taxonomy, alongside cognitive and psychomotor [3]. Krathwohl *et al* (1964) proposed hierarchical levels within the affective domain, defined as: 1. *receiving*, in which students passively attend to stimuli; 2. *responding*, in which students willingly respond to stimuli on request; 3. *valuing*, in which students see value and seek out ways to respond; 4. *conceptualisation*, in which students organise the values into systems and the value complex into a whole; and 5. *characterisation*, wherein students internalise and fully integrate the affective learning into their world view [4]. Previous Australian research on senior medical students identified that an extended, immersive simulation enhanced affective learning [2]. Gamified simulation has also been identified as one potential way to teach in the affective domain [5]. Senior Bachelor of Pharmacy students participated in an extended, immersive gamified simulation, conducted as a capstone activity in the final semester of undergraduate study. The serious game was designed to enhance students' professional confidence and competencies. The aim of this study was to assess the affective learning of senior pharmacy students during participation in the serious game.

MATERIALS AND METHODS

All senior pharmacy students in the final semester of a Bachelor of Pharmacy undergraduate program were invited to participate in the research during immersion in the 3-week serious game during August and September 2016. Students completed reflective journals at the close of daily activities across 12 days of the simulation and research participation involved granting researchers access to the journal entries. Two external trained markers assessed the journals for affective learning and rated them using the numerical Griffith University Affective Learning Scale (GUALS), from 1 'no evidence of affective learning' to 7 'characterisation' (see Table 1). The scale was derived from Krathwohl's original hierarchy and has previously been validated [6]. Descriptive statistics were generated using Microsoft Excel and paired sample t-tests were conducted using SPSS 25. Mean GUALS scores were analysed for change in affective learning over time during the serious game and were organised into groups representing the three consecutive weeks of the game. Institutional ethical clearance was obtained (GU Ref No: 2016/594).

RESULTS AND DISCUSSION

All of the 27 senior pharmacy students (19 female and 8 male) consented to participate in the research. They completed daily reflective journals for 12 days of the serious game; generating 322 journal entries for analysis. All journals provided some evidence of affective learning with the majority being assessed at the 'organisation' and 'valuing' levels (Table 1).

Table 1: Definition and Counts for GUALS Scores Levels of Affective Learning

GUALS Score	Definition	Female n=226	Male n=96	All n=322
1	No evidence of affective learning	0 (0.0%)	0 (0.0%)	0 (0.0%)
2	Receiving	14 (6.2%)	4 (4.2%)	18 (5.6%)
3	Responding	29 (12.8%)	8 (8.3%)	37 (11.5%)
4	Valuing	66 (29.2%)	25 (26.0%)	91 (28.3%)
5	Organisation	79 (35.0%)	42 (43.8%)	121 (37.6%)
6	Organisation to Characterisation	35 (15.5%)	16 (16.7%)	51 (15.8%)
7	Characterisation	3 (1.3%)	1 (1.0%)	4 (1.2%)

All combined students' affective learning significantly increased from the first week to the last (Figure 1). This was replicated in female students. While male students increased their GUALS scores over time, their improvement was not statistically significant, possibly due to lower numbers. Improvement from the second to third week of the game was slight and not statistically significant for all participants.

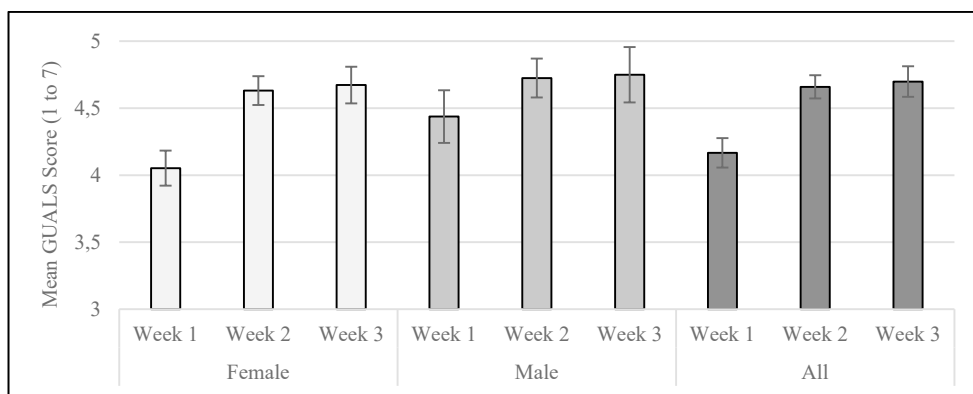


Figure 1: Mean GUALS Scores +95% Confidence Intervals by Week of Serious Game

CONCLUSIONS

An extended serious game enhanced senior pharmacy students affective learning. The duration of an extended gamified simulation may influence the degree of students' affective learning.

REFERENCES

1. Brown, D.L., et al., *Self-directed professional development: the pursuit of affective learning*. American Journal of Pharmaceutical Education, 2001. **65**(3): p. 240.
2. Rogers, G.D., A. Mey, and P.C. Chan, *Development of a phenomenologically derived method to assess affective learning in student journals following impactive educational experiences*. Medical Teacher, 2017. **39**(12): p. 1250–1260.
3. Bloom, B.S., et al., *Taxonomy of Educational Objectives, Handbook I: The cognitive domain*. Vol. 19. 1956: New York: David McKay Co Inc.
4. Krathwohl, D.R., B.S. Bloom, and B.B. Masia, *Taxonomy of Educational Objectives, Handbook II: The affective domain*. New York: David McKay Company. 1964, New York: David McKay Co., Inc.
5. Schoenly, L., *Teaching in the affective domain*. Journal of Continuing Education in Nursing, 1994. **25**(5): p. 209–212.
6. Rogers, G.D., et al., *Development and validation of the Griffith University Affective Learning Scale (GUALS): A tool for assessing affective learning in health professional students' reflective journals*. MedEdPublish, 2018: p. 1–8.

PHARMACEUTICAL CARE FOR CHILDREN – COMPARISON OF THE EDUCATIONAL APPROACH BETWEEN BULGARIA AND SERBIA

Petkova V¹, Cvijić S², Parojčić J², Dimitrov M¹

¹*Faculty of Pharmacy, Medical University – Sofia, Bulgaria*

²*Faculty of Pharmacy, University of Belgrade, Serbia*

INTRODUCTION

Global paradigm shift in pharmacy practice from product oriented towards patient centred collaborative healthcare has brought additional responsibility for higher education institutions to revise respective curricula, effectively respond to different learning needs and meet the expectations related to the changing professional roles and competencies of future pharmacies. In our countries, these demands have overlapped with political changes and challenges associated with pharmaceutical sector privatization. Being an EU member state, Bulgaria is obliged to adopt the legislation which is compliant with relevant EU directives. Consequently, Bulgarian Law on the medicinal products in human medicine is harmonized with EU legislation. On the other side, Serbia was granted the EU candidate status in 2012, and struggles to develop health system and relevant legislation in line with the current EU practice and policy. These circumstances, together with the expansion of knowledge base related to new drugs discovery, novel manufacturing and analytical techniques constantly challenge us to reconsider our roles as pharmacists in the healthcare system. One of the most prominent contemporary challenges, is a demand for the implementation of the concept “Pharmaceutical care” as a factual part of the contemporary pharmacy practice. The Faculty of Pharmacy, Medical University–Sofia initiated the “Pharmaceutical Care Program” within the pharmacy education in 2000. Similar activities have been initiated in Serbia, as well, leading to introduction of pharmaceutical care as a concept which is addressed in several undergraduate courses, as well as the one-year (60 ECTS) postgraduate specialization program for practicing pharmacists.

It should be noted that the term Pharmaceutical care, and what it means, as well as how and in which settings it should be provided, has sparked an enormous amount of debate around the world (1). Since being defined in the 80-s of the 20th century, it has taken a variety of meanings to researchers and practitioners. Strand and Cippole stated that it is obvious why so many pharmacists have been attached to the idea of pharmaceutical care, “because pharmacists feel free to use the term to mean whatever they want it to”(2). Hepler supported that idea, saying that “some people seem to attach meanings to the idea (pharmaceutical care) that are not there”.(3)

Another important element of the healthcare, connected with the pharmacist proficiency is the proper paediatric treatment. This conception means safe, effective and individualized drug therapy for the children. According to Ph. Care creators, Hepler and Strand (4), pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient’s quality of life. These outcomes are cure of disease, elimination or reduction of a patient’s symptomatology, arresting or slowing of a disease process, or preventing a disease or symptomatology. (4). Pharmaceutical care for children embraces a cooperation of a pharmacist both with the child and his parents and with the doctor in order to make a healing plan, to implement it and to monitor the therapy, thus rebounding to patient’s advantage.

There are four criteria that have to be met before the pharmacist can provide pharmaceutical care: adequate knowledge and skills in pharmaceutics and clinical pharmacology; mobilization of the drug distribution through which drug-use decisions are implemented; communication with the patient and other health-care professionals and practical approach towards the patient’s needs (4).

MATERIALS AND METHODS

Systematic review of the contemporary curriculum in Pharmaceutical care at the Faculty of Pharmacy, Medical University – Sofia (FPS) and the related courses at the Faculty of Pharmacy, University of Belgrade (FPB) was conducted. The two curricula were compared and the educational concept of Pharmaceutical care for children was compared.

RESULTS AND DISCUSSION

Thirty-year period since 1989 witnessed numerous changes in pharmacy curricula aimed at harmonization with the EU and diploma recognition at both institutions. At the FPS, new course in Pharmaceutical care was introduced in 2000 as elective subject and two years later it was included in the compulsory curricula. One of the main chapters is dedicated to Pharmaceutical care for children as specific requirements for this particular patient population are assessed. Major curricular reform at the FPB has been performed in 2006 with the aim to reinforce educational outcomes related to clinical pharmacy, pharmacy practice and pharmaceutical care. Specific educational contents related to pharmaceutical care for children have been introduced in 2016 in the form of two elective subjects related to Paediatric pharmacotherapy and Dosage forms for paediatric population.

The initial experience at both institutions indicate that: (i) involvement of expert pharmacy practitioners in course development and delivery is beneficial; (ii) there is a need for continuing professional development courses and postgraduate specialisation course for paediatric pharmacists; (iii) interprofessional education approach would be advantageous, and (iv) there is a need for specific guidelines for pharmacy practitioners.

CONCLUSIONS

The conception “Pharmaceutical care” is a necessary approach that has to be implemented in the pharmaceutical practice. In order to train highly qualified pharmacists who can deal with different problems in the increasingly demanding pharmacy practice, particularly related to age specific drug delivery in children, relevant competency based outcomes and corresponding educational resources should be developed and included in the core pharmacy curriculum.

REFERENCES

1. Mason, P. Managing medicines thru’ pharmaceutical care. *Pharmaceutical Journal*. 2001:267:569–573.
2. Strand LM, Cipolle LM. Challenges for pharmaceutical care. *American Journal of Hospital Pharmacy*. 1993; 50:1618–21.
3. Hepler CD. Issues in implementing pharmaceutical care. *American Journal of Hospital Pharmacy*. 1993; 50:1635–9.
4. Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. *American Journal of Hospital Pharmacy*. 1990; 47:533–43

INTERDISCIPLINARY INTERGRATION OF CHEMISTRY KNOWLEDGE AS A FACTOR OF PROFESSIONAL COMPETENCE IN THE FUTURE MASTERS OF PHARMACY

Nizhenkovska I., Kuznetsova O., Narokha V.

Department of Pharmaceutical, Biological and Toxicological Chemistry, Bogomolets National Medical University, Kiev, Ukraine

INTRODUCTION

Training specialists who can consciously use the potential of fundamental disciplines for systematic professional solutions is one of the ways to improve pharmaceutical education in Ukraine. Interdisciplinary integration, a new didactic concept of a comprehensive educational process in colleges and universities, can help to achieve this goal. Interdisciplinary, integrated requirements for training results, focused on the use of links between the disciplines of humanitarian, socio-economic, natural, scientific and professional training, are the basis of the competence approach in higher education.

The leading principles for the implementation of an integrative approach in teaching chemistry disciplines are:

- the principle of interdisciplinary integration, which provides for a coordinated study of individual chemistry disciplines, when each discipline uses the knowledge of another discipline and prepares the students for successful mastering of the concepts of the next (consequent) discipline;
- the principle of unity of intra- and interdisciplinary integration of chemistry knowledge and methods of action, reflecting the obvious uniformity in the interpretation of the same chemistry concepts, laws, theories, etc. and the exclusion of their duplication during the study of various chemistry disciplines; systematization and generalization of the chemistry concepts;
- the principle of horizontal and vertical dynamics and coordination of students' cognitive activities, which determines the temporal coordination of individual educational chemistry disciplines, ensuring consistency and continuity of individual topics, when each discipline prepares the students for successful mastering of the concepts of the next (consequent) disciplines.

The purpose of this article is to analyze the theoretical basis for the integration in the process of training of pharmacists and possible introduction of integrated chemistry courses in the programs for the Masters of Pharmacy for the creation of their professional competencies.

MATERIALS AND METHODS

In order to accomplish these tasks, the curriculum for the training of specialists of the second (master) higher education level, Discipline 22 “Healthcare”, at higher educational institutions of the Ministry of Health of Ukraine for the specialty 226 “Pharmacy, Industrial Pharmacy”, qualification “Master of Pharmacy”, approved on July 26, 2016, and curricula of chemistry disciplines for the students of Faculty of Pharmacy of Bogomolets National Medical University were analyzed. Four groups (156 students) of the 3rd year students of the Faculty of Pharmacy were tested during their classes at the department of Pharmaceutical, Biological and Toxicological Chemistry of Bogomolets National Medical University. The study methods included 40 A-format tests from the database of the license examination “KROK 1. Pharmacy”. Students were given 40 minutes to complete the tests. Answers were evaluated according to the alternative form: “correct” or “incorrect” without calculating the percentage of errors. The subjects of the tests were related to the currently studied subjects of the disciplines.

RESULTS AND DISCUSSION

The analysis of the curricula for specialty “Pharmacy, Industrial Pharmacy” showed that, in Ukraine, chemistry disciplines constitute at least 68.0 % of medical and biological disciplines as part of the

natural science cycle. The students' knowledge generated by the cycle of chemistry disciplines shows complex subordination: in the 1st year students are study discipline “General and Inorganic Chemistry” (6 credits: 110 classroom hours and 70 independent learning hours); in the 2nd year – “Physical and Colloid Chemistry” (4 credits: 90 and 30 hours), “Analytical Chemistry” (8 credits: 150 and 90 hours) and “Organic Chemistry” (8 credits: 150 and 90 hours); in the 2nd and 3rd year – “Biological Chemistry” (6 credits: 100 and 80 hours); during 3rd, 4th and 5th years – “Pharmaceutical Chemistry” (13 credits: 250 and 140 hours); in the 4th year – “Forensic Chemistry and Toxicology” (4 credits: 90 and 30 hours). Therefore, the organization of the integrated teaching of chemistry disciplines as part of the natural science cycle – “General and Inorganic Chemistry”, “Analytical Chemistry”, “Organic Chemistry”, “Biological Chemistry”; disciplines as part of the professional science cycle – “Physical and Colloid Chemistry”, “Pharmaceutical Chemistry”, “Forensic Chemistry and Toxicology”; as well as selective disciplines – “Cosmetic Chemistry”, “Theoretical foundations of synthesis”, “Physical-chemical analysis in the Drug Discovery” may be an example of interdisciplinary integration in the training of pharmacists.

It is important to bear in mind that several chemistry disciplines, studied during different training courses, are involved in the formation of the same competence. Therefore, an interdisciplinary approach is implemented in inter-faculty student's scientific circles or seminars, which will allow to deepen and expand knowledge, skills and abilities in each subsequent discipline that forms this competence.

One of the factors of interdisciplinary integration are tests which, in their content, provide control of the basic knowledge obtained during the study of previous disciplines. The principle of “feedback”, as a rule, consists in evaluating “baseline knowledge”, which at best reflects residual knowledge in students. For example, the 3rd year students of the Faculty of Pharmacy were offered tests in “Organic Chemistry” (Semantic module 4: Carboxylic acids (Mono-, dicarboxylic acids). Carboxylic acid derivatives. Heterofunctional carboxylic acids. Carbonic acid derivatives. Sulfonic acid.), “Physical and Colloid Chemistry” (Semantic module 2: Kinetics of chemical reactions and catalysis. Semantic module 4: Dispersed systems and their properties. Semantic module 6: Physical chemistry of high molecular compounds) and “Analytical Chemistry” (Semantic module 3: Instrumental methods of analysis) during their classes in “Biological Chemistry” (Semantic module 2: Introduction to Biochemistry. Simple and complex proteins. Enzymes).

For the discipline of “Organic Chemistry”, the students were offered 10 tests. The average percentage of successfully completed tests was 70.0 %. The most correctly performed tests ranged from 100.0 % to 40.0 %. 31 students did not reach the threshold of 60.0 %, which constituted 19.9 %. For the “Physical and Colloid Chemistry” (10 tests): the average percentage of successfully completed tests was 40.0 %; most correctly performed tests ranged from 90.0 % to 20.0 %. 61 students (39.1 %) did not reach the threshold of 60.0 %. For the “Analytical Chemistry” (10 tests) the average percentage of successfully completed tests was 50.0 %. The most correctly performed tests ranged from 80.0 % to 40.0 %. 64 students (41.0 %) did not reach the threshold of 60.0 %. For the “Biological Chemistry” (10 tests): The average percentage of successfully completed tests was 80.0 %. The most correctly performed tests ranged from 100.0 % to 60.0 %. 36 students (23.1 %) did not reach the threshold of 60.0 %.

CONCLUSIONS

Therefore, the results of the study are not unambiguous or definitive. Organization of the educational process requires further improvements in the content and structure of the educational materials of the chemistry disciplines included in the natural science and professional cycle, cooperation of the professors of different academic disciplines and the formation of chemistry knowledge and skills as a uniform and monolithic foundation of future professional and patient-oriented competencies in future pharmacists.

PATIENT ORIENTED COMPETENCIES AND LEVELS IN TURKISH NATIONAL PHARMACY CORE CURRICULUM

Gökbulut A¹, Özçelikay G²

¹ Department of Pharmacognosy, Ankara University Faculty of Pharmacy, Turkey

² Department of Pharmacy Management, Ankara University Faculty of Pharmacy, Turkey

INTRODUCTION

Core curriculum (EczÇEP-2015) is the main program that manifests the fundamentals and draws out the framework of pre-graduate pharmacy education which should be implemented in our country. The two main basis of EczÇEP-2015 which present the pre-graduate pharmacy education are programme social competencies and pharmacy technical competencies. The social competencies (pharmacy qualifications) are defined as the attitudes and characteristics of the pharmacist to be acquired by the faculty. These features are based on the basic study fields of the pharmacy profession and by examining the standard examples of the World. Pharmacy technical competencies are the skills that an individual should have in relation to his/her profession. In other words, these features show a person which level of tasks he/she can perform when he/she graduates. In this study, in particular, the qualifications required for the pharmacy and the clinical pharmacists will be determined in Turkish National Pharmacy Core Curriculum.

MATERIALS AND METHODS

The material of this study will be the National Pharmacy Core Curriculum adopted by the Council of Higher Education on 25.12.2015. In this program, patient-oriented competencies will be discussed and compared with overseas samples.

RESULTS AND DISCUSSION

Pharmacy technical competencies have been studied in six key areas:

- Pharmacy practice
- Symptoms and clinical conditions
- Judicial and psychosocial conditions
- Personal health status
- Public health and related conditions
- Environmental (physical and socio-cultural) and global situations

There are 169 competencies under the heading of pharmaceutical practices related to above mentioned areas. Four levels set for these competencies.

- Have knowledge about how to do the application and do routing.
- Perform an application stand-alone by using resources/guidelines or help.
- Do without help in general applications.
- Do stand-alone in complex situations. The level codes are different for the other competencies.

Synthesis and production of drugs, finished product analysis, preparation, presentation to the patient and rationalist use of the patient's medication are the factors that directly affect human health. When the national core curriculum of Turkish pharmacy is examined, it is understood that all competencies are patient-oriented, but in this study we especially focused on the competencies and their levels that are prepared according to the skills and behaviours which the pharmacist should have when faced with the patient.

According to the outcomes of the study, 76 of the 169 pharmacy practices competencies include behaviours expected to occur when the pharmacist is confronted with the patient. 5 of these

behaviours were specified as level 1, 36 of them were at level 2, 17 of them were at level 3 and 18 of them were at level 4.

CONCLUSIONS

In this study, the competencies required for the pharmacists who are in contact with patients are determined and discussed in Turkish National Pharmacy Core Curriculum

FIP RENAISSANCE

Altieri RJ¹ and Azzopardi LM²

¹University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences USA and FIP

²University of Malta Department of Pharmacy Malta and FIP

INTRODUCTION

The new leadership of the International Pharmaceutical Federation (FIP), CEO Catherine Duggan, and President Dominique Jordan, have laid out a new Vision, Mission, Strategic Outcomes and Global Development Goals for FIP, all designed to make FIP a more outward looking, partnership oriented and global leader and influencer in advancing pharmacy on the global health stage.

The following vision and mission have been adopted by the FIP Council, since Glasgow in 2018,

Vision: A world where everyone benefits from access to safe, effective, quality and affordable medicines and pharmaceutical care.

Mission: FIP improves global health by supporting the advancement of pharmaceutical practice, sciences and education.

The draft Strategic Outcomes are:

1. Everyone has access to the medicines they need
2. Everyone has access to the health and medicines-related information they need
3. Everyone benefits from new medicines, services and health technologies
4. Pharmacists ensure the responsible and quality use of medicines
5. Healthcare professionals and patients work together to ensure comprehensive healthcare for all
6. FIP is a vibrant and growing organisation that meets the needs and functions of its members

What FIP means for pharmacy education, practice and science

Initiatives are geared towards developing and sustaining a competent, capable workforce to meet societal needs and advance pharmacy education, practice and science to achieve FIP strategic outcomes.

Advancing pharmacy education worldwide to meet practice and science goals were guided by the Nanjing Statements and Pharmaceutical Workforce Development Goals (PWDGs) and aligned with UN Sustainable Development Goals and WHO Health Workforce Goals 2030.

In order to provide a cohesive direction, align activities with the strategic outcomes, we are proposing a set of FIP Global Development Goals.

In a Practice context, these will build on the pharmacy education model, and take the Hospital Pharmacy Baseline Statements, Community Pharmacy Services vision, build a Primary health care pharmacy strategy and initiative focusing on pharmacy contribution to prevention, wellness, self-care and treatment. They will provide focus on non-communicable diseases and the use of

advanced technologies to improve healthcare and health. The practice development goals will align the strategic outcomes FIP strives for and aligns with WHO goals.

To provide a renewed focus on pharmaceutical sciences and ensure we have a cross FIP approach, the Science and Innovation Development Goals will build on the pharmacy education model again and align science focused activities and direction to achieve the FIP strategy. These will be based on pharmaceutical sciences education and research that underpins the emerging world of pharmacy practice, evidence-based practice, intelligence-based practice; new technologies that improve diagnosis, innovations in medicines and enable health care services, delivery and improved outcomes. The FIP Pharmaceutical Sciences World Congresses; 2020 7th FIP PSWC Montreal Canada 22–27 May 2020 will provide a useful focus for these activities.

What FIP means for you as individuals and organisations

Partnerships and Collaboration

Global Organizations: WHO, UN, UNICEF, UNESCO, WHPA

FIP Member Organisations

FIP AIM

FIP Members

IPSF

Other health professions' global and regional organizations

Governmental agencies

Corporate partners

Global Outreach

Regional conferences to allow FIP to be of greater service and benefit to all regions of the world

First regional conference will occur in Jordan with others planned for other WHO world regions over the next two–three years

Global influence

Leadership in advancing pharmacy and health through development of toolkits, technical reports and resources, networking, leveraging partnerships

Partner in promoting gender equity in all workforce categories

FIP Atlas Project

An ambitious data collection project linked with the Global Pharmacy Observatory – a comprehensive study of global pharmacy workforce. The FIP Atlas will capture workforce, education, science, service, health, practice and innovation needs globally. FIP will collaborate with member organisations, academic institutions, governmental agencies, regulators and others to compile essential data to inform us and guide us in meeting FIP strategic outcomes and improving health worldwide.

AIM Global Academic Leaders Forum

The AIM Deans Forum has been expanded to include academic leaders in addition to deans, such as vice deans associate/assistant deans, department chairs and similar level leaders. The Global Academic Leaders Forum (GALF) will now be incorporated into the FIP Congress programme and will be held on Monday afternoon 23 September and all day Tuesday 24 September at the FIP 2019 Abu Dhabi Congress.

The Monday programme is focused on “Science infused into the curriculum: Breaking down the silos” with presentations and case studies. Day two programming consists of a half day on

“Entrepreneurship: Principles and examples of successful development” that addresses entrepreneurship in the pharmaceutical sciences, building relationships with leading universities worldwide, development of transnational education programmes and entrepreneurship education for students. The afternoon of day two is devoted to “Solving common challenges through networking” including roundtables on faculty development and succession planning, balancing teaching, research and administration duties and promoting the profession to future students.

The AIM also has an Advisory Committee that advises the AIM chair and helps to organize programming for future AIM GALFs based on feedback from prior years’ participants. The Advisory Committee consists of two AIM member leaders from each of the six WHO regions. An election for all 12 Advisory Committee seats and AIM chair will occur at the AIM GALF in 2019 in Abu Dhabi. To apply for one of these positions, submit your CV, motivation letter and a recent photograph to aim@fip.org prior no later than 1 July 2019.

Summary

FIP is renewing its commitment to become an outward facing organisation that supports, promotes and improves healthcare through partnerships, collaboration, resource generation and support for the advancement of pharmacy education, practice and science.

FIP ACADEMIC INSTITUTIONAL MEMBERSHIP – TEN YEAR ANNIVERSARY AND NEW DIRECTIONS

Azzopardi LM¹ and Altiere RJ²

¹University of Malta Department of Pharmacy Malta and FIP

²University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences USA and FIP

INTRODUCTION

Ten years ago, FIP established the Academic Institutional Membership (AIM) as a third category of membership in FIP in addition to Member Organizations and individual members. Over the ten years, AIM has grown to more than 150 schools from over 50 countries. AIM was created to provide a forum for academic institutions and their leadership to network with other global pharmacy academic thought leaders, to share opportunities, challenges and best practices and to learn from experts about topics relevant to academic leadership. An annual Deans' Forum, held for the one and a half days prior to the start of the annual FIP World Congress, provided opportunities for academic deans to receive all of these benefits through presentations, workshop activities and personal networking. A reflective exercise and evaluation of the 2018 AIM Deans Forum in Glasgow, Scotland was undertaken to gauge participants feedback and needs.

MATERIALS AND METHODS

The 2018 AIM Deans Forum was attended by 84 AIM leaders representing more than half of all AIM institutions. Day 1 of the Forum was devoted to strategic thinking and planning, a vital responsibility common to all academic deans. Presentations were delivered on “Developing strategic perspectives for the school” and “Strategic planning for the future” with workshops on organizational change and strategic planning and change management. The second day was devoted to another key aspect of leadership, namely conflict management theory and practice with case studies.

RESULTS

The programme was received very positively by attendees who were asked to evaluate the programming sessions and presenters. There was a 98% overall satisfaction with the programme and all presenters received high marks. Participants particularly enjoyed the interactive workshops. All those who evaluated the forum indicated that what they learned was useful in their roles as academic leaders, supporting the overall goals of AIM to provide valuable and beneficial information and tools for academic leaders to use at their home institutions.

CONCLUSION

Following the positive analysis, for 2019, two major changes have occurred within AIM and the Deans' Forum. First, the forum has been expanded to involve academic leaders in addition to the dean to include vice deans, associate/assistant deans, department chairs and similar level academic leaders. All are invited to attend what is now known as the Global Academic Leaders Forum (GALF). The GALF also is now embedded into the FIP World Congress programme so as to have the Forum integrated in the programme rather than as a stand-alone session and encourage academic leaders to participate in the full FIP World Congress.

Cooperation for a better education

INNOCAMPUS EXPLORA: MULTIDISCIPLINARITY IN SCIENCE

José Moros Gregorio ^{e1}, Cristina Torres Piedras ^{e2}, Laura Villaoslada Román ^{e2}, Noelia Joya Carrasco ^{e3}, Lluís Pascual Masía ^{e4}, Rebeca Vicent Romero ^{e5}, Luís Francisco Pascual ^{p5}, Teresa M Garrigues ^{p4}, Carmen Martínez Tomás ^{p5}, Carlos Zapata Rodríguez ^{p5}, Rosa Donat Beneito ^{p6}, Ana Corberán Vallet ^{p6}, M. Luisa Cervera Sanz ^{p1}, Rafael Ibáñez Puchades ^{p1}, Juan Bautista Ejea Martí ^{pc2}, Javier Pereda Cervera ^{pc4}.

^eStudent. ^pTeacher. ^cCoordinator. ¹Facultad de Química. ²Escola Tècnica Superior d'Enginyeria (ETSE-UV). ³Facultad de Ciencias Biológicas. ⁴Facultad de Farmacia. ⁵Facultad de Física. ⁶Facultad de Matemáticas. E-mail innocampus@uv.es.

INTRODUCTION

Innocampus Explora is an educational project born to promote the knowledge of science from a multidisciplinary point of view. Led by the Faculty of Pharmacy for 3 years, this project connects the different degrees taught at Burjassot-Paterna Campus of the Universitat de València supporting activities in which the interdisciplinary nature of science is revealed.

Our workgroup comprises teachers and student's representatives of the Faculties from Burjassot-Paterna Campus, which are Biology, Engineering, Chemistry, Physics, Maths and Pharmacy. The strength of the project relies on the collaboration between teachers and students of different degrees and a huge community that may participate or attend to our activities since we embrace more than 5000 people in our Campus.

Objectives:

The main objective of the project is to design and create activities to promote multidisciplinary knowledge in science. We think that scientific professionals coming from different specialties should collaborate to achieve excellence in today's society. The specific objectives are:

- Demonstrate the existing relationship between different scientific degrees.
- Show the necessary interdisciplinary relationship to develop scientific knowledge (teamwork).
- Show the usefulness of the skills and knowledge acquired in a specific degree for the real world and the necessary interaction between other degrees to achieve excellence.
- Disseminate concrete scientific knowledge from a multidisciplinary perspective.
- Serve as a platform for student's initiatives that promote team work.
- Work with a multidisciplinary team of students and teachers, breaking the barrier of the established role.

MATERIALS AND METHODS**Composition of the work team**

The team is form by at least two teachers and two students coming from all of our six faculties or schools of *Campus Burjassot Paterna*. This particular composition is very important to reach our objectives. At the beginning of the academic course, we choose new

members by a standardized call. Next, we perform several meetings to design and organize the activities to be carried out during the year. Students of the organizing committee received 1.5 generic ECTS and a certificate of their participation.

Activities

Different activities were programmed. Most took the form of roundtables where either experts or students led the session. Besides, audiovisual material is prepared by the multidisciplinary team to promote our aims. Evaluation of the activities was accomplished by different surveys focused on teacher and student satisfaction. Only results from the last three years of Innocampus Explora are reported here (excluding current period).

Funding

Innocampus explora is funded by *Servei de Formació Permanent i Innovació Educativa (SFPIE)* of University of Valencia and by participating centers from *Campus Burjassot Paterna*.

RESULTS AND DISCUSSION

2015–2016 course

This was the first year of Innocampus Explora. We organized a roundtable led by teachers was performed entitled: “Nanoscience and nanotechnology” and we had big success in terms of attendance (more than 200 students). The website was designed, and all social networks were launched.

2016–2017 course

First, a roundtable entitled: “The earth, beyond the earth” was performed by our students. Next, another roundtable entitled: “Beer and science” was led by teachers and beer cellars. In addition, a competition was carried out to award the best scientific picture showing interdisciplinarity in science. We also exhibited the pictures submitted in several places all around our *Campus*.

2017–2018 course

First, we completed a student’s roundtable entitled: “Are scientific the movies?” where extracts of movies were analysed. Then, we performed a teacher’s roundtable entitled “Science, with or against crime?” where the audience was able to interact using Kahoot! platform. A second edition of the competition was held, adding the video format.

Surveys of the activities and satisfaction of the work team were analysed, showing that the project reached its objectives and increased the knowledge of science and its interdisciplinarity features.

The result of this project has involved multiple multidisciplinary activities over three courses, achieving great coordination by all the centers of the Burjassot-Paterna Campus.

CONCLUSIONS

This project has enhanced multidisciplinary knowledge of science and transversal skills in student members of the project and in students who have participated in our activities. For Pharmacy students was an opportunity to demonstrate the strong scientific basis of their studies.

A NEW PAN-EUROPEAN INITIATIVE FOR THE DEVELOPMENT OF AN INTERPROFESSIONAL EDUCATIONAL PROGRAM ON AGE-SPECIFIC MEDICINES

Dimitrov M¹, Cvijijć S², Petkova V¹, D'Arcy D³, Parojić J², Breitkreutz J⁴

¹*Faculty of Pharmacy, Medical University Sofia, Bulgaria*

²*Faculty of Pharmacy, University of Belgrade, Serbia*

³*School of Pharmacy and Pharmaceutical Sciences, Trinity College Dublin, University of Dublin, Ireland*

⁴*Institute of Pharmaceutics and Biopharmaceutics, Heinrich-Heine-University Düsseldorf, Germany*

INTRODUCTION

Unmet patient needs related to the lack of appropriate age-specific medicines have been recognized as one of the health priority issues by the European Commission, as reflected in relevant documents such as the regulation on medicinal products for paediatric use [1] and the EMA geriatric medicines strategy [2]. Several initiatives, networks and groups have been established to assist in providing better medicines for age-specific populations: the European Paediatric Formulation Initiative (EuPFI), the Global Europe Initiative (GEI) group within the European Society of Geriatric Medicine (EuGMS), the Paediatric medicines Regulators' Network (PmRN) managed by the World Health Organization (WHO), the Global Research in Paediatrics – Network of Excellence (GRiP) funded by the EU, the European Network of Paediatric Research at the EMA (Enpr-EMA) with associated network members and the Geriatric Expert Group within the EMA; In addition, the European Committee on Pharmaceuticals and Pharmaceutical Care (CD-P-PH) and the European Pharmacopoeia Commission commenced preparation of the European Paediatric Formulary as a “user-friendly, science-based online tool providing access to a collection of child-appropriate formulations” [3]. In support of these ongoing EU initiatives, higher education and healthcare institutions around Europe should contribute by updating curricula, developing necessary educational resources and introducing relevant competencies into professional practice.

The aim of this presentation is to publicise the new pan-European initiative for the development of an interprofessional educational program on age-specific medicines, and propose a relevant Action plan.

OBJECTIVES

The main objectives of the proposed initiative are focused on:

- a) Development of an interprofessional educational program for healthcare professionals at undergraduate, postgraduate specialization, and continuous professional development level;
- b) Development of a joint e-portal providing an interactive learning environment for health sciences students and practitioners;
- c) Reinforcement of healthcare institutions as educational bases for the updated curricula delivery, and advanced interprofessional collaborative practice sites;
- d) Development of educational training programmes targetted at i) parents, and ii) school-age children to support and promote appropriate, safe and effective use of paediatric dosage forms and specific medical devices.

ACTION PLAN

It has been recognized that objectives of the proposed initiative are well aligned with the objectives of the Erasmus+ Programme Key Action 2: Cooperation for innovation and the exchange of good

practices: Knowledge Alliances. Accordingly, activities have been undertaken to form the Project Planning Committee, which will prepare a draft project proposal and distribute relevant information and invitations to potential consortium partner institutions. The project proposal will be presented and discussed at the EAFP Annual Conference in order to refine the initial ideas and identify prospective consortium partner institutions, followed by a situation analysis and collation of the necessary data for the project application. The proposed action plan is presented in Table 1.

Table 1. Project preparation action plan

Step	What	Who	When
1	Draft project proposal	Project Planning Committee	March, 2019
2	Establishment of project consortium	Project Planning Committee	April–October, 2019
3	Review and update of project proposal	Project Planning Committee	May, 2019
4	Situation analysis and data gathering	Project Planning Committee	May–October, 2019
5	Draft project application	Project Planning Committee	October–December, 2019
6	Project application review	Project Consortium	January–February, 2020
7	Project application submission	Project Consortium	February, 2020

CONCLUSION

It is expected that timely planning and mobilisation of relevant stakeholders will enable establishment of a competent consortium, which will demonstrate the necessary expertise and skills for project implementation following preparation of a comprehensive and successful project application. Thus the securing of an operational and financial framework will enable the realisation of the stated objectives, contributing to improved healthcare professionals’ education and ultimately to better health outcomes of vulnerable patient populations across Europe.

REFERENCES

1. Regulation (EC) No 1901/2006 of the European Parliament and of the Council of 12 December 2006 on medicinal products for paediatric use;
2. EMA geriatric medicines strategy. EMA/CHMP/137793/2011
3. EDQM European Paediatric Formulary (<https://paedform.edqm.eu/home>)

PROSPECTS FOR THE HARMONIZATION OF EDUCATIONAL PROGRAMS ON THE SPECIALTY “PHARMACY” WITH THE PARTNER UNIVERSITIES OF EUROPE

Ustenova GO, Turgumbayeva AA, Zhakipbekov KS

National medical university, School pharmacy, Almaty, Kazakhstan

INTRODUCTION

International cooperation is a powerful lever for the development of the world education system, it solves a number of urgent tasks to strengthen international solidarity and partnership in the field of higher education; contributes to the alignment of training levels of specialists from different countries; It is an important tool in ensuring the quality of education in accordance with international standards. The integration of the higher education system of Kazakhstan is one of the long-term strategic priorities at the world educational space of the republic. Analysis of the current situation allowed us to identify a number of conditions, the implementation of which will provide new opportunities for the promotion of Kazakhstan’s education in the international arena. A unified world educational space is being formed, which is expressed, above all, in the harmonization of educational standards and curricula of specialties of universities in different countries. Open educational space implies an increase in student mobility and cooperation between university teachers from different countries. Integration of the country's higher education system into the world educational space is one of the long-term strategic priorities of the republic.

Conducting a comparative analysis of educational programs of leading universities in various countries of the world, it was revealed that in many European and other countries cross-cutting bachelor + master programs are implemented with a training period of 4 to 5.5 years.

In connection with the introduction of the new state educational standard of 2018, the term of study in the bachelor degree in the specialty “Pharmacy” will be 4 years, in the specialized magistracy 1 year. We have 5 component, after 2 year study to Choice component: 1) Pharmacist – Manager; 2) Chemist toxicologist; 3) Pharmacist – Technologist; 4) Clinical-pharmacist; 5) Pharmacist – cosmetologist (in master degree).

EDUCATIONAL TRAJECTORY specialty – 5B110300 – “Pharmacy” (4-year study)

Distribution of loans at courses

Course	GE		BD		BD	Total
	RC	CS	RC	CS	RC	
1	47		4	9		60
2	4	5	32	19		60
3			6	11	43	60
4			14	17	29	60
Total	51	5	56	56	60+12 FSC	240

1 course – 60 credits (set of 2019–2020 school year)

General Education (GE) (RC) – 47 credits

Basic disciplines (BD) (UK) – 4 credits

Basic disciplines (BD) (CS) – 9 credits

The 1 course name of discipline: Modern history of Kazakhstan, Philosophy, Foreign language, Kazakh (Russian) language, Sociology and political science, Information communication technology, Psychology and Cultural Studies, Physical education, Botany, Educational practice: Field practice in botany, Physics, Latin language, Inorganic chemistry, Molecular biology with the basics of medical genetics

2 course – 60 credits (set of 2020–2021 school year)

General Education (GE) (CR) – 4 credits

General Education (GE) (UC) – 5 credits

Basic disciplines (BD) (UC) – 32 credits

Basic disciplines (BD) (CS) – 19 credits

The 2 course name of discipline: Organic chemistry, Analytical chemistry, Basics of pharmacognosy, General research methods and analysis of medicines, Organization of pharmaceutical activities, Medical and pharmaceutical commodity research, Technology of medicinal forms, Educational practice on the technology of dosage forms, Practice of organizing pharmaceutical activities, Human physiology, Human anatomy, Physical and colloidal chemistry, Ethical-deontological aspects in the field of drug circulation, Microbiology,

Educational program – “Pharmacist”

3 course – 60 credits (set of 2021–2022 academic year)

Basic disciplines (BD) (UC) – 6 credits

Major Disciplines (UC) – 43 credits

Basic disciplines (BD) (CS) – 11 credits

The 2 course name of discipline: Pharmacology, Industrial Drug Technology, Pharmacognosy, Pharmaceutical Chemistry, Management and Economics of Pharmacy, Modern information technology in pharmacy, Industrial Practice on Industrial Medicine Technology, Industrial Practice on Industrial Medicine Technology, Pharmacognosy Production Practice, Biological Chemistry, Pathological physiology, Statistical methods in pharmacy

Educational program – “Pharmacist”

4 course – 60 credits (set of 2022–2023 academic year)

Basic disciplines (BD) (UK) – 14 credits

Major Disciplines (UK) – 29 credits

Basic disciplines (BD) (CS) – 17 credits

The 4 course name of discipline: Toxicological chemistry, Pharmacotherapy, Industrial practice: Toxicological chemistry, Bases of management and marketing in Pharmacy, Biopharmacy, Pharmaceutical, Industrial practice of organization and management of Pharmacy biotechnology, Chemical-toxicological assessment of poisoning, Modern aspects of phytonearing, Drug standardization, Licensing of pharmaceutical production according to GxP

Master's curriculum (profile 1 year)

The 1 course name of discipline: Foreign language (professional), Management, Psychology and Choice component (Manager of Pharmaceutical Industry, Chemist technologist, Technology of prepared medicines, Biotechnologist).

Master's curriculum (profile 2 year)

The 2 course name of discipline: Industrial practice and Choice component (Manager of Pharmaceutical Industry, Chemist technologist, Technology of prepared medicines, Biotechnologist). Experimental research work of a student, including the implementation of a master's thesis. Final examination, Registration and defense of a master's thesis *

CONCLUSIONS

Concluding , the analysis allows us to conclude that the main difference between educational programs is the implementation of training in bachelor and master within one end-to-end program with the award of a master's degree in the specialty “Pharmacy”, and in the CIS countries only 5 years, in magistracy 1 or 2 years additional. The convergence of educational programs on the content of disciplines of leading universities of the university by more than 50% allows further development of joint educational programs for academic mobility of students, but the risks in this process may be a mismatch of levels of education in the preparation of individual curricula for students and insufficient financial support for academic mobility programs.

FACULTY OF PHARMACY ERASMUS MOBILITY (UNIVERSIDAD COMPLUTENSE DE MADRID) 2010–2018: DATA AND CONCLUSIONS

Gómez-Serranillos MP, Lozano R., Elorza B., Córdoba M., Escario J., Román J., Iglesias I.

Faculty of Pharmacy, Universidad Complutense de Madrid, 28040- Madrid, Spain

INTRODUCTION

The European Union Erasmus + Programme aims at contributing to the creation of an advanced society of knowledge, being its general objective to facilitate student exchange, cooperation and mobility among the different European educational programmes. The Erasmus Programme's main objective is the mobility of students and staff among European countries for the academic cooperation and official recognition by the sending university of the studies performed at the host institution abroad. The Complutense University of Madrid has Inter-Institutional agreements with 916 European Universities. Within the Erasmus + Programme, the Faculty of Pharmacy of the Universidad Complutense de Madrid offers 146 vacancies in 70 different Universities of 20 European countries.

On 30th May 2018, the Commission adopted its proposal for the next Erasmus programme, with a doubling of the budget to 30 billion euros for the period 2021–2027. On the success of Erasmus+, the next programme will provide learning and mobility opportunities to 12 million people, in comparison to 4 million people in the current programme. Its focus on “evolution, not revolution” will further promote activities which foster knowledge and awareness of the EU, opportunities in forward-looking knowledge fields and better outreach and inclusion of people with fewer opportunities. The international dimension of the programme will also be boosted [1,2].

MATERIALS AND METHODS

By gathering all available mobility data (including satisfaction and quality surveys fulfilled by students who took mobility programmes), we aim at performing research and analysis of the Erasmus mobility (Studies and Traineeship) of the Faculty of Pharmacy (UCM) students and staff during the period 2010–2018, taking into account the learning agreement (LA) characteristics as well as studying performance, motivation, expectation and satisfaction of the students who enjoyed the Erasmus mobility in such period.

RESULTS AND DISCUSSIONS

The academic offer is the main criteria used by students to select the mobility destination.

The Erasmus outgoing mobility has increased significantly in the Faculty of Pharmacy (UCM) while most students finalised their learning programmes satisfactorily. About 84% of all mobile students successfully completed all educational components of the curriculum. 56% modified their LA from the host institution.

A high percentage of students (79%) are satisfied with the learning and support received by the host institution.

CONCLUSIONS

We can determine that the overall satisfaction of students and staff is very high (in both Study and Traineeship programmes) whereas the objectives of European Commission for the Erasmus Mobility are thoroughly fulfilled. The outcome of our analysis of the gathered data is that the students benefit from the study and learning in other European countries from an educational, linguistic and cultural perspective. There is also a development and promotion of cooperation among Institutions with a resulting enrichment of the educational environment of the host institutions. The Erasmus +

Programme also contributes to the creation of a community of young and future good qualified professionals with international experience by facilitating the transfer of ECTS and academic recognition of stays abroad. Finally, the survey indicates that a high percentage of students are satisfied with the quality of teaching and learning.

REFERENCES

1. https://ec.europa.eu/programmes/erasmus-plus/node_es
2. [“Commission adopts proposal for the next Erasmus programme 2021–2027”](#). *European Commission*. 2018-05-30. Retrieved 8 December 2018. https://ec.europa.eu/programmes/erasmus-plus/news/commission-adopts-proposal-next-erasmus-programme-2021-2027_en

INTENSIVE INTERNATIONAL EXCHANGE EXPERIENCE FOR UNDERGRADUATE STUDENTS: CAREER PATHS FOR PHARMACISTS IN SPAIN AND BELGIUM.

Pérez-García C¹, Otero P¹, Cos P², Martinet W², Hurtado C¹, de Pascual-Teresa B¹

¹ *International Relations, Faculty of Pharmacy, Universidad San Pablo CEU, Madrid, Spain*

² *Department of Pharmaceutical Sciences, University of Antwerp, Antwerp, Belgium*

INTRODUCTION

The present activity arose as a result of the meeting between the [University CEU San Pablo](#) (Spain) and [University of Antwerp](#) (Belgium) at the last European Association of Faculties of Pharmacy Annual Conference (EAFF 2018). Both universities are involved in a strong internationalization process.

The knowledge of the students about the different career options in the field of pharmacy is usually poor. When they end their bachelor degree, they feel disoriented and have difficulties to decide the area where they would like to develop their professional career. On the other hand, nowadays, with globalization, there is an increasing demand of graduated people with an international experience. Therefore, with this background, the main aims of the activity we have planned are:

- 1) to offer a better knowledge of the different career paths to our students by visiting in Belgium and Spain the main institutions where our future pharmacists can practice their professions.
- 2) to explore new career options abroad, opening their minds to possible future jobs in other countries.
- 3) to increase the internationalization of our universities by creating new links with other universities and finding new partners for international exchange of students.
- 4) to encourage our students through this trip to participate in future international mobilities both at the undergraduate and graduate level.

MATERIALS AND METHODS

The present activity is based on a project of a trip addressed to undergraduate students of pharmacy from both universities. In the case of the University of Antwerp, this activity is part of an elective course entitled “Bachelor test: international internship” [1] and in the case of the University CEU San Pablo it is an extracurricular activity that is recognized with 3 ECTS. During both trips, the following visits are programmed: community pharmacies, pharmaceutical and biotechnological companies, hospitals, universities and research centres. During the visit to the university, undergraduate students from both universities will interact with each other by presenting posters on topics related to research lines of the universities. Apart from this interaction, selected PhD students will present their main lines of research.

RESULTS AND DISCUSSION

Both institutions have successfully organized a trip with their students to Spain and Belgium. Thus, a relatively high number of students have decided to participate in this proposal (70 students from Antwerp and 30 students from CEU San Pablo). This is the first time we organize an activity of this type and this initiative has been very well received by the whole university community.

CONCLUSIONS

With this type of activities students will get a wider knowledge of the different career paths for pharmacists in an international environment; and universities will broaden and strengthen their international connections. Meetings, such as the ones organized by the EAFP, play a key role to achieve these goals.

REFERENCES

1. Cos P, Martinet W. Organizing an international bachelor test as part of pharmacy training. EAFP Annual Conference, Parma, 2018

Software / Databases

EVALUATION OF A PEBBLEPAD™ DIGITISED RESOURCE IN UNDERGRADUATE PHARMACY PRACTICE WORKSHOPS

Hope DL¹, Campbell C²

¹ School of Pharmacy and Pharmacology, Quality Use of Medicines Network and Menzies Health Institute Queensland, Griffith University, Gold Coast, Australia

² Griffith Institute for Educational Research, Griffith University, Queensland, Australia

INTRODUCTION

The use of information technology in pharmacy, and more widely in healthcare, is an essential curricular element of undergraduate pharmacy education in Australia [1]. One approach of the digital strategy of the School of Pharmacy and Pharmacology, Griffith University, Australia, is to encourage digital literacy through that use and application of a range of technologies in teaching, learning and assessment. PebblePad™ is a personal learning environment, traditionally used for the development of ePortfolios [2], which was used as a platform for a digitised workbook in a foundational undergraduate pharmacy practice course. The workbook enabled students to complete set workshop tasks, including digital data base searches, use of evidence-based resources and foundational dispensing activities. One of the limitations of digitising dispensing for pharmacy students has been the ephemeral nature of generated dispensing labels for simulated patients and the difficulty of incorporating physical outputs, such as dispensing labels, into a traditional learning management system. This was addressed through students' use of PebblePocket™, the mobile application that allows the user to edit and save mobile assets on their device to link with PebblePad™. In this case, students could photograph their dispensing labels plus any cautionary and advisory labels, edit in PebblePocket™ and link to their digital workbook for future and perpetual access. The aim of this study was to evaluate pharmacy students' experience with the PebblePad™ platform.

MATERIALS AND METHODS

An electronic survey was developed which asked demographic questions and participants' agreement with a range of statements related to the use, usability, ways of using and reflection using PebblePad™ on 5-point Likert scales ('strongly disagree' to 'strongly agree'). Participants were asked to check off the ways in which they used PebblePad™ and the techniques they used to become familiar with PebblePad™. In 2018, second year students of a foundational pharmacy practice course were provided the link to the survey in Qualtrics, which was voluntarily and anonymously completed online. Descriptive statistics were generated by Qualtrics and analysed using Microsoft Excel. Institutional ethical clearance was obtained (GU Ref No: 2017/111).

RESULTS

Twenty of the 56 (36%) enrolled students completed the survey. The majority of participants (n=15, 75%) were female. Nine (45%) were aged less than 20 years, 8 (40%) were 21–24 years and 3 (15%) were 25–29 years. The most common reasons reported for using PebblePad™ were to complete required workbooks (n=17, 85%); to track learning throughout the program (n=10, 50%); to reflect on learning (n=9, 45%); and to maintain all course work in one place (n=8, 40%). The techniques used by participants to become familiar with PebblePad™ are summarised in Figure 1. The dominant technique reported was in person guidance from the course convenor (n=10, 50%) and the second most reported technique was working it out by oneself, with no support used (n=8, 40%).

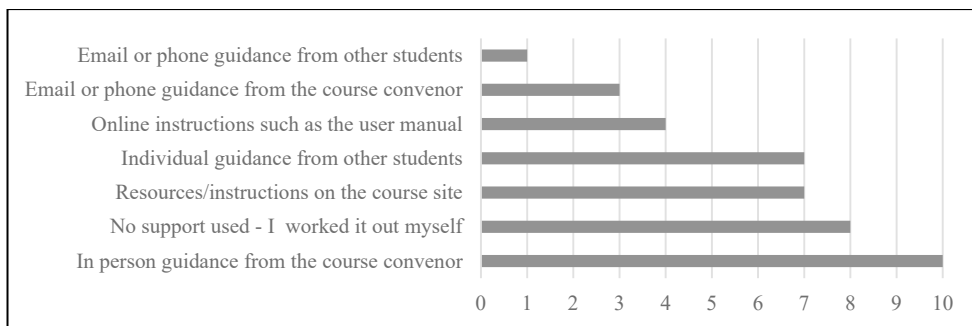


Figure 1: Techniques Used to Become Familiar with PebblePad™

The majority of Likert scale means were greater than 3.00 (neutral), demonstrating positive agreement for statements on the use, usability, ways of using and reflection using PebblePad™. The most agreed upon statements reflected the support provided by teaching staff, the ease of use of the platform and students' confidence using digital technologies. Only three of 25 statements had Likert scale means of 3.00 or less, demonstrating disagreement, and those statements related to barriers to use. Participants' disagreement therefore suggested positive support for the PebblePad™ platform (Table 1).

Table 1: Likert Scale Means for Most Agreed and Most Disagreed Statements on PebblePad™

Statements with most Agreement (Likert Scale Mean ≥ 4.30)	Likert Scale Mean
I had sufficient support from teaching staff.	4.56
I am comfortable using online technologies for educational purposes.	4.50
The template (workbook) design is easy to navigate.	4.50
The template (workbook) design has a logical structure.	4.50
Overall, I found PebblePad easy to use.	4.42
I understand the relevance of using PebblePad to support my learning.	4.32
I feel confident when I have to use new online technologies for education.	4.30
Statements with most Disagreement (Likert Scale Mean ≤ 3.00)	
I experienced technical issues using PebblePad.	3.00
I feel technological skills are a barrier to using PebblePad.	2.94
I would prefer not to have to use PebblePad.	2.37

CONCLUSIONS

While PebblePad™ is well recognised as a suitable platform for ePortfolios, this study demonstrated the ease of use and utility of the platform for a digitised workbook in a foundational pharmacy practice course. PebblePad™ was gauged by pharmacy student participants as logical and easy to navigate. The platform enabled students to complete requisite workbooks, track progress and reflect on learning.

REFERENCES

1. Australian Pharmacy Council Ltd. Accreditation Standards for Pharmacy Programs in Australia and New Zealand. 2014 23 April 2018]; Available from: https://www.pharmacycouncil.org.au/policies-procedures/standards/standards_pharmacyprograms2014.pdf.
2. Pebble Learning. PebblePad Features. 2019; Available from: <https://www.pebblepad.co.uk/features.aspx>.

HIGH-FIDELITY SIMULATION FOR COMPETENCE DEVELOPMENT IN UNDERGRADUATE PHARMACY EDUCATION: CLOSING THE GAP BETWEEN COMMUNICATION AND TEAMWORK THEORY AND COMPETENCE

O'Leary C¹, Hayden J¹, Condon C², Sullivan C³, Flood M¹

¹ School of Pharmacy, Royal College of Surgeons in Ireland, Dublin, Ireland

² Department of Surgery, Education and Research Centre, Royal College of Surgeons in Ireland, Dublin, Ireland

³ Department of Simulation, Royal College of Surgeons in Ireland, Dublin, Ireland

INTRODUCTION

In Ireland, there has been a move towards competency-based education approaches in pharmacy education. This move has been guided by the introduction of The Core Competency Framework for Pharmacists by the pharmacy regulator, to which schools of pharmacy must map their programmes. The framework identifies communication and teamwork skills as being vital in the provision of safe and effective patient care. Incorporating approaches that enable students to develop competence in these areas throughout the entire course of their MPharm programme, and not just at the later stages, led to the incorporation of high-fidelity simulation into our Year 2 curriculum. High-fidelity simulation training, using computerised manikins that closely mimic real-life scenarios, has been widely studied as an approach to teach teamwork and communication in medicine and nursing, but less commonly in pharmacy. The aim of this study was to establish how a SimMan®-based educational activity can contribute towards the development of second-year pharmacy students' communication and teamwork skills and competence.

MATERIALS AND METHODS

Four SimMan® simulation scenarios were developed by academic and simulation staff designed to reflect material covered in the MPharm programme to-date. Topics included medicines reconciliation, gastrointestinal, cardiovascular, respiratory, and musculoskeletal disorders. Students worked in groups to complete the scenarios, interacting with SimMan®, simulated family members, and simulated healthcare professionals. The following research questions were identified:

1. How do students self-assess their teamwork and communication skills after participation in the educational activity?
2. How does a debriefing activity impact on this self-assessment?

Validated survey instruments were utilised to gather student self-report data immediately after they completed the SimMan® cases and again after their debriefing session where faculty provided students with feedback on their performance. The Global Consultation Rating Scale (GCRS) [1] was used to evaluate communication skills, and the Teamwork Assessment Scale (TAS) [2] was used for teamwork. Ethical approval was obtained for this research from the institutional Research Ethics Committee.

RESULTS AND DISCUSSION

The response rate for the study was 86% (54/63). Data were analysed using STATA v14. Interestingly, there were only four statistically significant changes in item responses when pre- and post-debriefing ratings were compared. For the majority of items on both scales, the debriefing did not have a significant impact on how the students self-assessed on the GCRS or TAS. Tab 1 (below) shows the items which were associated with a statistically significant change ($p < 0.05$).

Tab. 1: Statistically Significant Changes in Responses to Items Post-Debrief

Item	Change	<i>p</i> value
None of the team members switched their role (TAS)	Decrease	0.03
The team leader always reassured that their changes were understood (TAS)	Decrease	0.03
Gathering Information 1 (listens, encourages story, screens) (GCRS)	Decrease	0.01
Closure (contracts, safety nets, summarises, final check) (GCRS)	Decrease	0.04

The findings indicate that the debriefing helped the students identify that they had overestimated their performance in two elements of each instrument. In terms of teamwork, they realised that team members had switched roles more often than they had initially thought, and that the team leader did not check that their changes were understood as consistently as they had initially thought. The communication aspects where the students felt they had overestimated their performance were gathering information and closure.

CONCLUSIONS

The findings indicate that it is possible for students to assess their teamwork and communication performance using validated scales after completing a high-fidelity simulation activity, and subsequently after a debriefing session. The majority of elements of both scales did not change significantly post-debrief, but particular elements of each scales were reviewed downwards when feedback and debriefing were completed, indicating that students' initial perceptions of 'good' were potentially problematic, and more preparation may be needed to manage students' expectations. The potential limitations of this study include that there may not have been enough time for students to reflect on their skills and competence between the administration of the instruments, and that second year students may not be sufficiently skilled in reflection to accurately self-assess. We intend to triangulate these results with qualitative data in future studies.

REFERENCES

1. Burt J, Abel G, Elmore N, Campbell J, Roland M, Benson J, Silverman J. Assessing communication quality of consultations in primary care: initial reliability of the Global Consultation Rating Scale, based on the Calgary-Cambridge Guide to the Medical Interview. *BMJ open*. 2014 Mar 1;4(3):e004339.
2. Kiesewetter J, Fischer MR. The teamwork assessment scale: A novel instrument to assess quality of undergraduate medical students' teamwork using the example of simulation-based ward-rounds. *GMS Zeitschrift für Medizinische Ausbildung*. 2015;32(2).

SIMULATED IMMERSIVE CONSULTATIONS TO ENHANCE UNDERGRADUATE NON-PRESCRIPTION EDUCATION

Hope DL¹, Baumann-Birkbeck LM, Grant GD¹

¹ School of Pharmacy and Pharmacology, Quality Use of Medicines Network and Menzies Health Institute Queensland, Griffith University, Gold Coast, Australia

INTRODUCTION

Emergency contraception (EC) is a *Pharmacist Only* behind-the-counter medicine in Australia, used to prevent unintended pregnancy following unprotected intercourse, contraceptive failure or sexual assault. Provision of EC must be timely following unprotected sexual intercourse, to optimise the medicine's efficacy [1]. It is important that pharmacy students learn sensitive and targeted questioning and counselling techniques for EC provision. As learning through simulation enriches the acquisition of knowledge and skills [2], this research aimed to determine whether the use of a simulated immersive consultation could enhance students' knowledge, skills and confidence regarding EC supply.

MATERIALS AND METHODS

A computer-based simulated immersive scenario was developed using a design-based research methodology [3]. The scenario simulated a community pharmacy consultation involving a virtual adolescent patient's request for EC. Anthropomorphic patient, pharmacist and doctor avatars were created in SitePal™ with text-to-speech questions and responses recorded in mini videos. The scenario was iteratively developed in the RaptMedia® and then the Wix® platforms. The student, in the role of pharmacist, progressed through multiple steps of the simulation by choosing questions to ask, responding to the virtual patient's answers and deciding upon actions to take, in a choose-your-own-adventure type pathway. This approach allowed for flexible navigation through the virtual space. The virtual pharmacist mentor provided advice and feedback to participants at various stages in the simulation. Such imbedded reflective guidance can improve students' content knowledge [4].

Target research participants were third year students who were yet to undertake formal learning on EC. The study compared student learning outcomes from the simulation alone with those of the simulation as adjunct to a traditional narrated online lecture. The brief lecture (08:50 min) delivered fundamental information about EC, including rationale for use, targeted questions and focused counselling for safe and appropriate EC provision. The randomised groups were (1) simulation only and (2) lecture plus simulation. Changes in students' knowledge and perceptions were determined through analysis of pre- and post-intervention questionnaires. The questionnaires asked five multiple-choice questions on EC content (timing of EC, dose, when to repeat a dose, efficacy and actions in the case of assault). Participants were also asked to rate their own knowledge, skills and confidence to question, counsel, refer and safely provide EC on a 5-point Likert scale (1=strongly disagree to 5=strongly agree). The study was conducted with a single student seated at a computer display where some viewed the online lecture, and all navigated the simulation and completed the pre- and post-intervention questionnaires. Institutional ethical clearance was granted (GU Ref. No: PHM/12/14).

RESULTS AND DISCUSSION

Twenty-four third-year pharmacy students were recruited for the project study and 91.7% (n=22) participated during October 2014. Thirteen (59.1%) participants were male and the majority (n=19, 86.4%) were under 25 years of age. The randomly allocated study groups compared simulation only (n=15, 68.2%) with simulation plus lecture (n=7, 31.8%). For multiple choice questions, the simulation plus lecture group demonstrated statistically significant greater improvement in knowledge

($p=0.0028$; Fisher’s Exact Test) than the simulation only group, through correction of pre-intervention errors. The greatest improvements were seen for factually-based questions (EC timing and dose) (Table 1).

Table 1: Correct Pre and Post Knowledge Questions

Questions [correct answer]	Simulation Only (n=15)		Simulation + Lecture (n=7)	
	Pre-Test n (%)	Post-Test n (%)	Pre-Test n (%)	Post-Test n (%)
Number of hours since unprotected intercourse in which levonorgestrel may be supplied as effective emergency contraception [72 hours]	7 (46.7)	7 (46.7)	4 (57.1)	7 (100.0)
The currently recommended dose of levonorgestrel as emergency contraception [single 1.5mg tablet]	7 (46.7)	6 (40.0)	1 (14.3)	6 (85.7)
When a patient should repeat a dose of emergency contraception [immediately if vomiting \leq 2 hours]	7 (46.7)	13 (86.7)	6 (85.7)	7 (100.0)
Efficacy of emergency contraception if taken within 24 hours of unprotected intercourse [95%]	10 (66.7)	15 (100.0)	3 (42.9)	7 (100.0)
What the pharmacist should do if they believe the patient requesting emergency contraception has been sexually assaulted [support, supply EC, refer to police and doctor or rape crisis centre]	10 (66.7)	14 (93.3)	6 (85.7)	7 (100.0)

Compared to simulation only, the simulation plus lecture group reported higher Likert scale means pre- and post-intervention for all 12 statements relating to participants’ perception of their knowledge, skills and confidence to question regarding EC, to counsel on EC, to refer to a doctor for EC and to safely provide EC. Both groups demonstrated improvement, or stayed the same, in self-perception across all domains of knowledge, skills and confidence. A significant difference ($p=0.044$; Fisher’s Exact Test) was observed between the simulation only and the simulation plus lecture groups regarding participants’ self-perception of confidence to question. However, for self-perception of confidence to counsel, to refer and to provide, no significant differences were observed for these intervention groups.

CONCLUSIONS

This proof of concept study identified that a computer-based simulated immersive scenario could enhance student learning regarding the non-prescription provision of EC. Employing the simulation as an adjunct to traditional teaching approaches, such as the lecture, improved students’ content knowledge and their perceptions of their own knowledge, skills and confidence to undertake the critical tasks of a pharmacist, namely questioning and counselling a patient, referring to a medical practitioner when necessary and overall safely providing an important non-prescription medicine.

REFERENCES

1. Cheng, L., Y. Che, and A.M. Gulmezoglu, *Interventions for emergency contraception*. Cochrane Database of Systematic Reviews, 2012. **8**(CD001324).
2. Lyons, J. *Learning with technology: theoretical foundations underpinning simulations in higher education*. ascilite 2012 Conference 2012; 1–5]. Available from: http://www.ascilite.org/conferences/Wellington12/2012/images/custom/lyons_judith_learning.pdf.
3. Wang, F. and M.J. Hannafin, *Design-based research and technology-enhanced learning environments*. Educational technology research and development, 2005. **53**(4): p. 5–23.
4. Nelson, B.C., *Exploring the use of individualized, reflective guidance in an educational multi-user virtual environment*. Journal of Science Education and Technology, 2007. **16**(1): p. 83–97.

THE EDUCATION AND PRACTICE PLATFORM MOVES BEYOND

Caramona MM^{1,2}, Costa FA², Martins AP¹, on behalf of the Education & Practice Platform

¹ *Ordem dos Farmacêuticos, Portugal;*

² *Plataforma Ensino Profissão, Portugal*

INTRODUCTION

During the year 2016, a discussion platform was created within the Portuguese Pharmaceutical Society, aiming to foster discussion among peer academics and also with practitioners from various areas of practice. Moreover, it intended to shorten the gap between education and practice and create an interest point for academia to engage into the Society.

MATERIALS AND METHODS

Preparation and Implementation

The first year focused on identification of representatives, establishment of goals, mission, vision and values. A set of activities were planned and implemented sequentially during the second year: dissemination of workforce development goals (WDGs) in Portuguese [1]; providing baseline data on the national alignment with WDGs; Organisation of periodic discussion for a using different formats to suit different purposes (e.g. expositive presentation vs workshop) involving all representatives and occasionally external partners (e.g. students organisations or sectorial associations).

Dissemination

By the end of the second year, we focused on international dissemination of products produced; expansions of the engagement with international organisations that may further enhance the work being developed.

Sustainability

During the third year, we will be focusing on finalising products initiated in 2018 that may serve be used to align education and practice. We also intend to move from a unidirectional process of assessing needs to a directional where all involved parties are encouraged to identify themes or activities to be pursued. Finally, expanding being education into practice-led research will demonstrate the utility of the concept in its broadest sense.

RESULTS AND DISCUSSION

This platform is well established, constituted by a coordinator and a secretary, and involving directors from the nine educational institutions teaching pharmaceutical sciences and the six boards of pharmaceutical practice. The vision, aims and values have been agreed and presented [2]. WDGs in portuguese disseminated (figure 1). One discussion forum was held to establish the path and map similarities and differences between faculty (table.1), subsequently followed by two workshops; one focusing on teaching methodologies and one on organisation of internships. We established links with the European Society of Clinical Pharmacy and are collaborating in the mapping of the education in Europe. Future steps will focus on implanting a common training framework for internships and on implementing a post-graduate course meeting the needs of practitioners.



Figure 1. WDGs in Portuguese and baseline mapping of national situation

Table 1. Summary table about the common and diverse features in the MSC in Pharmaceutical Sciences offered by nine institutions in Portugal

Instit	ECTS conferred	Area with strongest component	Proportion employed graduates	Post-graduate offer	Particularities
1	300	Pharmaceutical Sciences	94.8%	6 MSc; 1 PG; 1 PhD	Various international partners Unique center for monitoring drug-herbal interactions
2	300	Pharmaceutical Sciences	99.4%	7 MSc; 3 PG; 5 PhD	Various partnerships with other faculties for PhD
3	300	Health Sciences	95.0%	0 MSc; 0 PG; 6 PhD	Various partnerships with other faculties for PhD
4	300	Biology and Biochemistry	94.9%	3 MSc; 0 PG; 0 PhD	Compulsory internships throughout the degree in various areas
5	300	Pharmaceutical Sciences	95.0%	4 MSc; 14 PG; 0 PhD	Summer internships throughout the degree in various areas
6	300	Pharmaceutical Sciences	98.1%	1 MSc; 0 PG; 1 PhD	Sole institution with growing number of students
7	300	Pharmaceutical Sciences	95.7%	0 MSc; 10 PG; 1 PhD	Teacher practitioner concept (integrated with local community). Interprofessional collaboration in teaching (e.g. clinical cases)
8	300	Pharmaceutical Sciences	Not Available	0 MSc; 0 PG; 0 PhD	Has own hospital to ensure internships
9	300	Pharmaceutical Sciences	95.0%	1 MSc; 0 PG; 1 PhD	International partnerships for PhD. Teaching organized in trimesters

CONCLUSIONS

This experience shows that involving those involved in perceived gaps from early stages has the potential to change education and practice.

REFERENCES

1. International Pharmaceutical Federation (FIP). Workforce Development Goals. Copyright © 2016. Available at https://fip.org/files/fip/PharmacyEducation/2016_report/2016-11-Education-workforce-development-goals.pdf accessed 15/03/2019.
2. Costa, FA, Baptista J, Martins AP, Caramona MM. Developing a platform to join pharmaceutical education with practice. 78th FIP World Congress of Pharmacy and Pharmaceutical Sciences, Oral communication Glasgow. Sept 2018 (FIPSUB-1745)

PHARMACISTS COMPETENCE TO RESOLVE THE THERAPEUTIC CHALLENGE OF THE VALSARTAN SAGA

Muscat C^{1,2}, Attard A^{1,2}, Mifsud Buhagiar L^{1,2}, Serracino Inglott A^{1,2},

¹ *Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Msida, Malta*

² *Malta Medicines Authority, San Gwann, Malta*

INTRODUCTION

In an evolving healthcare system, continuing professional development and education should reflect timely topics to enhance and improve professional skills¹. In July 2018, a safety alert by the European Medicines Agency notified that some valsartan products were contaminated with the genotoxic impurity, N-nitrosodimethylamine (NDMA)². This triggered a voluntary recall of potentially impacted valsartan medicines.

The purpose of this study is to investigate the use of an innovative tool, Mentimeter in assessing safety concerns of NDMA in valsartan medicines.

MATERIALS AND METHODS

A symposium was organised to evaluate the competence of the pharmacists in the application of scientific knowledge to the therapeutic challenges in the valsartan saga. A concise 32 slide interactive presentation with 9 questions was prepared after a literature search of valsartan-related peer-reviewed articles and scientific documents was conducted. The Mentimeter was used as a tool to ask and record the responses given by the pharmacists in the interactive discussion.

RESULTS AND DISCUSSION

Twenty six (26) pharmacists (16 females, 10 males; age 22 to 45) from different pharmaceutical work backgrounds (10 hospital, 12 community, 4 industrial pharmacists) participated in the symposium. Table 1 presents the outcome of the correct positive responses obtained interactively by the Mentimeter. The results show that the pharmacists can benefit educational interventions to enhance their knowledge and competence in certain areas such as in the pharmacokinetics and the clinical relevance of angiotensin-receptor antagonists and the threshold for toxicological concern of NDMA impurities.

Table 1: The number of correct positive responses to the statements presented

Number of pharmacists identifying the correct statement	Statement
18 (60%)	NDMA is a probable human carcinogen found to cause cancer in animals
22 (84%)	Not all sartans contain a tetrazole ring
20 (77%)	The formation of NDMA occurred during the synthesis of valsartan
20 (77%)	NDMA is unlikely to bioaccumulate
7 (27%)	The half-life of valsartan is 6 hours
6 (24%)	1.5mcg/day is the tolerated limit for daily exposure to NDMA
24 (88%)	Drinking water, ham, bacon and cigarettes are contaminated with NDMA
20 (77%)	Advised that valsartan should not be stopped abruptly until alternative treatment is available
24 (92%)	Would recommend switching patients to another sartan as early as possible

CONCLUSIONS

It is concluded that the Mentimeter is a useful innovative tool to enhance the learning experience. Pharmacists can benefit from added value continuous professional development and education to enhance their scientific knowledge and competencies to deal with evolving healthcare issues.

REFERENCES

1. Wise EH, Sturm CA, Nutt RL, Rodolfa E, Schaffer JB, Webb C. Life-long learning for psychologists: Current status and a vision for the future. *Professional Psychology: Research and Practice*. 2010; 41:288–297.
2. Pottegard A, Kristensen KB, Ernst MT, Johansen NB, Quartarolo P, Hallas J. Use of N-nitrosodimethylamine (NDMA) contaminated valsartan products and the risk of cancer: Danish nationwide cohort study. *BMJ*. 2018; 362: k3851.

GAME BASED LEARNING APPLIED TO NUTRITION AND FOOD SCIENCE AT THE SCHOOL OF PHARMACY

Aguilar MV, Hernández MT, Villaescusa L, Aberturas MR, Molpeceres J

School of Pharmacy, University of Alcalá, Alcalá de Henares, Madrid, Spain

INTRODUCTION

There is a need to update and incorporate modern and creative educational approaches in higher education in order to improve quality issues. Recently, the use of modern, more dynamic and interactive teaching methodologies have transformed the traditional passive role of the student into a more active and student-centered teaching process, where they are the main characters of their own learning process [1]. One of these methodologies is gamification, that according to Werbach and Hunter [2] «is the use of game elements in non-game contexts» applied to learning and teaching scenarios. Thus, the objective of this project is the design and use of games, including or not a playful issue, to improve the achievement of learning outcomes, competences, skills and positive behavioral attitudes [3]. In addition, game based learning promotes students involvement in scheduled activities and increase their motivation in the proposed fields [4].

MATERIALS AND METHODS

Developed by 3rd year students (n=450) registered in Nutrition and Food Science course at the Faculty of Pharmacy during 2012–2013 to 2016–17. The steps taken were:

1. Creation of teams (5–8 students/team)
2. Identify target population
3. Develop generic questions related to human nutrition database
4. Design and development of games according to population
5. Play a game
6. Evaluation: Projects were evaluated detecting the level of nutritional knowledge of the courseware designers and evaluators.

RESULTS AND DISCUSSION

A total of 60 games were designed by the students and their names were based on well-known popular games in Spain (figures 1–5):

Fig. 1. NuTrivial

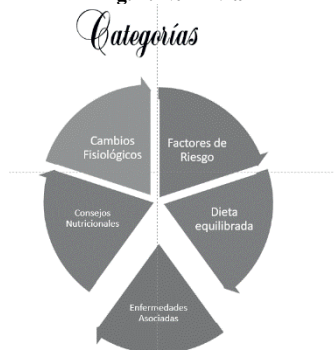


Fig. 2. Who wants to be healthy?



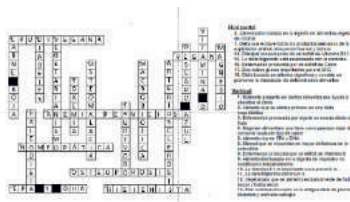
Fig. 3. Food-based Goose game



Fig. 4. Twister on Nutrition



Fig. 5 . Crossword puzzle



All of them include questions about basic concepts and applied knowledge in Nutrition, Healthy diet and associated co-morbidities in order to evaluate knowledge within the course classmates as a first step but later introduced to other scenarios such as schools, working occupational environments or gyms. While playing the game there is a feedback for mistakes, correct choices and a brief explanation.

These games motivate students for [4]:

1. Learning of the subject
2. Team play and winning.

CONCLUSIONS

The design and application of games as a teaching toolkit has improved students motivation, their involvement in the course, promoted active attitudes and interactions and have instilled in them healthy lifestyles aligned with other educational initiatives at the University [5–6].

REFERENCES

1. Cortizo, J C, Carrero, F, Monsalve, B, Velasco, A, Díaz, L I y Pérez, J. (2012). Gamificación y Docencia: Lo que la Universidad tiene que aprender de los Videojuegos. VIII Jornadas Internacionales de Innovación Universitaria. Retos y oportunidades del desarrollo de los nuevos títulos en educación superior. <http://observatoriovideojuegos.wordpress.com/>
2. Werbach, K. y Hunter, D. (2014) Gamificación: revoluciona tu negocio con las técnicas de los juegos, Madrid: Pearson Educación.
3. Cano, J. A. (2013). La gamificación se abre paso en la educación como forma de combatir el fracaso escolar. www.periodistas-es.org/sociedad-de-lainformacion/formacion/21356-la-gamificacion-se-abre-paso-en-la-educacioncomo-forma-de-combatir-el-fracaso
4. Kim, S., Song, K., Lockee, B., & Burton, J. (2018). Engagement and fun. In Gamification in Learning and Education (pp. 7–14). Cham, Switzerland: Springer.
5. Blazquez.L (2012). Gamificación: como mejorar el aprendizaje con el juego. www.digiworks.es/blog 2012/01/23
6. Pérez-López IJ, Rivera García E, Delgado-Fernández M. Mejora de hábitos de vida saludables en alumnos universitarios mediante una propuesta de gamificación. Nutr. Hosp. 2017;34:942–951

PILOT SURVEY OF STUDENTS OF PHARMACY TRAINING IN PHARMACIES OF OPEN TYPES FOR USE OF THE HOMEOPATHY SOFTWARE

Peychev Z,¹ Peychev L,² Gueorguiev S,³ Petkova-Gueorguieva E³

¹ *Dept. Medical informatics, Biostatistics and E-learning, Medical university – Plovdiv, Faculty of Public Health, Bulgaria*

² *Dept. of Pharmacology and Drug Toxicology, Medical university – Plovdiv, Faculty of Pharmacy, Bulgaria*

³ *Dept. of Pharmaceutical Sciences, Medical university – Plovdiv, Faculty of Pharmacy, Bulgaria*

INTRODUCTION

In 1996, homeopathic medicines were officially licensed for marketing and use in Bulgaria as OTC products. The holistic approach to the client and the variety of psychosomatic symptoms make it difficult for the pharmacist to choose a homeopathic remedy for acute pathology – fever, dizziness, asthenia, trauma, burns, etc. The need for introducing specialized software into the pharmacy to improve the performance of the pharmacist arises. The aim of the present work is to investigate the attitude of trainee-pharmacists working in open-type pharmacies for introducing and using specialized software for clinical homeopathy in acute pathology.

MATERIALS AND METHODS

We conducted a survey on 103 students – master pharmacists of pre-graduate practice. The questionnaire contains 16 questions, grouped in 4 panels: administrative; educational about homeopathy training; a panel examining the student's attitude for using homeopathy software; a benefit / risk assessment panel for using a software for clinical haemopathy.

RESULTS AND DISCUSSION

In cases of acute pathology, 35 (34.7%) of respondents reported serious difficulties in choosing homeopathy and 22 (21.8%) had difficulty in appointing a homeopathic remedy. The biggest problems are reported in finding the medications for a sensitive type: Arsenicum album, Argentum nitricum, Aurum metallicum, Causticum, Cina, Graphites, Hepar sulfur, Kalium carbonicum, Lachesis, Lycopodium, Natrum sulfuricum, Psorinum, Sulfur iodatum, Thuya, Zincum metallicum, etc. The mean time of service for a patient in acute pathology is 7.5 min. The need to use computer software in homeopathy indicate 91 (90.1%) of the respondents, another 4 (4%) think that it is not needed and 6 (5.9%) consider it dangerous.

CONCLUSION

The results of this study reveal a significant need for pharmacists to use specialized homeopathy software to diagnose and choose a drug. Its development requires the collaboration of a team of doctors with additional qualification in homeopathy and experts in the field of computer systems.

VIRTUAL ATLAS OF NATURAL DRUGS

Kurhajec S¹, Bačkorová M¹, Kubínová R²

¹ Department of Pharmacognosy and Botany, University of Veterinary Medicine and Pharmacy in Košice, Slovakia

² Department of Natural Drugs, University of Veterinary and Pharmaceutical Sciences Brno, Czech Republic

There are often outdated or false information on natural drugs in the available literature. Nowadays, the need to use pharmacognostic atlases is essential during pharmacy studies. The results of solution to this problem is our project “Virtual Atlas of Medicinal Plants”, which is published on the internet domain www.naturaldrugs.eu. The project was implemented by representatives of the University of Veterinary Medicine and Pharmacy in Košice and the Faculty of Pharmacy of the Veterinary and Pharmaceutical University in Brno. The Virtual Atlas of Medicinal Plants occurs three language versions (Slovak, English and Czech). It contains an alphabetical list of drugs according to the nomenclature introduced by the European Pharmacopoeia 8th Edition [1]. Each selected herbal drug is documented by photography. In addition to the short definition, there are the macroscopic and microscopic characteristics, the names of parent plant in various languages, the using of drug, and there is the warning or the curiosity in some cases. The Virtual Atlas of Medicinal Plants represent part of the modernization of teaching Pharmacognosy. Thus, information on medicinal plants have become more accessible to the professionals and to the lay public.

Acknowledgments

This project was financially supported by European Association of Faculties of Pharmacy.

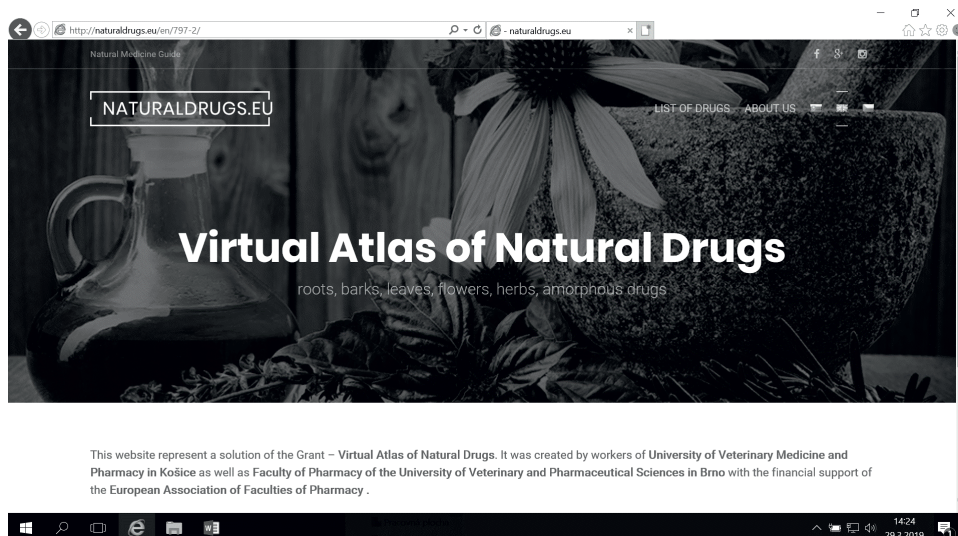


Fig. 1: The website of Virtual Atlas of Natural Drugs

REFERENCES

1. European Pharmacopoeia Commission, European Directorate for the Quality of Medicines & Healthcare. European pharmacopoeia 8th Edition. Council of Europe; 2010.

Clinical pharmacy

DEVELOPING CLINICAL PHARMACY COMPETENCIES IN THE CARE OF PATIENTS WITH CARDIOVASCULAR DISEASE

Wirth E, Serracino-Ingloft A, Azzopardi LM

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Msida, Malta

INTRODUCTION

The Clinical Pharmacy module within the Master of Pharmacy (MPharm) course at the Department of Pharmacy of the University of Malta is aimed at developing a comprehensive, holistic approach to patient care and medicines management. Skills and competencies related to clinical pharmacist interventions in patient care in different care settings, including cardiology, are developed in this module. The aim was to devise and deliver sessions within the study unit to support MPharm students to develop clinical pharmacy competencies in the care of patients with cardiovascular disorders.

MATERIALS AND METHODS

The learning outcomes identified were to demonstrate a comprehensive understanding of evidence-based drug therapy interventions, to analyse patient information and to recommend appropriate clinical pharmacy management plans for cardiovascular disorders. Three two-hour sessions adopting case-based learning were developed and delivered to 25 MPharm students. Ten case discussions were held over the three sessions. The three sessions tackled the following cardiovascular disorders: 1) Stable angina and acute coronary syndrome, 2) Hypertension and heart failure, 3) Atrial fibrillation and stroke.

RESULTS AND DISCUSSION

The delivery of the three case-based sessions consisted of establishing; 1) *systematic analysis and interpretation of patient information*, including patient details, clinical features and symptoms of presenting complaint, medical history, drug history, family history and social history, signs and investigations on examination, and 2) *pharmaceutical care planning*, including identifying risk factors and active problems, establishing goals of therapy, developing a clinical pharmaceutical care plan for acute and long-term pharmacotherapeutic management, interpreting biochemistry and haematological laboratory results and identifying need for further investigations, reflecting on comorbidities and concomitant medications, identifying drug therapy problems and recommending patient monitoring and advice. Pharmacist professional obligations towards patients including ethical responsibilities, and collaboration with physicians and other health care professionals was highlighted. The students were familiarised with recent clinical evidence and drug information resources on the topics, namely the September 2018 edition of the British National Formulary and the latest European Society of Cardiology guidelines and United Kingdom National Institute for Care Excellence clinical guidelines and pathways. At the end of the third session, a case-based quiz with 12 multiple-choice questions was

administered. The students were allowed 30 minutes to attempt the quiz with a discussion held afterwards.

CONCLUSIONS

The model developed for this learning activity supports students to mobilise earlier knowledge gained in their pharmacotherapeutic classes, refer to guidelines and participate in a case-based sessions.

ADVANCED CLINICAL PHARMACY EXPOSURE AT PAEDIATRIC ONCOLOGY WARD

Falzon S^{1,2}, Galea N³, Calvagna V³, Grech L¹, Azzopardi LM¹

¹*Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Msida, Malta*

²*Department of Pharmacy, Mater Dei Hospital, Msida, Malta*

³*Department of Paediatrics, Mater Dei Hospital, Msida, Malta*

INTRODUCTION

The post-graduate doctorate in pharmacy course includes experiential clinical rotations which are run within a collaborative framework between the Department of Pharmacy at the University of Malta and the College of Pharmacy of the University of Illinois, at Chicago. The aim was to develop a 6-week experiential programme providing a comprehensive understanding of medication use process and exposure to an interdisciplinary approach operating within a paediatric oncology ward.

MATERIALS AND METHODS

At the beginning of the placement, the student is introduced to the clinical setting by the clinical pharmacist who briefs them on the teamwork approach and the logistic background of the placement. The student attends clinician-led ward rounds and day-case sessions. During clinical activities the student is expected to actively participate in team discussions, identify and resolve pharmaceutical care issues and follow up patient cases as necessary. The student is exposed to parent education on pharmacotherapy and is asked to participate in journal clubs by undertaking a critical appraisal of a published paper on a topic related to an encountered clinical case. Students prepare a presentation of a clinical case managed highlighting pharmaceutical care issues involved and participate in compiling and updating of treatment protocols or guidelines.

RESULTS AND DISCUSSION

During the placement the student compiles a weekly portfolio with reflections on the activities undertaken which are discussed with the preceptor. As part of the clinical activities, the student is expected to update the Pharmacy Patient Profiles documenting the pharmaceutical care issues. At the end of the rotation, the student prepares a presentation of a clinical case encountered during the rotation. During the presentation the pharmaceutical care issues identified and resolved are discussed in detail. The student is assessed by the preceptor on the ability to integrate and apply the theoretical knowledge into the clinical scenario.

CONCLUSIONS

Through this experiential doctorate of pharmacy rotation, students are exposed to a delicate clinical pharmacy scenario such as paediatric oncology. The students are given the opportunity to develop critical thinking skills, sustain clinical discussions with other healthcare professionals and provide drug information.

OPINIONS OF DECISION-MAKERS ON THE CLINICAL DEVELOPMENT AND ASSESSMENT OF ANTINEOPLASTIC AGENTS

Said D¹, Borg JJ², Attard Pizzuto M¹, Serracino-Inglott A¹

¹ *Department of Pharmacy, University of Malta, Malta*

² *Malta Medicines Authority, Malta*

INTRODUCTION

Regulatory early access routes have increased flexibility in the authorisation process by accepting less comprehensive data as basis for approvals [1,2]. Health technology assessment (HTA) bodies tend to be more rigid in their evaluations by requesting mature clinical datasets for economic modelling and comparative efficacy assessments [2,3,4]. An analysis of parallel scientific advice outputs between HTA bodies and the European Medicines Agency (EMA) reports that both decision-maker groups failed to fully agree on multiple clinical trial design elements [5]. Industry stakeholders have indicated that oncology medicinal products are significantly associated with divergences in HTA and regulatory positions [4]. The objective of this study was to capture and compare the perspectives of regulatory and HTA decision-makers on aspects related to the clinical development and assessment of antineoplastic agents.

MATERIALS AND METHODS

Development, Validation and Reliability Testing of Survey

An online survey was developed to gauge opinions of regulatory and HTA experts on the quality of evidence generated and alignment of clinical assessments in the therapeutic fields of oncology and haematology. Attitudes towards the potential impact of harmonising HTA and regulatory clinical assessments on patient access to innovations were also examined. Survey items consisted of weighted agreement and quality rating scales and rank-type questions. The survey was validated using the content validity index (CVI) method [6] by a multi-disciplinary 8-member validation panel composed of clinical (n=4), regulatory (n=1), HTA (n=2) and informatics (n=1) specialists. The intra-subject reliability of the survey items was confirmed by means of the test-retest approach.

Recruitment of Study Participants

Oncology experts were invited to participate using non-probability, purposive sampling. Contact details for HTA bodies were retrieved from the online platforms of the European Network for Health Technology Assessment (EUnetHTA), World Health Organization Regional Office for Europe (WHO/Europe) Health Evidence Network (HEN) and the International Network of Agencies for Health Technology Assessment (INAHTA). Members and alternate members of the EMA Committee for Medicinal Products for Human Use (CHMP), Scientific Advice Working Party (SAWP) and external experts in clinical oncology were identified from the EMA experts database and constituted the regulatory scientific personnel invited to participate in the study.

Statistical Analysis of Opinions

Descriptive and inferential statistics were operated to report the distribution of regulatory and HTA opinions. Weighted mean ratings for ordinal scales were compared between the two expert groups and analysed for statistical significance using the non-parametric Mann-Whitney U Test.

RESULTS AND DISCUSSION

Twelve (12) HTA experts from 9 different EU countries and 18 regulatory representatives were recruited in the study. HTA experts expressed stronger dissent than their regulatory counterparts when asked on their level of agreement to the current alignment between regulatory and HTA clinical evidence needs in assessment procedures of oncology medicines (weighted mean ratings: 3.1 (regulatory); 2.4(HTA)). The majority of HTA respondents consider that the clinical evidence requested for antineoplastic agents by their respective HTA body is akin to that of other HTA bodies (weighted mean rating of 3.8). Conversely, HTA experts were of the opinion that their agencies' evidentiary requirements are not on par to those being requested by the EMA (weighted mean rating of 2.4). This difference was found to be statistically significant with a p-value of 0.006. Decision-makers also had conflicting views on the quality of evidence generated for antineoplastic agents in the pre- and post-authorisation phases (p-value for pre-authorisation phase: 0.01; p-value for post-authorisation phase: 0.04). A mean of 73% versus 21% for the regulatory and HTA opinions respectively rated the quality of evidence as good, very good or excellent.

Regulatory experts expressed a firmer standpoint (weighted mean rating of 3.8) than HTA respondents (weighted mean rating of 3.5) that divergences in clinical evidence requirements negatively impacts patient access to novel cancer treatments. From a list of 6 stakeholder groups, patients were ranked by both decision-makers as the top stakeholder to benefit from enhanced collaboration between regulators and HTA throughout the medicinal product life cycle.

CONCLUSIONS

Scientific expert opinions indicate that clinical evidence needs for antineoplastic agents are not optimally aligned between regulatory and HTA bodies. Decision-makers perceive the quality of evidence generated for medicines indicated in malignancy differently. Regulatory and HTA experts recognise patients as the main stakeholders to gain from greater collaborative initiatives. Findings from this study are intended to stimulate calls for more effective alignment between the two facets, potentially driving faster patient access to novel cancer treatments.

REFERENCES

1. Cressmsn S, Browman GP, Hoch JS, Kovacic L, Peacock SJ. A time-trend economic analysis of cancer drug trials. *Oncologist*. 2015;20(2):729–736.
2. Leyens L, Brand A. Early patient access to medicines: Health technology assessment bodies need to catch up with new marketing authorization methods. *Public Health Genomics*. 2016;19:187–191.
3. Martinlbo J, Bowen D, Camarero J, Chapelin M, Demolis P, Foggi P, et al. Early market access of cancer drugs in the EU. *Ann Oncol*. 2016;27:96–105.
4. Wang T, McAuslane N, Liberti L, Leufkens H, Hovels A. Building synergy between regulatory and HTA agencies beyond processes and procedures – Can we effectively align evidentiary requirements? A survey of stakeholder perceptions. *Value Health*. 2018;21(6):707–714.
5. Tafuri G, Pagnini M, Moseley J, Massari M, Petavy F, Behring A et al. How aligned are the perspectives of EU regulators and HTA bodies? A comparative analysis of regulatory-HTA parallel scientific advice. *Br J Pharmacol*. 2016;82:965–973.
6. Lynn MR. Determination and quantification of content validity. *Nurs Res*. 1986;35(6):382–385.

Practical education

THE EDUCATION OF FUTURE PHARMACISTS IN BRATISLAVA IS LED IN COOPERATION WITH THE PROFESSIONAL ORGANIZATION

Snopková M^{1,2}, Mučaj P¹, Hrčka Dubničková M¹, Valentová J¹, Tóth J¹, Tesař T¹

¹ Comenius University in Bratislava, Faculty of Pharmacy, SK-832 32 Bratislava, Slovakia

² Slovak Chamber of Pharmacists, SK-831 04 Bratislava, Slovakia

INTRODUCTION

The *Practice in Community Pharmacy* (*hereinafter* “Practice”) is an obligatory course in the five-year Master programme Pharmacy curriculum at the Comenius University in Bratislava, Faculty of Pharmacy (*hereinafter* “FPharm CU”). Students get acquainted with the real pharmacy environment, gain advanced knowledge of the pharmacy’s assortment, learn to master pharmaceutical activities under the supervision of an assigned professional in a community or hospital pharmacy.

MATERIALS AND METHODS

The Practice is organised, provided and managed by the Department of Organisation and Management of Pharmacy at FPharm CU (*hereinafter* “DOMP”). The expert guarantee of the Practice is the Slovak Chamber of Pharmacists – an independent, non-political, self-governing professional organization that associates and represents over 4,500 pharmacists in Slovakia. The Practice formally starts with the (i) Paper of Acceptation and (ii) Agreement on Professional Practical Experience of a Student of the FPharm CU. The programme of the course is based on the Directive 2005/36/EC. The range of activities required in a teaching pharmacy can vary but there is a minimum range of activities that students should undergo during the Practice.

RESULTS AND DISCUSSION

The Practice lasts 6 months (1 month in the 8th and 5 months in the 9th study semester) and takes place in facilities providing pharmaceutical care (teaching pharmacies) throughout Slovakia (Fig. 1) as well as in EU Member States.

Slovakia



Fig. 1: Regions of Slovakia

The Practice in Slovakia is carried out in 620 “teaching pharmacies” that comprise 26.85 % of the total number of pharmacies in the country (2,309), see Fig. 2 (last updated on March 15, 2019).

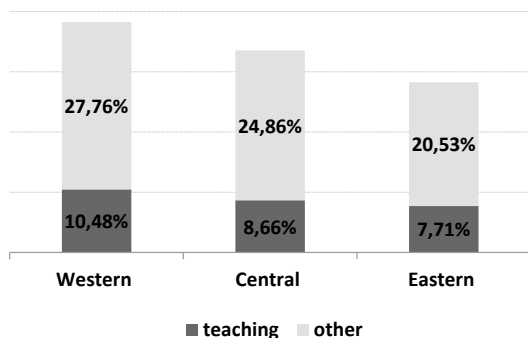


Fig. 2: Share of teaching pharmacies compared to the total number of pharmacies in the regions of Slovakia

Students shall keep continuous report about the progress of the professional practical experience via an “e-Report” as directed by the responsible person authorized by the FPharm CU. The average assessment of e-reports was 97.53 % in 2018. Upon completion of the traineeship period the teaching pharmacy shall issue a Final Assessment of the Student based on established criteria (Tab. 1). Students achieved an average of 98.33 % in their final assessments in 2018.

1: Final Assessment of the Student

Assessed area	Points
1. Overall approach to work	
2. Knowledge of assortment of drugs – original, generic and biological drugs	
3. Drug dispensing activity (dispensing minimum and optimum)	
4. Communication skills and training (ability to explain, understandable explanation method, willingness to help)	
5. Manipulation with medical prescription and medical device voucher	
6. Pharmacological and therapeutical grouping of drugs, clinical data on active substances, dosage control	
7. Warehousing, ordering and receiving drugs	
8. Individual prepared drugs, control and assessment of raw materials	
9. Pharmacies use software, handling of information sources (practical use)	
10. Pharmaceutical ethics and communication skills, Ethical codex of the pharmacist	

Note: Evaluate each area in the range from 0 to 10 points (10 is the best)

CONCLUSIONS

The FPharm CU aims to prepare an educated, responsible and professional pharmacist. Implementation of the Practice enables the FPharm CU, in cooperation with the Slovak Chamber of Pharmacists, and with individual teaching pharmacies to streamline the interconnection of academic environment and clinical practice not only in Slovakia but in other EU Member Countries as well.

REFERENCES

1. Act No. 131/2002 Coll. on Higher Education and on changing and amending certain laws, as amended.
2. Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications.

MOVING TOWARDS REGULATORY SCIENCES THROUGH EDUCATIONAL INITIATIVES

Attard A^{1,2}, Muscat C^{1,2}, Mifsud Buhagiar L^{1,2}, Azzopardi LM¹, Serracino-Inglott A^{1,2}

¹ Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Msida, Malta

² Malta Medicines Authority, San Gwann, Malta

INTRODUCTION

There is the need for training in regulatory sciences for pharmacy students, which may be facilitated by exposure within national competent authorities, such as training rotations in the diverse directorates.

MATERIALS AND METHODS

A fellowship programme was implemented (September 2014 to February 2019) covering different academic levels, to assist students to train in the regulatory sciences field during the process of obtaining their qualification. This programme was aimed at enhancing research in the field of regulatory sciences through educational training rotations at the Malta Medicines Authority. The fellowship programme was reviewed in March 2019 through demographics and research areas.

RESULTS AND DISCUSSION

Over a timeframe of 53 months a total of 41 students have enrolled for the programme. Thirty-five (35) students enrolled for Doctorate stream, (Level 8), 5 students for Masters stream (Level 7) and 1 student for Diploma stream (Level 5). Out of the stream 1 students, 20 were from European Union (EU) countries and 15 from non-EU countries, while students of stream 2 and 3 were from Malta. Ten students have terminated the fellowship programme before conducting their course research, while out of the remaining 31 students, 15 have carried out their research related to regulatory sciences, 11 have not started their research and 5 have conducted their research in other pharmacy areas. The research carried out by the students was conducted in 15 innovative regulatory sciences areas, such as clinical trials, stem cells, cannabis and medicines access, with 26 presentations at various conferences. The fellowship programme was reviewed to include a new stream related to Bachelor (Level 6) qualification.

CONCLUSIONS

The fellowship programme offered a unique opportunity for local and international pharmacy students exposing them to the regulatory sciences field. This initiative improves the regulatory knowledge of academic researchers for the benefit of patients and the healthcare system.

HOW DO YOU KNOW YOUR STUDENT IS READY FOR PRACTICE?

Brunner JM¹, Thompson M¹, Altieri R¹

¹ *University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences, Aurora, Colorado, United States*

INTRODUCTION

U.S. based pharmacy programs must provide evidence demonstrating that students meet core competencies with increasing proficiency. To meet this goal, it is imperative that students have ample opportunity to practice skills in a variety of pharmacy settings and are assessed early on and throughout the program. The University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences (CU SSPPS) has developed the “Advanced Introductory Pharmacy Practice Experience” (aIPPE) that assesses skills and prepares students for the final, clinical practice phase of the Doctor of Pharmacy curriculum. The purpose of this project is to determine if the aIPPE is a key predictor for success during the final, clinical practice phase of the program, also known as Advanced Pharmacy Practice Experiences (APPEs).

MATERIALS AND METHODS

The aIPPE is an intensive 6-week practice experience that occurs during the third year of the four-year PharmD program and mimics an APPE. The evaluation tool used for the aIPPE is similar to the APPE tool, and assessed three key domain areas: practitioner skills, professionalism, and communication. Final aIPPE grade data was collected and was compared to final APPE grades one year later.

RESULTS AND DISCUSSION

Assessment data show that students who perform well on the aIPPE perform well throughout the APPE year. All students passed the aIPPE. In addition, of the 99% of students who passed all their APPE rotations, most earned a grade of A. Upon completion of the aIPPE, 98% of students indicated they were prepared for their APPEs. Finally, 99% of graduates stated the aIPPE prepared them for their APPEs.

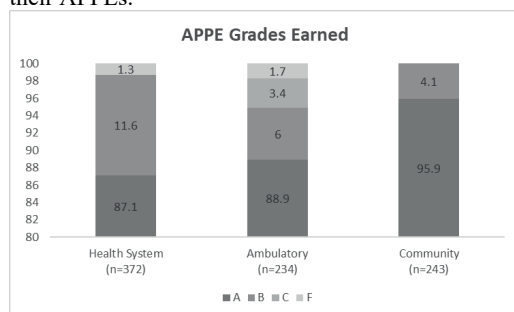


Fig. 1: APPE grades earned

CONCLUSIONS

Early intensive practice experiences allow students to practice and refine skills before embarking on the final, clinical phase of the PharmD program. Although expectations are different during the APPE year, using similar assessment strategies for both the aIPPE evaluation tool and APPE tool provide

valuable learning opportunities and the consistency between experience leads to improved preparedness.

REFERENCES

1. Accreditation Council for Pharmacy Education. Accreditation Standards and Key Elements For the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree “Standards 2016.” 2016; <https://www.acpeaccredit.org/pdf/Standards2016FINAL.pdf>.
2. Gilliam E, Nuffer W, Thompson M, Vande Griend J. Design and Activity Evaluation of an Advanced-Introductory Pharmacy Practice Experience (aIPPE) Course for Assessment of Student APPE-Readiness. *Curr Pharm Teach Learn*, 9 (4) (2017) pp.595–604.

IMPLEMENTATION OF A RUBRIC FOR ASSESSMENT THE RESOLUTION OF PRACTICAL CASES DURING SUPERVISED TRAINING PLACEMENT OF PHARMACY DEGREE.

Sánchez-Hidalgo M, Orta MM, Muñoz N, De Rojas MA, Ojeda M, Sánchez Burson J, Ramos Carillo A, María Álvarez de Sotomayor.

Faculty of Pharmacy, University of Seville, C/Profesor García González 2, 41012 Seville, Spain.

INTRODUCTION

The Supervised Training Placements have become a remarkable and complementary component to the academic training and an integrative element of Pharmacy students' academic curriculum, facilitating the subsequent job placement. They can be carried out in Community Pharmacy during six months or in a Hospital Pharmacy Service plus Community Pharmacy during three months in each place [1, 2]. On the other hand, a rubric for assessment, is a tool used to interpret and grade students' work against criteria and standards [3]. In this line, in order to improve the teaching objectives and acquisition of learning competencies as well as to homogenize the process of evaluation of the qualification achieved during the Supervised Training Placements, an evaluation rubric was designed and carried out to evaluate the resolution of practical cases elaborated by the teaching team in a simulated pharmacy classroom.

MATERIALS AND METHODS

Three hundred 4th-5th Students Pharmacy Degree were divided into 30 groups composed by 6 members. Previously, teaching team elaborated a total number of 30 practical cases and designed an assessment rubric.

RESULTS AND DISCUSSION

The designed assessment rubric collected all the evaluation criteria's, standards, descriptions and summative outcome according to the achievement of the objectives' belonging to the educational unit to evaluate and those expected skills that students have acquired during the Supervised Training Placements. Among the competences to be evaluated were: communication skills, knowledge of the procedure during the dispensation process, search for information and the contribution to resolve other cases defended by their classmates. The teaching team was in charge of managing all the documentation to ensure always the confidentiality.

CONCLUSIONS

Implementation of an evaluation rubric for resolution of practical cases during supervised training placement of Pharmacy Degree can contribute positively to ensure the follow up and to control the functionality of the process.

ACKNOWLEDGEMENTS

We gratefully acknowledge the financial support from III Plan Propio de Docencia from the University of Seville.

REFERENCES

1. Orden CIN/2137/2008 de Julio (BOE núm. 174 de 19 de Julio de 2008)
2. Directiva 2005/36/CE del Parlamento Europeo y del Consejo (De 7 de Septiembre de 2005) relativa al reconocimiento de cualificaciones profesionales.
3. Dawson P. Assessment rubrics: towards clearer and more replicable design, research and practice. *Assessment & Evaluation in Higher Education*. 2015; 347–360.

Examination

CAN OSCEs BE AN INDICATOR OF STUDENTS' PROGRESSION OF CLINICAL AND SCIENTIFIC COMPETENCIES?

Hitch G¹, Hadley TE¹, Apampa B¹, Jill Merewood¹, Mike Pettit¹ and Manfrin A¹

¹*Department of Life Sciences/Pharmacy, JMS Building, University of Sussex, Falmer, Brighton BN1 9RH, UK.*

INTRODUCTION

In order to deliver high quality patient focused care, pharmacists need to be fully competent in order to enable them to integrate their scientific knowledge underpinning their clinical skills. This in itself presents new challenges for pharmacy educators to develop competency based assessments which are patient facing. The Objective Structured Clinical Examination (OSCE) is one such means of assessing competencies in clinical knowledge and communication skills in students.¹ Our newly developed MPharm Degree Programme at the University of Sussex requires students to undergo both formative and summative OSCEs in all 4 years of the programme. The study aimed at assessing differences in the scores achieved by students in the OSCE stations and the correlation of the scores between stations.

MATERIALS AND METHODS

The OSCEs in year 1 are formative, while the OSCEs in years 2, 3, and 4 are both formative and summative. Summative OSCEs contributes 5% to 10% toward the overall coursework mark. Data was collated from first, second and third year students. Each student was assigned a progressive number from 1 through 74 to anonymise them. Students completed five stations, each of which took 10 minutes with associated learning outcomes. For each year, the spiral nature of the curriculum dictated the complexity and clinical content of the task associated with a given station. This also reflected the students' level of clinical and scientific competency at the time of the OSCE assessment. Data were normally distributed and one-way ANOVA was used to assess the variance of the means among groups. Fisher's Exact Test was used for dichotomous variables and Pearson's coefficient was used to assess the correlations between variables. The analysis was conducted with SPSS version 24.

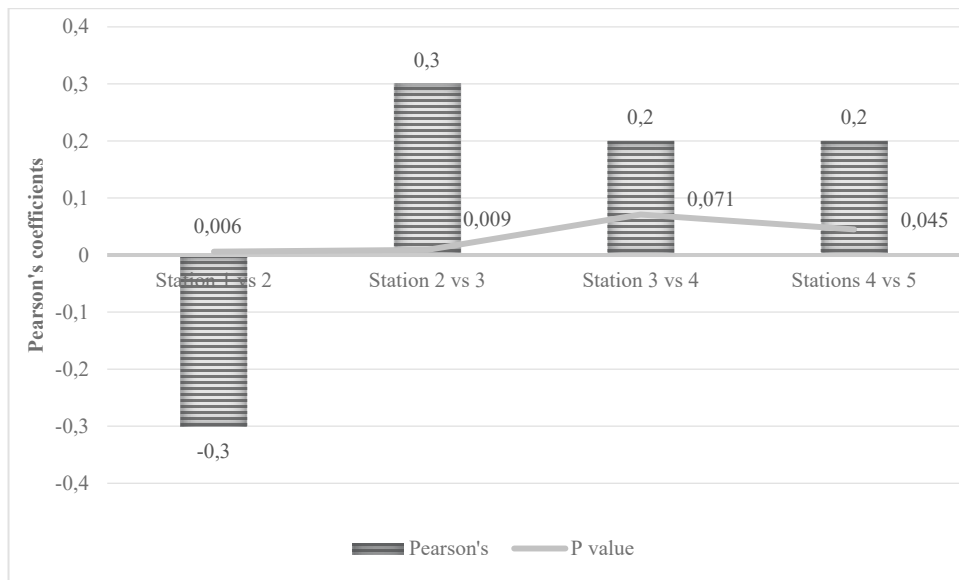
RESULTS AND DISCUSSION

The number of students who completed all OSCE stations was 74; 22 were enrolled in year 1, 25 in year 2 and 27 in year 3. The mean score for station 1 was 5.86 (SD=2.2), for 2 was 4.89 (SD=1.7), 3 2.6 (SD=1.2), 4 was 2.8 (SD=1.2) and 5 was 2.42 (SD=1.3). The mean of the overall score was 18.6 (SD=3.9). A statistically significant difference was found among the means of the overall scores among the groups (Tab. 1). A negative correlation was identified between the scores achieved in station 1 and 2, while positive correlations were identified among the other stations. The correlation between station 3 and 4 was not statistically significant ($p=0.071$). The others correlations were statistically significant although all Person's coefficients were very small indicating weak correlations (Fig. 1). In the first global score 70 students passed and 4 failed (1 in the first year and 3 in the second year). In the second global score 73 students pass and 1 failed (second year). This difference was not statistically significant ($p=0.946$).

Tab. 1 OSCEs' overall score means in each group

Year	N of students	Mean	SD	P value
First	22	20.6	4.1	<0.001
Second	25	19.4	4.1	
Third	27	16.3	2.1	

Fig. 1 Pearson's coefficients correlation between OSCE stations



CONCLUSIONS

The results are showing a decrease in the overall score means among groups, which could suggest that as students are progressing OSCEs are becoming more challenging. Strong correlations between stations were not identified. The difference in the OSCEs' pass rate was not statistically significant; nevertheless, the reduction of the attrition rate from 4 to 1 could be a positive indicator of students' improvements of clinical and scientific competences.

REFERENCES

1. Harden RM, Stevenson M, Downie WW, Wilson GM. Assessment of clinical competence using objective structured examination. *Br Med J.* 1975 Feb 22;1(5955):447–51.

OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCE) TEST FOR ASSESSMENT OF COUNSELLING COMPETENCIES AMONG PHARMACY STUDENTS AND ASSISTANT PHARMACISTS IN ESTONIA

Volmer D¹, Bobrova V¹, Petrova K¹, Tähnas J², Randmäe L³.

¹ *Institute of Pharmacy, Faculty of Medicines, University of Tartu, Tartu, Estonia*

² *Town Hall Pharmacy, Tartu, Estonia*

³ *Hospital Pharmacy, Tartu University Clinic, Tartu, Estonia*

INTRODUCTION

Objective Structured Clinical Examination (OSCE) is widely used tool in different healthcare training programs to assess clinical skills in real time counselling situation. OSCEs could be used for interim assessment of basic skills, e.g. communication, patient assessment or for final assessment as a part of entry-to-practice examination.

The aim of this study was to assess OSCE test as a tool for training and evaluation of clinical counselling competencies of pharmacy students and assistant pharmacists in counselling of self-medication.

MATERIALS AND METHODS

The OSCE test was organized for the pharmacy students on the 8-th semester of the pharmacy program and for the assistant pharmacists participated at the CPD course at the University of Tartu, Estonia, in 2018. Both OSCE tests consisted of four stations covering various aspects of self-medication. Counselling was evaluated by pre-trained evaluators with structured assessment tool in 4-steps scale (0 – information not asked/provided till 3 – full information asked/provided) for clinical (e.g. patient assessment, use of medicines including safety aspects) and communication (e.g. initiation and closing the contact, lay terminology used for communication) skills. In all stations contact with patient was limited to 3 minutes. After OSCE test the students and assistant pharmacists were asked to fill in the structured feedback form.

RESULTS AND DISCUSSION

About 75% of the students and 83% of the assistant pharmacists agreed that in the OSCE test they could use combined knowledge about minor illnesses, non-prescription medicines and communication skills. Of the students 69% and of assistant pharmacists 48% learned about their actual level of expertise in patient counselling.

In both groups about 1/3 of the participants faced with high stress level before test. Of the students 77% and of the assistant pharmacists 54% complained about limited time for counselling. In both groups the participants demonstrated excellent communication skills. Students were to some extent more focused on identification of symptoms than assistant pharmacists (92% vs 78%), but counselling of medication use was provided almost at the same level (71% of pharmacy students and 81% of assistant pharmacists) including more practical tips and life style recommendations from assistant pharmacists.

CONCLUSIONS

OSCE test was considered as a relevant tool for evaluation of clinical counselling competencies in self-medication for pharmacy students and practicing pharmacists. In both groups participants gained extended information about actual level of knowledge and skills they use in counselling situation. As the pharmacy students followed more carefully full counselling model, the assistant pharmacists concentrated more on provision of drug information and less to the patient assessment. Based on the initial experience, the OSCE test could be recommended for assessment of undergraduates and practicing pharmacy specialists to evaluate their expertise and give recommendations for provision of quality patient centred service about medicines.

DEVELOPMENT AND ASSESSMENT OF OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCEs) IN A NEWLY INTRODUCED MPHARM PROGRAMME.

Hitch G¹, Hadley TE¹, Apampa B¹, Jill Merewood¹, Mike Pettit¹ and Manfrin A¹

¹*Department of Life Sciences/Pharmacy, JMS Building, University of Sussex, Falmer, Brighton BN1 9RH, UK.*

INTRODUCTION

Clinical competence is now widely recognised to assess The Objective Structured Clinical Examination (OSCE)¹. OSCEs comprise of a number of successive stations each with an observer and a 'standardised' scenario performed by a patient. Global rating and binary (yes/no) checklists are used to assess competencies in OSCEs.

At the University of Sussex, the assessment of OSCEs evolved in parallel with the development of the course. Students undergo both formative and summative OSCEs in all 4 years of the programme. Here we show how we developed our OSCEs to align with the Global rating score following attendance of an OSCEology course and the differences in students' performances between formative and summative assessment.

METHOD:

Two faculty staff attended the OSCEology course to learn about developing, assessing and global score rating of OSCE stations in 2018. Prior to that, in 2016 and 2017, first year pharmacy students completed five stations, each of which took 10 minutes with associated learning outcomes. The results were collated and the mean score for each station pre and post OSCEology course was compared as shown in Figure 1. The number of students who completed all OSCE stations was 74; 22 were enrolled in year 1, 25 in year 2 and 27 in year 3. All data was anonymised. Pre-OSCEology assessment was carried out as follows:

5 stations were developed and used in year 1 in 2016.

The checklist scoring for the assessor was marked out of 20. Global scoring was not used for assessment at this stage of the course.

In 2017 the checklist was re-written, but each assessed point equal carried an equal weighting of 1 mark (total 33 marks). The Global Score was introduced as a pass/ fail element of the station.

Post OSCEology assessment:

In 2018, 2 academics attended the OSCEology course which is developed and run by Prof Zubin Austin. this enabled the OSCEs to be restructured and the checklist changed again using the Ebel method of scoring. The scores for the stations changed and the global scoring remained as a pass/ fail element based upon the areas of

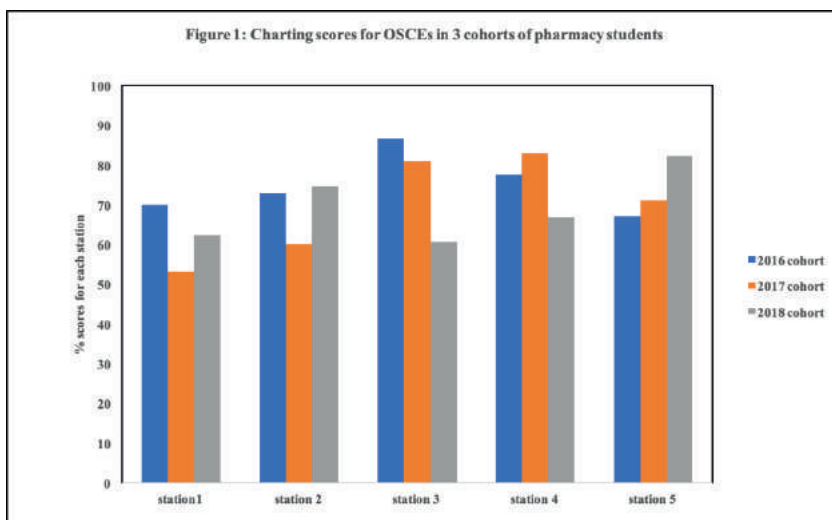
1. Verbal Expression and non-verbal expression (communication skills),
2. Response to Actor's feelings and needs (professional and diagnostic skills) and
3. Degree of Focus, Logic and Coherence (clinical knowledge and diagnostic skills)

RESULTS AND DISCUSSION

Figure 1 shows the mean scores per station as the OSCEs and associated assessments evolved with cohorts of 2017 and 2018. No significant statistical analysis was used since the stations evolved as the checklist and the marking criteria were altered between 2016 to 2018, pre and post attending the OSCEology course. It can be seen from the results that Prior to attending OSCEology course, the checklist score in 2016 and 2017 did not present with clarity and simplicity for assessor to mark. The

global scoring system was a pass/fail component based upon verbal expression and non-verbal expression (communication skills), response to actor’s feelings and needs (professional and diagnostic skills) and degree of focus, logic and coherence (clinical knowledge and diagnostic skills). Post OSCEology course, the marking criteria were more streamlined, and global scoring was based upon a pass/fail element on communication skills, professional skills and knowledge and diagnostic skills as a pass/fail element. Global scoring was included patient facing stations only.

It was interesting to note that the average score for station 1 which was changed from patient facing (2016 and 2017) to non-patient facing station (2018), the mean score for that station reduced from 70% to 62%. it maybe that students find it easier to collect data via communicating with the patient rather than having to look up information from resources in order to answer case based scenario on the same topic.



CONCLUSIONS

Our study highlights the importance of having a well-structured checklist and OSCE stations where patients are trained standardized patients, making it easier to validate and set standards on stations.

REFERENCES

1. AustinZ, O’Byrne C, PugsleyJ,et al.Development and validation processes for an objective structured clinical examination (OSCE) for entry-to-practice certification in pharmacy: the Canadian experience. Am J Pharm Educ. 2003;67(3):Article 76.

ANALYSIS OF MARKS IN A BIOPHARMACEUTICS AND PHARMACOKINETICS COURSE TO IMPROVE CONTENTS DESIGN AND PLANNING

Molpeceres J¹, Aberturas MR¹, Villaescusa L¹, Gastelut J¹, Aguilar MV¹

¹ *Department of Biomedical Sciences, School of Pharmacy, University of Alcalá, Spain*

INTRODUCTION

The pharmacy degree at Alcalá University amounts a total of 300 ECTS credits distributed in 30 basic and mandatory courses (6, 9 or 12 ECTS), 6 elective courses (4 ECTS) plus hospital or community pharmacy training (30 ECTS) and final degree project (6 ECTS). Every year students face a tight schedule of activities among which assessment tests are included. Therefore, as students are time-conditioned to prepare for the exams they tend to adopt pragmatic organizational schemes in order to pass the courses relying on the combination of the two exam sittings available (partial and final) under regular call. There is evidence that assessments can be used as sources of information for teachers and students to demonstrate success and effectiveness [1]. The objective of this project has been the analysis of marks given in a biopharmaceutics and pharmacokinetics course (6 ECTS) in order to understand student behaviour and improve contents design and planning.

MATERIALS AND METHODS

Biopharmaceutics and pharmacokinetics are taught in the first semester of 3rd academic year. Pharmacokinetics is studied firstly (14 chapters) and then, the different administration routes, LADME steps, bioavailability and bioequivalence, drug dosing adjustment and clinical pharmacokinetics are the focus of the resting 19 chapters.

Three groups were taught: A1, A2 (Spanish language) and A3 (English language). A2 followed a 1h class pattern whereas A1 and A3 followed 2h classes.

All marks available from the three groups taught during the first semester of the present academic year were analysed. Two different sittings are available under regular call: partial exam (PK problem solving and multiple-choice test (MCT)) and final exam (PK problem solving, MCT and short questions). Topics covered under partial exam included chapters 1 to 11. Assessment criteria were as follows:

- Lab course 15% (written exam on experimental topics)
- Problem solving 30% (15% partial exam; 15% final exam)
- MCT (15% partial exam, 25 questions, 20% final exam, 55 questions)
- 4 Short questions (20% final exam)

For the assessment there were 3 groups in the partial exam (A, B, C) and 2 groups (A, B) in the final exam.

RESULTS AND DISCUSSION

As shown in Figure 1 marks corresponding to the MCT in the partial exam were homogeneous in all groups. However, when the contribution of the group taught in English was analyzed a slight change was observed (54% pass). Figure 2 shows the results of MCT in the final sitting. Although the homogeneity within groups is kept, surprisingly, there is an abrupt change in the number of students passing. Concerning the problem solving activity, 60% of students taught in Spanish passed it in the partial exam whereas only 32% did it in the group taught in English. However, the same activity in the final assessment showed 67% and 58% passing in the mentioned groups, respectively. When the scores in both problem solving activities were compared (Figure 3) a majority of students showed PK was adequately learned from the partial exam regardless of the PK model.

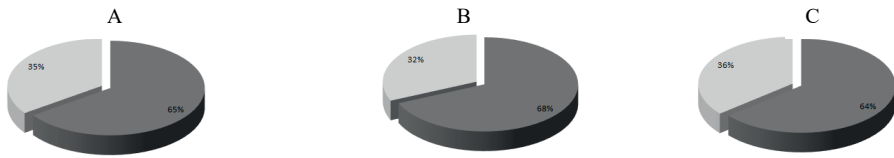


Fig. 1: Marks obtained in the MCT-partial exam for groups A (69), B (57) and C (50; 56% contribution of the English language group). Light grey: fail; dark grey: pass.

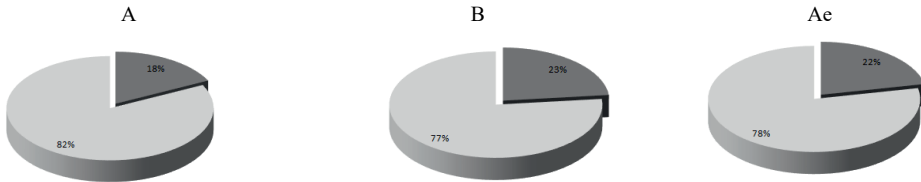


Fig. 2: Marks obtained in the MCT-final exam for groups A (68), B (73) and Ae (23, English language). Light grey: fail; dark grey: pass.

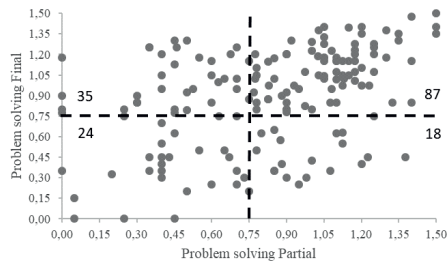


Fig. 3: Marks obtained in problem solving in the partial and final exams.

CONCLUSIONS

Analysis of assessment data in this course demonstrates that student performance in PK (problem solving) is relatively independent on the exam sitting (52% passed both of them) whereas some measures need to be taken to correct the strong differences found in the MCT.

REFERENCES

1. Guskey TR. How Classroom Assessments Improve Learning. Educational Leadership. 2003; 60(5): 6–11

Pharmacy students

PHARMACY STUDENTS' ACTIVITY AND EXPECTATIONS ON THE EXAMPLE OF POLISH PHARMACEUTICAL STUDENTS ASSOCIATION AT JAGIELLONIAN UNIVERSITY MEDICAL COLLEGE

Guzy P¹, Klaś K¹, Klimczyk A¹

¹Polish Pharmaceutical Students' Association at the Jagiellonian University Medical College, Kraków, Poland

INTRODUCTION

Polish Pharmaceutical Students' Association (PPSA) is the largest independent, non-governmental, non-political and non-profit organisation founded in 2016 by students of Jagiellonian University Medical College. The Association now represents nearly 1,300 pharmacy students and recent graduates. Moreover, PPSA is the part of International Pharmaceutical Students' Federation (IPSF) and European Pharmaceutical Students' Association (EPSA). The Association's statutory goals are focused on promoting the idea of pharmaceutical care and clinical pharmacy in Poland, also on supporting students in gaining practical experience and theoretical knowledge in the field of pharmaceutical sciences. Furthermore, our aim is to raise public awareness about prevention, care and education of the most common health problems. Polish Pharmaceutical Students' Association at the Jagiellonian University Medical College (PPSA JUMC) is the most numerous group of PPSA members.

The aim of the project is to summarize the PPSA JUMC activities in the period from October 2016 to February 2019, as well as to present the results of the online questionnaire survey conducted in the period of August and September 2018 by the local board in order to examine the expectations and ambitions of pharmacy students.

MATERIALS AND METHODS

The summary of activities was drawn on the basis of the reports collected from October 2016 to February 2019. The online questionnaire consisted a series of 30 questions, including multiple choice, closed and open-ended ones. The survey was addressed only to PPSA JUMC members. The main goal of the questionnaire was to analyse the members' needs and their level of satisfaction of the activities conducted by PPSA JUMC.

RESULTS AND DISCUSSION

Over 130 events were organized during the period from October 2016 to February 2019. PPSA JUMC conducts a wide range of activities, not only for students, but also for society. We strive to provide our members with the possibilities of gaining new knowledge and experiences before graduation, hereby broadening their career horizons and enabling an active entry into the labour market. The Association primarily focuses on conducting conferences, workshops and trainings, both at national and local level. Furthermore, PPSA JUMC is involved in students' integration, pharmaceutical and medical communities and promoting the idea of pharmaceutical care, as well as the profession of pharmacist. An important part of the PPSA JUMC activity are public health and educational campaigns for society. The aim of these events is set on raising public awareness about knowledge, prevention and care of most common health problems.

Detailed results are presented in table number 1.

Tab. 1: Number and type of PPSA JUMC activity

Type of PPSA JUMC activity	Number of events		
	Oct. 2016 – Sept. 2017	Oct. 2017 – Sept. 2018	Oct 2018 – Feb. 2019
Public health and educational campaigns	6	6	2
Educational trainings for pharmacy students	5	7	7
Conferences (both for student and patients)	7	5	7
Soft skills trainings for pharmacy students	3	6	1
Workshops for schools	2	2	3
Human Resources (e.g. Integration Events, Members' Meetings)	13	11	8
Charity events	4	3	5
Other types of activities	6	8	5
TOTAL	46	48	38
	132		

The online questionnaire survey results

The main questions which the survey asked are as follows:

- What kind of benefits do you expect from participating in the events organized by PPSA JUMC? (*multiple choice question*)
Of the people surveyed,
 - 75% chose the benefits of integration,
 - 54.5% stated that acquiring pharmaceutical and/or medical knowledge,
 - 36.4% answered “enrichment of *Curriculum vitae*”.
- What are the reasons that you attend the events conducted by PPSA JUMC? (*multiple choice question*)
Of the people surveyed,
 - 79.5% replied that interesting subject matter,
 - 72.7% chose an opportunity to gain new experiences,
 - 68.2% stated that an opportunity to acquire knowledge.
- What is your opinion on the statement that PPSA JUMC and its activities bring an added value to the pharmaceutical and student communities?
Of the people surveyed 72.7% answered “yes”.

CONCLUSIONS

The main conclusion of our analysis is that the amount of events organized by PPSA JUMC increases yearly. It provides evidence that members of PPSA JUMC have showed more involvement and a willingness to participate in an active life of Association, which results in gaining experience and knowledge before graduation. Importantly, it would appear that pharmacy students are becoming more and more aware of future workplace challenges.

EVALUATION OF A PHARMACY STUDENTS RESEARCH SYMPOSIUM

Vella Szijj J, Wirth F, Sammut Bartolo N, Attard Pizzuto M, Grech L, Serracino-Inglott A, Azzopardi LM

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Msida, Malta

INTRODUCTION

The Annual Pharmacy Symposium organised by the Department of Pharmacy at the University of Malta brings together undergraduate and postgraduate students, academic staff, stakeholders and collaborators to present outcomes of student research projects as oral and poster presentations. The student perception of the 2018 Pharmacy Symposium was evaluated.

MATERIALS AND METHODS

A self-administered questionnaire was distributed to students attending the symposium. Students were asked to rate, on a 5-point Likert scale from 'strongly agree' to 'strongly disagree' if the symposium made them more aware of other research projects, helped them understand research methodologies and terminologies, facilitated contact with stakeholders and improved their appreciation of presentation skills. Students were asked to rate their learning and social experience (from 1 to 5, 5 highest).

RESULTS AND DISCUSSION

Eighty-five students (27 male, 58 female; age range 18–26 years) completed the evaluation. Seventy-eight participants were undergraduate students. Students strongly agreed or agreed that the symposium made them more aware of other research projects (n=82), helped them appreciate presentation skills (n=79), helped them understand research methodologies and terminologies (n=66), and helped them get in contact with stakeholders (n=33). The majority of students gave positive feedback (score 4 or 5) on the symposium as a good learning (n=50) and social experience (n=57).

CONCLUSIONS

The 2018 Pharmacy Symposium was evaluated positively by the students indicating that the Symposium is a suitable platform that is supporting undergraduate students to appreciate research skills including dissemination competencies.

CELEBRATION OF THE III MEETING ON TOXICOLOGY AND SOCIETY: DRUGS OF ABUSE AND MOLECULAR TOXICOLOGY (TOXICOLOGY FORUM AND OLYMPIAD)

Guzmán-Guillén R¹, Hinojosa MG¹, Medrano-Padial C¹, Díez-Quijada L¹, Catunescu G², Merchán MM¹, Llana-Ruíz-Cabello M¹, Puerto M, Prieto AI¹, Pichardo S¹, Moreno IM¹, Jos A¹, Cameán AM¹, Gutiérrez-Praena D¹

¹*Area of Toxicology, Department of Nutrición y Bromatología, Toxicología y Medicina Legal, Faculty of Pharmacy, University of Sevilla, Spain.*

²*Department of Technical and Soil Sciences, Faculty of Agriculture, University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca, Romania.*

INTRODUCTION

The III Meeting on Toxicology and Society: Drugs of Abuse and Molecular Toxicology (Toxicology Forum and Olympiad) will take place on April 26th, 2019 at the Faculty of Pharmacy of the University of Sevilla, thanks to a Teaching Innovation Project of the University of Sevilla (code number 22114). The aim is to establish a framework for discussion on topics of great interest on toxicology (Drugs of Abuse, Molecular Toxicology, Food Safety, etc.) between students of different subjects and degrees (Degrees in Pharmacy, Biochemistry and Criminology, and Double Degree in Pharmacy and Optics and Optometrics).

MATERIALS AND METHODS

Different sessions are organized with a total duration of 10 hours, such as invited oral presentations concerning Acrylamide in food and Forensic Samples, a round table about Food Safety, short oral presentations by the students regarding Drugs of Abuse and Molecular Toxicology, and a poster session. Afterwards, students will participate by teams in different quiz games, with questions related to the syllabus taught in classes in what is called the “Toxicology Olympiad”. As a result of participation in the Meeting they could get up to 1 extra point in the grade. A survey will be distributed in order to know the attendees’ opinion.

RESULTS AND DISCUSSION

Up to date, more than 100 students have enrolled and more than 20 posters are expected to be presented, together with 2 invited oral presentations, 4 speakers in the Food Safety round table and 10 short oral presentations regarding Drugs of Abuse and Molecular Toxicology.

CONCLUSIONS

Based on the results from last year, the Meeting is expected to fulfil the expectations of the majority of attendees, due to the interest and variety of topics treated, and the attractiveness of the quiz games in teams from the Olympiad.

ACKNOWLEDGEMENTS

We gratefully acknowledge the III Plan Propio de Docencia and Faculty of Pharmacy of the University of Sevilla.

PATIENT-ORIENTED FINAL PROJECTS PUBLISHED IN FARMAJOURNAL IN 2018.

Caballero E¹, Muro A¹, Martín-Suárez AM¹, Morales AI¹, Álvarez R¹

¹ Faculty of Pharmacy, University of Salamanca, Spain.

INTRODUCTION

Pharmaceutical care and patient-oriented education are among the most important competences in Pharmacy Degrees. Student final projects in this area are usually performed either in hospitals or pharmacies. FarmaJournal, an *on line* journal edited by Salamanca Faculty of Pharmacy includes in its objectives to outreach the results of this healthcare research works. (<http://revistas.usal.es/index.php/2445-1355/index>)

MATERIALS AND METHODS

FarmaJournal invites students to publish their projects as soon as they are considered outstanding or excellent by the evaluation committee.

After submission, the articles are reviewed and corrected to finally be published.

RESULTS AND DISCUSSION

Along year 2018 80% of articles published in FarmaJournal are related to pharmaceutical care or assistant pharmacy. However, only 30% of experimental final projects are performed in this area, which means that FarmaJournal is becoming important to outreach the researching work that Pharmacy students are carrying out in Hospitals and Pharmacies.

Magistral preparations, information about minor pathologies, pharmacokinetic studies, personalized dosification systems are some of the usual issues studied.

CONCLUSIONS

Faculty of Pharmacy of Salamanca is completely implicated in patient-oriented formation of its students. Last year students take part of pharmaceutical daily work in hospitals and pharmacies and they actively collaborate with Pharmacist in the implementation of new pharmaceutical care programmes.



Postgraduate/professional education

INTRODUCTION TO TEACHING – A SHORT COURSE WITH THE AIM TO BUILD PEDAGOGIC CONFIDENCE IN PHDS AND POST-DOCS

Bengtsson J., Johansson H., Holmbäck U.

PRåM – the Pedagogic Council at the Disciplinary Domain of Medicine and Pharmacy, Uppsala University, Sweden

INTRODUCTION

PhD students often get involved in teaching early in their research career with little or no pedagogical education or training. They need pedagogical tools and confidence to help them create a good learning environment. Although our University offers a five-week academic teacher training course, it is not always possible for PhD students to allocate such time to attend this course. Also, it may be an advantage to also have some teaching experience before attending this more extensive course.

The aim was to create a short introductory course to teaching for PhD students and post-docs with no or little pedagogic training with the overall goal to instill confidence in teaching situations.

MATERIALS AND METHODS

The three-day course was based on a “flipped classroom approach” [1]: The participants received material to read before the first meeting and were also to create a short online presentation. The first two days consisted of group activities and discussions on methods to activate students, reflective teaching and e-learning tools [2, 3]. During the following three weeks the participants performed pair-wise observations of an experienced teacher during a lecture, seminar or laboratory work, wrote a reflective report, and read the other participants’ reflective reports [4]. After these weeks, at the third day of the course, the reports were discussed in groups and the participants filled in a course evaluation. A long-term evaluation was sent to the participants six months after the course.

RESULTS AND DISCUSSION

Fifty participants (37 PhD-students and 13 post-docs) completed the course (two courses in 2017 and two courses in 2018), thirty-five answered the course evaluation. Seventy-seven percent of the participants reported that they felt more in control of their upcoming teaching sessions. A majority of the participants reported that the most relevant thing they had learnt was the importance of reflective teaching.

Twenty-three participants of 43 answered the long-term evaluation. The importance of reflection was confirmed. In addition, the importance of a good preparation was also stressed in several comments. Many participants have or will implement reflective teaching as well as tools to activate students (e.g. clickers and padlet).

CONCLUSIONS

Our results indicate that a short introductory course can give PhDs and post-docs pedagogic confidence in their upcoming teaching. The evaluations indicate that the participants have started to reflect about their teaching, which in our opinion will benefit the students’ learning.

REFERENCES

1. Hew KF, Lo CK. Flipped classroom improves student learning in health professions education: a meta-analysis. *BMC Med Educ.* 2018 Mar 15;18(1):38
2. Armstrong DK, Asselin ME. Supporting Faculty During Pedagogical Change Through Reflective Teaching Practice: An Innovative Approach. *Nurs Educ Perspect.* 2017 Nov/Dec;38(6):354–357
3. Nguyen QD, Fernandez N, Karsenti T, Charlin B. What is reflection? A conceptual analysis of major definitions and a proposal of a five-component model. *Med Educ.* 2014 Dec;48(12):1176–89.
4. Sullivan PB, Buckle A, Nicky G, Atkinson SH. Peer observation of teaching as a faculty development tool. *BMC Med Educ.* 2012 May 4;12:26.

TRAINING TO TEACH AT THE FACULTY OF PHARMACY OF VALENCIA (SPAIN)

Ferrándiz ML¹, Garrigues TM¹, Pereda J¹

¹ Faculty of Pharmacy, University of Valencia, Spain

INTRODUCTION

The Universitat de València's mission is "to train competent professionals at European Professional Standard and to encourage prestigious research with international implications that will contribute to the development of our society". Nevertheless, in Spain the staff is primarily engaged based on excellence in research, whereas the competences to teach are not to be demonstrated. Historically, University teacher training consisted of reproducing the model of senior teachers known by the junior teachers.

Recently, as a consequence of the EHEA, a new paradigm was established: the teaching-learning process became student centred. Moreover, teaching is understood as a skill that can be learnt. In this context, university professors are required to make every effort to develop and maintain the skills of a competent teacher.

Our Faculty initiated in 2013 a series of workshops to facilitate the training and continuing education, with three main objectives:

- Encompass the change of EHEA
- Develop competences and maintain teaching excellence as new strategies become in force
- Strengthen the sense of community among our staff

MATERIALS AND METHODS

The project has been part of the Innovation plan of the Faculty of Pharmacy. It is designed by a Committee of the Faculty composed of four teachers, three students and one administrative staff. The proposal is sent to an annual call of the UdIE-UV (Unit for Teaching Innovation) and it is financed under a competitive fashion. Even though there is a common objective (i.e. training faculty members as teachers), every year had a different topic. Topics were selected covering teachers' demands through the satisfaction survey, appreciation of students or needs expressed by the Directive team. The courses were organized as workshops of 15h (i.e. two sessions and online work), covering both knowledge of learning theory and an experiential component. They were programmed during the exam period (January or June) in order to facilitate the attendance of teachers, as the teaching pressure is lower than in other periods. The information about the course is distributed by e-mail and announcement in the Faculty website. A formulary is published to apply in order to define the classroom size and materials to be used. The activity is completely voluntary. It is free, developed during the work time and at the workplace. Questions Likert type were used in a satisfaction survey as a measure of quality.

RESULTS AND DISCUSSION

Workshops already developed are chronologically listed in Table 1. Topics covered include setting SMART learning objectives; lesson planning; encouraging active participation in teaching; and giving and receiving feedback at different teaching activities, among others.

Table 1: Courses developed

Academic course	Title
2012–13	Seminars: what can we do?
2013–14	Final Degree Work: what, how and how long?
2014–15	Worth of face to face activities in the new degrees
2015–16	Achieving excellence in Pharmacy Education
2016–17	Can we improve our tutorials?
2017–18	How to get the most out of our Moodle platform?
	The evaluation: a tool and a challenge
2018–19	Can we improve our theory classes?

The number of teachers involved along the years is maintained, pointing that there is a stable group of teachers aware of the need of this formation, besides their scientific expertise, to achieve excellence. There is not a relationship between number of years at the job and engagement, nor gender. Concerning the satisfaction expressed, the global perception was very high, mainly directed to speakers and utility in the actual conditions of our teaching. Comments were acknowledged in the virtual classroom, as the survey was anonymous.

CONCLUSIONS

These courses allowed the meeting of teachers from different courses thus opening a channel for cooperation in the organisation of the curricula while improving the techniques and activities to enhance learning.

REFERENCES

1. Strang AF, Baia P. An Investigation of Teaching and Learning Programs in Pharmacy Education. *Am J Pharm Educ.* 2016;80(4):59.

COACHING IN PHAMACEUTICAL SCIENCES

Moutinho MGM^{1,2}, Costa IM^{1,2}, Cavaco-Silva P², Gomes P²

¹ *PharmSci Lab – Innovative Solutions in Pharmaceutical Sciences; IUEM, Instituto Universitário Egas Moniz, Monte de Caparica – Portugal*

² *CiiEM, Centro de Investigação Interdisciplinar Egas Moniz; IUEM, Instituto Universitário Egas Moniz, Monte de Caparica – Portugal*

INTRODUCTION

Pharmaceutical Sciences undergraduate programs traditionally have a high number of laboratory classes, but few curricular units regarding communication and personal skills. Although, over the years the employer paradigm has shifted and recruitment is focused not only in technical skills and knowledge, but also in personal skills and in the potential of growth and development.

Therefore, in 2018/2019 the Integrated Master Degree in Pharmaceutical Sciences of IUEM, Portugal, decided to offer, in the last curricular year, a new, and, as far as we know, unique in Portugal, Optional Curricular Unit (OCU): “Coaching in Pharmaceutical Sciences”. This OCU aimed to enable the development of students’ personal potential and to provide them with the knowledge and techniques to develop their skills and deepen self-knowledge, allowing the students to be better professionals.

MATERIALS AND METHODS

Coaching in Pharmaceutical Sciences was offered as an optional unit to the 5th year students. Classes were based on a practical methodology, using active pedagogical methods with the aim of integrating student participation, based on self-learning through individual activities, or in pairs so students could train their soft skills. Teaching methods included self-diagnosis, case studies and training of competences in different simulations that culminated in the development of a personal development plan. Exercises aimed to empower students to perceive new possibilities, to recognize resources, and to perceive their self-efficacy. Syllabus addressed issues such as communication, emotional intelligence and leadership, coaching competences and tools, coaching within the pharmaceutical reality, among others.

RESULTS AND DISCUSSION

At the beginning of the semester, students were surprised by the new teaching-learning methodology, totally different from the traditional methodology of the other curricular units. However, during the academic semester, pharmaceutical science students showed an excellent acceptance of all the aspects worked in the classroom.

Students enrolled in Coaching in Pharmaceutical Sciences, reported in the end of the semester that, despite their initial surprise and even some resistance with this new teaching-learning methodology and paradigmatic approach, they greatly valued the CU. Students believe that it will be a very important and useful training tool for their future, and that all Pharmaceutical Sciences students should have it.

CONCLUSIONS

In this era of technology, competition and need for continuous adaptation to new situations and employment opportunities, it is the author’s conviction that students will benefit from curricular units of coaching geared to their professional field, focused on the future, for action and change, affirming the students as skilful individuals.

It is still early to assess the real impact of this new CU in the training of future pharmacists, however we believe that they will be better able to face the new challenges of the profession, with improved performance, motivation and problem-solving ability.

REFERENCES

1. Garvey Berger J & Johnson K. Simple Habits for Complex Times: Powerful Practices for Leaders. 2016. 1st ed. Stanford Business Books.
2. Garvey Berger J. Changing on the Job: Developing Leaders for a Complex World. 2011. Stanford, CA
3. Waitzkin J. The Art of Learning: An Inner Journey to Optimal Performance. 2008. Free Press.

MENTORING DOCTORATE OF PHARMACY STUDENTS: AN INTERPROFESSIONAL COLLABORATION

Grech Louise¹, Coleiro Bernard^{1,2}, Azzopardi Lilian Margaret¹

¹*Department of Pharmacy, University of Malta, Malta*

²*Department of Medicine, Mater Dei Hospital, Malta*

INTRODUCTION

The Doctorate in Pharmacy course is a post-graduate three year course available for pharmacists who would like to develop their patient-focus competences. Students follow case-based sessions, undertake five experiential placements for a total duration of 26 weeks and submit a pharmacy practice research dissertation. One of the experiential placements which takes place over 6 weeks and which is offered to students is carried out within the rheumatology unit at Mater Dei Hospital.

METHOD

At the start of the rotation, students are briefed on the clinical pharmacy practice setting within rheumatology and general aspects of the rotation. The first week is dedicated to an observation phase where the student observes the interdisciplinary team including the clinical pharmacist at work in hospital during ward rounds and in ambulatory care clinics. During the second week, the student is expected to identify two patient cases for discussion, one from the ward round setting and the other from the ambulatory clinic respectively. During the third week, in addition to attendance to the ward rounds and ambulatory clinics, the student presents and discusses the chosen cases with the pharmacist preceptor. During the fourth week of the placement, another two cases are chosen for discussion. During the fifth and last week of the placement, the student is exposed to medicines information query cases, a journal club where critical appraisal is carried out and a discussion of a hot topic or a critical controversy discussion. Health care professional education sessions are included in the placement and these are developed based on identified service needs.

RESULTS

The assessment consists of a self assessment form which students fill in at baseline, midpoint and the end of the placement. The self assessment consists of identifying areas of weakness, strengths and addresses opportunities to resolve the weaknesses identified. The preceptor evaluates the presentation and discussion of the clinical cases in terms of case description, case evaluation and oral communication. The rheumatology field placement was chosen by 3 students over a period of 4 times when it was offered. Two of the students were Maltese and one was foreigner. The students came from policy and community pharmacy backgrounds.

CONCLUSION

The rheumatology placement offers exposure to clinical pharmacy, direct patient interaction with an inter-professional approach. The next step is to evaluate the placement from a students point of view in order to feed suggestions in the improvement loop for the experiential placement.

RELATIONSHIP BETWEEN EDUCATIONAL ENVIRONMENT, FULFILMENT OF BASIS PSYCHOLOGICAL NEEDS AND MOTIVATION OF PHARMACIST TRAINEES IN WORKPLACE-BASED EDUCATION

Westein MPD^{1,2,3}, Koster AS¹, Burgt SME van der², Bouvy ML¹, Kusurkar RA²

¹ *Department of Pharmaceutical Sciences, Utrecht University, Utrecht, the Netherlands*

² *Amsterdam UMC, VUmc School of Medical Sciences, Dept. of Research in Education, Amsterdam, the Netherlands*

³ *Royal Dutch Pharmacists Association (KNMP), the Netherlands*

INTRODUCTION

Research has shown that autonomous motivation for learning and academic performance are associated with satisfaction of students' basic psychological needs (BPN) for autonomy, competence, and relatedness. Studies in medical education show that the educational environment (EE) plays an important role in the motivation of students and in determining the degree to which education prepares them for independent practice.

The authors hypothesize that, in workplace-based education, the influence of the EE on the motivation of trainees is mediated by fulfilment of the BPN. This study investigates the relationships between the experienced EE, BPN satisfaction and frustration, and the autonomous (AM) and controlled motivation (CM) of pharmacist trainees using Structural Equation Modeling (SEM).

MATERIALS AND METHODS

The study is carried out in the Netherlands with pharmacist trainees in a 2-year postgraduate workplace-based education programme specialising as community pharmacists [1]. Between November 2017 and October 2018, pharmacist trainees were asked to fill in three questionnaires: (1) The SPEED (Scan of Postgraduate Educational Environment Domains) to measure the perception of the EE based on Moos' theoretical framework for human environments (15-items), (2) The 'BPN Satisfaction and Frustration Scale for the Work Domain' (24-items) based on the Self-Determination Theory, and (3) the Academic Motivation Scale (24 out of 28 items, excluding amotivation). The reliability of the measurements, and the relationships between EE, BPN and the level of AM and CM were analysed through SEM, using SPSS v24 and MPlus 8, respectively.

RESULTS AND DISCUSSION

A total of 205 out of 232 pharmacist trainees (88%) participated in this study. Cronbach's alphas were calculated for each subscale. 2 items within the Academic Motivation Scale were removed to improve reliability. All subscales had an acceptable reliability (>0.70), except for autonomy satisfaction (0.66) and identified extrinsic motivation (0.61). The Pearson's correlations of all variables measured are shown in Table 1.

Tab. 1: Pearson's correlation. **Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

	Educational Environment	BPN Satisfaction	BPN Frustration	Autonomous motivation	Controlled motivation
Educational Environment	1				
BPN Satisfaction	0.570**	1			
BPN Frustration	-0.508**	-.703**	1		
Autonomous motivation	-.014	.154*	.029	1	
Controlled motivation	-.138	-.044	.246**	.498**	1

The SEM-model with the best fit is shown in figure 1. The CFI (= 0.97), TLI (= 0.92), and SRMR (= 0.042) indicated good fit. The RMSEA (= 0.11) is relatively high, but this could be due to the relatively small sample size and a low number of degrees of freedom. A positive score of EE improves the BPN Satisfaction and reduces Frustration of BPN. Satisfaction of the BPN didn't have a strong influence on Autonomous motivation of pharmacist trainees. However, frustration of the BPN did increase Controlled motivation.

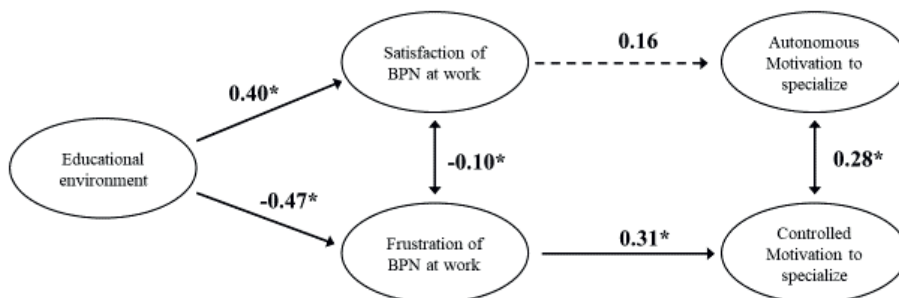


Fig. 1: Structural Equation Model of the relationship found between EE, BPN, and Academic Motivation

CONCLUSIONS

The results support the hypothesis that a structural relationship exists between the quality of EE within the training pharmacy, the fulfillment of BPN and the motivation of pharmacist trainees. A positive perception of the EE lowers Frustration of BPN, which in turn decreases Controlled motivation.

REFERENCES

1. Westein MPD, de Vries H, Floor A, Koster AS, Buurma H. Development of a Postgraduate Workplace-based Curriculum for Specialization of Community Pharmacists using CanMEDS Competencies, Entrustable Professional Activities and Programmatic Assessment. *Am J Pharm Educ* 2018 02/28; 2018/04:ajpe6863.

Varia

EVALUATION OF THE CONSUMPTION OF MEDICINAL PLANTS FOR THE TREATMENT OF AFFECTIONS OF THE DIGESTIVE SYSTEM IN THE COMMUNITY OF MADRID, SPAIN

Sánchez M.¹, González-Burgos E.¹, Iglesias I.¹, Lozano, R.², Gómez-Serranillos MP¹

¹*Departamento de Farmacología, Farmacognosia y Botánica. Facultad de Farmacia., Universidad Complutense de Madrid, 28040-Madrid, Spain.*

²*Departamento de Química en ciencias Farmacéuticas, Facultad de Farmacia, Universidad Complutense de Madrid, 28040-Madrid, Spain.*

INTRODUCTION

In Spain, around half of the population suffers from some type of digestive pathology and the stress and bad diet and it is estimated that stress and poor nutrition are the main reasons for this type of disorder. This Type of pathologies has a prevalence of approximately 20% of patients admitted to hospitals. Digestive diseases are the reason for frequent consultation in the pharmacy as well as in primary care centers or specialized care consultations. Their high frequency significantly alters the quality of life of the people who suffer them, affect their work performance and entail a considered consumption of health resources. [1, 2]

The phytotherapy is an effective and safe alternative for the treatment of digestive diseases. As these pathologies are normally related to each other, medicinal herbal products can be polyvalent, of application in different diseases or digestive alterations. [3–5]

MATERIALS AND METHODS

In this work, a cross-sectional descriptive study was carried out on the consumption of medicinal plants for the digestive system in the Community of Madrid, elaborating an *ad hoc* survey, previously validated. The survey was answered by a total of 543 people, of whom 382 were women and 161 men. The majority of the respondents were within the age range of 18–44 years (66.9%), followed by the age range 45–64 (22.8%) and finally those over 65 years (10.3%). It is based on 20 questions that refer to the demographic characteristics of the patient, form of use, frequency and purpose of use of medicinal plants, including possible adverse reactions and interactions, as well as the information associated with their acquisition. Data were collected from December 2016 to May 2018 using the face-to-face interview technique, in local independent pharmacies, workplaces and university areas of different regions of the Autonomous Community of Madrid

RESULTS AND DISCUSSION

The results obtained indicate that 69% of the population surveyed use medicinal plants to treat disorders of the digestive system. Infusion is the preferred form of consumption by that population (75.8%). Considering the preferences of the place of acquisition of herbal products by respondents, almost half prefer the pharmacy (51.9%) followed by the herbal shops (42.9%) and supermarkets (34.9%). The analysis of the results is carried out statistically using the chi-square method. Regarding educational level, about 76.8% of the interviewees had higher education while about 23.2% of the respondents had basic education or vocational training.

In this population survey we also analyzed the degree of knowledge about adverse reactions and side effects of herbal products. Half of the respondents (46.6%) think that medicinal plants could cause adverse reactions and side effects such as conventional drugs do while the other half of the population sampling did not (53.4%).

CONCLUSIONS

The results of this work show a high consumption of medicinal plants, especially in young-middle-aged women with university studies. The medicinal plants most consumed for the treatment of digestive system disorders by the surveyed population *Matricaria recutita* (24.8%), *Camelia sinensis* (L.) Kuntze. (7.1%) and *Mentha pulegium* L. (6.9%). The pharmacy is the preferred place for respondents to obtain these products. Many consumers use medicinal plants and their derivatives with the assumption that the natural is safe; this is not necessarily true, since, many recent reports have shown, in addition to benefits, there are also risks associated with the use of traditional medicine and complementary and alternative medicine. Several different medicinal plants which are concomitantly consumed with conventional drugs have been identified in this study

REFERENCES

1. Devesa, F., Pellicer, J., Ferrando, J., Borghol, A., Bustamante, M., Ortuño, J. et al. 575 (2004). Consumo de hierbas medicinales en los pacientes de consultas externas de 576 digestivo. *Gastroenterol. Hepatol.* 27, 244–249.
2. Hang Li, H. (2012). Editorial Message to the Journal of Medicinal & Aromatic Plants. *Medicinal Aromatic Plants* 1:e115. doi:10.4172/2167-0412.1000e115.
3. Craft, R., McClure, K. C., Corbett, S., Ferreira, M. P., Stiffarm, A. M., and Kindscher, K. (2015). Ethnic differences in medicinal plant use among University students: a cross-sectional survey of self-reported medicinal plant use at two Midwest Universities. *BMC Complement. Altern. Med.* 15:192. doi: 10.1186/s12906-015-0725-1.
4. McLay, J. S., Pallivalappila, A. R., Shetty, A., Pande, B., Al Hail, M., and 634 Stewart, D. (2016). 'Asking the Right Question'. A Comparison of Two Approaches to Gathering Data on 'Herbals' Use in Survey Based Studies. *PLoS One.* 11, e0150140. doi: 10.1371/journal.pone.0150140.
5. Castillo Garcia, E. and Martinez, I. (2016). *Manual de fitoterapia*. Barcelona: Elsevier-Masson, 536 Págs. ISBN: 978-84-458-1797-1.

FOLIA PHARMACEUTICA CASSOVIENSIA – A NEW SCIENTIFIC PHARMACEUTICAL JOURNAL AT THE UNIVERSITY OF VETERINARY MEDICINE AND PHARMACY IN KOŠICE, SLOVAKIA

Faixova Z, Pistl J, Fedorova M, Mojzisova J

University of Veterinary Medicine and Pharmacy in Košice, Slovakia

INTRODUCTION

The University of Veterinary Medicine and Pharmacy in Košice started publishing a new scientific journal “Folia Pharmaceutica Cassoviensia” (ISSN 2585-9609) in 2019.

MATERIALS AND METHODS

The main impetus behind the launch of the new journal was the Pharmacy study programme, offered at UVMP in Košice since the academic year 2006/2007. There were students enrolled in the new study programme and the university also welcomed new university teachers and researchers, who began conducting pharmaceutical research. There was a need for a journal in which we could publish scientific results obtained by the researchers and produced by masters theses in this science field. Another reason for starting the journal was organising rigorous procedures in the Pharmacy study programme, PhD study and student scientific conferences for pharmacy students at the university.

The first step in setting up the journal was its registration with the University Library in Bratislava as “Folia Pharmaceutica Cassoviensia” (ISSN 2585-9609) on 1 August 2018. The registration was followed by creating the journal’s graphic design, defining its focus, and determining a composition of the international editorial board, conditions for contributors as well as its publication frequency. The journal is published quarterly. It contains original papers from the field of pharmaceutical and biomedical sciences, review articles, pharmaceutical and clinical case studies and short reports on current scientific knowledge in pharmacy and medicine. Articles are published in Slovak, Czech or English, with abstracts written in English. Since the publication costs are covered by UVMP in Košice, we do not charge any publication fees. The journal aspires to become a periodical with contributions published solely in English. Decisions about the publication of contributions in the journal are made by the editorial board on the basis of reviews by at least two anonymous reviewers. When submitting their manuscripts, authors must provide a statement that their article is original, has not been published before and has not been submitted for publication elsewhere.

RESULTS AND DISCUSSION

The first issue of the new journal was published in January 2019 and the launch ceremony took place in March. The journal is available in print and freely accessible electronic formats. Information about the journal including instructions for authors and the journal’s online versions can be found on the website of UVMP in Košice <http://www.uvlf.sk/univerzitné-časopisy/fovia-pharmaceutica-cassoviensia>.

The Folia Pharmaceutica Cassoviensia journal is listed among the periodicals of the Ministry of Culture of the Slovak Republic under the registration number EV 5741/18.



1
I • 2019

Fig. 1: Folia Pharmaceutica Cassoviensia

CONCLUSIONS

The journal in print format is distributed to higher education institutions, faculties, research centres in the Slovak Republic and the Czech Republic, university libraries and pharmaceutical distribution companies. A hyperlink to the journal has also been shared with partner universities abroad. We firmly believe that the new university scientific journal will be accepted by pharmacy and biomedicine professionals not only at the University of Veterinary Medicine and Pharmacy in Košice but also at other universities, faculties and research institutions in the Slovak Republic and abroad.

Index

- Aberturas MR, 111, 133
Aguilar MV, 111, 133
Altieri R, 59, 123
Altieri RJ, 61, 87, 90
Álvarez de Sotomayor M, 125
Álvarez de Sotomayor M, 53
Álvarez R, 139
Álves Sánchez J, 72
Ambrus T, 50
Apampa B, 127, 131
Armoiry X, 46
Attard A, 74, 109, 122
Attard Pizzuto M, 63, 78, 118, 137
Aulagner G, 46
Azzopardi LM, 63, 74, 76, 77, 78, 87, 90, 115, 117, 122, 137, 146
Bačkorová M, 114
Baumann-Birkbeck LM, 105
Benardos P, 25
Beneito RD, 91
Bengtsson J, 140
Bobrova V, 129
Borg JJ, 118
Bouvy ML, 147
Breitkreutz J, 93
Brunner JM, 123
Burgt SME van der, 147
Caballero E, 72, 139
Callejón R, 55
Callejón RM, 55
Calvagna V, 117
Cameán AM, 138
Campbell C, 101
Caramona MM, 107
Carrascal L, 55
Carrasco NJ, 91
Casas M, 55
Catunescu G, 138
Cavaco-Silva P, 144
Cervera JP, 91
Codesal Gervás T, 72
Coleiro B, 146
Condron C, 103
Cos P, 99
Costa FA, 107
Costa IM, 144
Córdoba M, 97
Cvijjić S, 81, 93
D'Arcy D, 93
de la Haba RR, 55
de Pascual-Teresa B, 99
De Rojas MA, 125
Díez-Quijada L, 138
Dimitrov M, 81, 93
Dymek J, 57, 75
Elorza B, 97
EPSA, 44
Escario J, 97
Faixova Z, 151
Falzon S, 117
Fedorova M, 151
Ferrándiz ML, 142
Firlova A, 50
Fish D, 59
Flood M, 103
Franson KL, 61
Gaillard C, 46
Galea N, 117
García-Miranda P, 55
Garrigues TM, 91, 142
Gastelut J, 133
Gilliam EH, 61
Gökbulut A, 85
Gołda A, 57, 75
Gomes P, 144
González-Burgos E, 149
Gómez-Serranillos MP, 97, 149
Grant GD, 51, 79, 105
Grech L, 63, 76, 117, 137, 146
Gregorio JM, 91
Georguiev S, 113
Gutiérrez-Praena D, 55, 138
Guzmán-Guillén R, 55, 138
Guzy P, 135
Haaf-Mactal C, 63
Hadley TE, 127, 131
Hartmann D, 46
Hayden J, 103
Hernández MT, 111
Hinojosa MG, 138
Hitch G, 127, 131
Holmbäck U, 140
Hope DL, 51, 79, 101, 105
Hrčka Dubničková M, 120

Hurtado C, 99
 Iglesias I, 97, 149
 Janczukowicz J, 22
 Johansson H, 140
 Jos A, 138
 King MA, 51, 79
 Klač K, 135
 Klimczyk A, 135
 Kollar P, 50
Koster AS, 45, 147
Kowalski T, 57
 Kubinová R, 114
 Kurhajec S, 114
 Kusurkar RA, 147
 Kuznetsova O, 83
 LaFerla G, 48
 Lau A, 63
 Llana-Ruiz-Cabello M, 138
 Lozano R, 97, 149
 Manfrin A, 127, 131
 Martí JBE, 91
 Martinet W, 99
 Martins AP, 107
 Martín-Suárez A, 72
 Martín-Suárez AM, 139
 Masiá LP, 91
 Medrano-Padial C, 138
 Merchán MM, 138
 Merewood J, 127, 131
 Mifsud Buhagiar L, 48, 109, 122
 Mojziso J, 151
 Molpeceres J, 111, 133
 Moore G, 59
 Morales AI, 139
 Moreno IM, 138
Moutinho MGM, 144
Mučaji P, 120
 Muñoz N, 125
 Muro A, 139
Muro Álvarez A, 72
Muscat C, 109, 122
Narokha V, 83
 Nemire R, 21
 Nicoli S, 65
 Nizhenkovska I, 83
 O'Leary C, 103
 Ojeda M, 125
Opatrilova R, 50
 Orta MM, 125
 Otero P, 99
 Özçelikay G, 85
Padula C, 65
 Parojčić J, 81, 93
 Pascual LF, 91
 Pereda J, 142
Pérez-García C, 99
 Pescina S, 65
Petkova V, 81, 93
 Petkova-Gueorguieva E, 113
 Petrova K, 129
 Pettit M, 127, 131
Peychev L, 113
 Peychev Z, 113
 Pham J, 63
 Pichardo S, 138
 Piedras CT, 91
 Pisl J, 151
 Polak W, 57, 75
 Prieto AI, 138
 Puchades RI, 91
 Puerto M, 138
 Ramos A, 53
Ramos Carillo A, 125
 Randmäe L, 129
 Ríos-Reina R, 55
 Rodríguez CZ, 91
 Rogers GD, 51, 79
 Román J, 97
 Román LV, 91
 Romero RV, 91
 Ruiz R, 53, 55
 Said D, 118
 Sammut Bartolo N, 63, 137
 Sánchez Burson J, 125
Sánchez M, 149
 Sánchez-Hidalgo M, 55, 125
 Santi P, 65
 Sanz MLC, 91
 Saseen J, 59
 Sergentanis T, 19
Serracino Inglott A, 48, 109
 Serracino-Inglott A, 63, 74, 77, 78, 115, 118,
 122, 137
 Seychell M, 19
 Skowron A, 57, 75
 Snopková M, 120
 Späth HM, 46
 Sullivan C, 103
 Tähnas J, 129
 Talero E, 55
 Teixeira Silva P, 72
 Tesaf T, 120
 Thompson M, 123
 Tomás CM, 91

Tóth J, 120
Turgumbayeva AA, 95
Ustenova GO, 95
Valentová J, 120
Valles Martín E, 72
Vallet AC, 91
Varas-Doval R, 72

Vella Szijj J, 63, 77, 137
Villaescusa L, 111, 133
Volmer D, 129
Westein MPD, 147
Wirth F, 63, 74, 115, 137
Wiśniowska B, 57
Zhakipbekov KS, 95



ABL&E-JASCO POLSKA

A white outline map of Europe is centered on a dark blue background. A white circle highlights the city of Kraków in southern Poland. A white line extends from the circle to the text "Kraków".

Kraków

ISBN 978-83-66027-37-4