Pharmacy Education, 2018; 18 (1) 11 - 28

European Association of Faculties of Pharmacy 2017 Annual Conference, Helsinki, Finland

O-2 Inter-professional learning by advanced clinical simulation

Teresa M. Garrigues[1], Carmen Casal-Angulo[2,3], Luis Mifsut-Rodríguez[3,4], Carmen Carrión-Carrión[1,5], Javier Chorro[4], Julio Fernández-Garrido[2]

[1]*Faculty of Pharmacy, University of Valencia, Spain*

[2]*Faculty of of Nursing, University of Valencia, Spain*

[3]*Emergency Health Service of Valencia (SES - SAMU), Spain*

[4]*Faculty of Medicine, University of Valencia, Spain*

[5]*Pharmacy Service at the Clinic University Hospital of Valencia, Spain*

Introduction: The World Health Organization (WHO) has defined inter-professional education (IPE) as the occurrence of two or more health or social professions learning interactively about, from and with each other, all with the common goal of enabling effective collaboration and improving patient health outcomes[1]. Advanced clinical simulation is a technique that incorporates scenarios and case studies developed to replicate real-life clinical situations. It enables health students to be trained in a safer environment than actual hospital internships.

Aim: In this study, clinical simulation sessions to experience joint training among students of Medicine, Nursing and Pharmacy, encouraging interactive learning were organised. The degree of satisfaction and the acquisition of non-technical skills were verified.

Method: The case study was prepared by an inter-professional team of six university teachers, detailing clinical situation, technical and non-technical competences to be practiced and rubrics/tests[2,3] to measure both. Volunteer students from the last year of Medicine (n=13), Nursing (n=12) and Pharmacy (n=22) of the University of Valencia took part in different clinical simulations. After every session, participants attended a debriefing during which they viewed the videotape of the simulation and discussed their actions and perceptions in order to reach a consensus of how to achieve the best result in patient care, emphasising non-technical skills as teamwork, effective communication and leadership. Statistical analysis of results was carried out by SPSS® v 22.

Results: Most of the students (94%) consider simulation as an interesting methodology to learn clinical skills, from a technical and non-technical point of view. They expressed the interest of inter-professional practical sessions as a way to learn with wider perspectives, nursing and pharmacy students being more aware of this point than medical students. They also highlight the importance of putting into practice their own knowledge in a simulation team in order to collaborate as professionals in the future. Learning outcomes obtained were positive.

Discussion: Simulation is a teaching methodology that enables practicing clinical skills in a safe environment. The addition of inter-professional learning in the scenarios bring out the possibility to rise teamwork, effective communication and leadership among students.

References

[1]Reeves, S., Boet, S., Zierler, B., Kitto, S. (2015). Interprofessional Education and Practice Guide No.3: Evaluating interprofessional education. *Journal of Interprofessional Care*, **29**(4), 305-312.

[2]Baker, C., Pulling, C., & McGraw, R. (2010). Assessing teamwork attitudes in healthcare; development of the Team-STEPPS teamwork attitudes questionnaire. *Quality safety in Health Care*, **19**(49), 1-4

[3]Navarro Soria, I. & González Gómez, C. (2010). La autoevaluación y la evaluación entre iguales como estrategia para el desarrollo de competencias profesionales. Una experiencia docente en el grado de maestro. *Revista de Docencia Universitaria*, **8**(1), 187-200.

O-3 OSCE as assessment method in a course regarding pharmacotherapy in self-treatment

Emma Lundkvist

Faculty of Pharmacy, Uppsala University, Sweden

Introduction: The Faculty of Pharmacy at Uppsala University has in recent years discussed communication skills within our pharmacy programmes. In the Bachelor of Science programme in Pharmacy we have a nine credit course regarding pharmacotherapy in self-treatment. The course includes theoretical knowledge about non-prescription drugs as well as communication with customers. Part of the course consists of role plays, but the purpose of those has been to let the students practice rather than to assess them. The examination at the end of the course has been a traditional written exam, where the

ISSN 1447-2701 online

communication skills have been hard to assess. In the search for a new, more suitable assessment method, we decided to implement an Objective Structural Clinical Examination (OSCE), *i.e,* an oral exam based on role play[1].

Aim: The aim of this project was to strengthen the students´ communication skills and better assess whether they could apply their theoretical knowledge when advising a customer in a pharmacy, by changing the assessment method to an OSCE.

Method: Before changing the assessment method, criteria were developed and tested during the original role play exercises. During the autumn semester of 2015 the assessment criteria were implemented in the course. The original role play remained as a practice session and the written exam was replaced by an OSCE. The OSCE consisted of three different stations ("pharmacies") where the students met a customer, played by a teacher. Another teacher in the room assessed the interaction with the customer and asked follow-up questions after the role play. After three days of OSCE-sessions, the students´ three performances were weighted with an overall grade, based on all role plays. Both theoretical knowledge regarding non-prescription drugs and distinction between self-treatment and healthcare, as well as communication skills, were taken into account in the grading. In order to pass the course, the student had to perform sufficiently well within all areas above.

Results: The distribution of grades was in line with prior semesters. However, a couple of students failed the exam solely based on inadequate communication skills. The students found the assessment form relevant and authentic but some of them claimed that nervousness made it harder to think. The participating teachers were all very positive, and we have continued to use OSCE as assessment method.

Discussion: This project has led to a more relevant assessment method for this course, a method where we can assess the students´ communication skills to a greater extent. Since the assessment method will affect the way students focus their learning[2], this assessment method could also lead to the strengthening of students' ability to communicate and make them better prepared for their future profession.

References

[1]Kirton, S.B. & Kravitz, L. (2011). Objective structured clinical examinations (OSCEs) compared with traditional assessment methods. *American Journal of Pharmaceutical Education*, **75**(6), Article 111.

[2]Ramsden, P. (2003). Learning to teach in higher education, 2nd ed.

O-4 A conversation analytic investigation into pharmacy students' interactional practices before and after their internship

Bilge Sözen-Şahne[1], Elif Ulutaş-Deniz[1], Selen Yeğenoğlu[1], Olcay Sert[2], Melih Elçin[3], Terken Baydar[1]

[1]Hacettepe University, Faculty of Pharmacy, Ankara, Turkey

[2]Hacettepe University, Faculty of Education, Ankara, Turkey

[3]Hacettepe University, Faculty of Medicine, Ankara, Turkey

Aims: In this study, we aimed at investigating the interactional practices of third year pharmacy students before and after their summer internship. The study stands out to be the first one based on simulated practices in Turkey, despite the widespread use of this method in the world[1,2].

Method: In order to examine the extent to which the internship experience prepares the students for their future career, a simulation practice was planned. Eleven students participated in the practice voluntarily, with seven standard patients and four different scenarios in the simulation environment before and after the summer internship. In order to depict the progress of the students in terms of social interaction, Conversation Analysis was used[3,4,5]. The data consists of four hours of video-recorded interactions, which were transcribed using Jefferson (2004) transcription conventions and were analysed using Transana software by paying close attention to sequential organisation of interaction as well as non-verbal details of talk[6]. To triangulate the data, students' opinions about simulation were gathered using a written feedback form. This study was supported by the Hacettepe University Scientific Research Project Coordination Unit (Project No: TDS-2016-10689).

Results: Our conversation analytic findings showed that after the internship, the pharmacy students were able to explicitly verbalise their expertise, by (a) using a decreased number of hesitation markers, (b) reduced long silences and by (c) providing more information about the drugs. Furthermore, students emphasised that simulation practice should be included in the pharmacy curriculum before their internship.

Discussion: It has previously been shown that the communication of the pharmacists with patients increases the quality of the healthcare service. Conversation analysis methodology has proved to be very useful for revealing the importance of the internship experience the use of simulation in pharmacy communication training.

References

[1]Vyas, D. *et al*. (2013). Use of simulation-based teaching methodologies in US colleges and schools of pharmacy. *American Journal of Pharmaceutical Education*, **77**(3), 53.

[2]Wallman, A. *et al*. (2013). Communications training in pharmacy education, 1995-2010. *American Journal of Pharmaceutical Education*, **77**(2), 36.

[3]Sacks, H., Schegloff, E.A., Jefferson, G. (1974). A simplest systematics for the organization of turn-taking for conversation. *Language,* **50**(4), 696-735.

[4]Sidnell, J. & Stivers, T. (2013). The Handbook of Conversation Analysis. Malden, MA: Wiley-Blackwell.

[5]Nguyen, H.I. (2006). Constructing expertness: A novice pharmacist's development of interactional competence in patient consultations. *Communication and Medicine,* **3**(2), 147-160.

[6]Jefferson, G. (2004). Glossary of transcript symbols with an Introduction. In *Conversation Analysis: Studies from the first generation* (ed. G.H. Lerner), Philadelphia: John Benjamins, pp. 13-23.

O-5 Curriculum mapping of European pharmacy curricula using the European Pharmacy Competences Framework

Andries S. Koster[1], Daisy Volmer[2], Agnieszka Skowron[3], Borut Bozič[4], Jouni Hirvonen[5], Antonio Sánchez Pozo[6], Keith A. Wilson[7], Kristien de Paepe[8], Jeffrey Atkinson[9]

[1]Department of Pharmaceutical Sciences, Utrecht University, The Netherlands

[2]Institute of Pharmacy, Faculty of Medicine, University of Tartu, Estonia

[3]Pharmacy Faculty, Jagiellonian University, Krakow, Poland

[4]Faculty of Pharmacy, University of Ljubljana, Slovenia

[5]Pharmacy Faculty, University of Helsinki, Finland

[6]Faculty of Pharmacy, University of Granada, Spain

[7]School of Health and Life Sciences, Aston University, Birmingham, United Kingdom

[8]Dept. Pharmaceutical and Pharmacological Sciences, Vrije Universiteit, Brussels, Belgium

[9]Pharmacolor Consultants, Nancy, France

Aims: Recently the European Pharmacy Competences Framework (EPCF) was published[1], but it is unknown whether this framework can serve as a tool for guidance in curriculum evaluation and development. The objective of this study was to evaluate the usefulness of the EPCF for the mapping of existing first-degree pharmacy curricula in Europe.

Method: In this mapping exercise the intended curriculum of six programmes from different countries, and the expected competence level at first-degree, was assessed. Curricular elements (courses, projects, rotations) were mapped on the 50 competencies of the EPCF. At the end of the mapping process, a questionnaire was distributed to evaluate the content and usability of the framework and the effectiveness of the mapping process.

Results: The description of competences in the EPCF was found to be complete with respect to community and hospital pharmacy, but for some countries scientific and industrial competencies may require additional attention. Suggestions were made to add further explanations, illustrations and examples of explicit learning outcomes to increase the usability of the framework. The mapping process was experienced as complex, time-consuming, but interesting. In general, the mapping process was organised internally but future consultation of alumni and pharmacy employers was deemed desirable. A need for training in reflective curriculum evaluation was felt.

Discussion: This first round of curriculum mapping suggests that the EPCF is a useful tool for curriculum evaluation, but further refinement of the framework and training of faculty is needed to enhance effectiveness.

References

[1]Atkinson, J. *et al*. (2016). Pharmacy 4: Art. 27 (online).

O-6 Introducing a toxicology perspective in a pharmaceutical analysis course

Janis Vella, Nicolette Sammut Bartolo, Anthony Serracino-Inglott, Lilian M. Azzopardi

University of Malta, Msida, Malta

Introduction: Knowledge of drugs and toxicants in biological fluids can help optimise pharmacotherapy and help in the treatment of poisoning. Students at the Department of Pharmacy at the University of Malta follow a study unit entitled 'Pharmaceutical Analysis.' The study unit consists of four credits (ECTS) and is delivered via 28 hours of lectures.

Aims: To elaborate a study unit offered for third year pharmacy students on pharmaceutical analysis consisting of two ECTS to a four ECTS unit which includes a toxicology perspective; to focus unit on toxicology and on the analysis of drugs from biological fluids; to seek student feedback about the developed course.

Method: The updated study unit contains added topics dealing with toxicology, namely ways to measure toxicity, the exposure and effects of toxic substances, biotransformation, mutagenesis, carcinogenesis and teratogenesis. Special focus is given to treatment following exposure to toxic substances, drugs of abuse and different ways of drug testing. Students following the newly updated study unit for the first time were asked to rate the course content and delivery of lectures via an independent review. Students were asked a total of 29 questions. These questions were divided into six sections: (i) General questions on the study unit (ii) Study-unit description and actual delivery (iii) Lecturing methodology (iv) Lecturer (v) Method of assessment (vi) Administration and resources. For each question, students were asked to choose between 'Strongly agree,' 'Agree,' 'Not sure,' 'Disagree' and 'Strongly disagree.'

Results: Out of a total of 23 students, 18 gave feedback about the study unit. All students felt that the study unit was of help in strengthening the knowledge and skills relevant to their area of study and that the content of the study unit met their initial expectations. All students felt that the study unit was well organised and that the lectures were understandable and stimulating.

Discussion: The updated course focused on the introduction of a toxicology perspective whilst highlighting the application of pharmaceutical analysis. The updated course was positively evaluated by students who claimed to be very satisfied by the way this study unit was delivered to them and valued the relevance of the content.

P-1 Farmajournal, a multidisciplinary on-line innovative project

Raquel Álvarez, Esther Caballero, Ana I. Morales, Antonio Muro

Faculty of Pharmacy, University of Salamanca, Spain

Introduction: FarmaJournal is a new on line journal made by and for students and teaching staff at the Pharmacy Faculty in Salamanca (Spain). It is a multidisciplinary journal that collects the best experimental final projects carried out by the students, conferences organised by the Academy of Pharmacy of Castilla y León and other workshops held at the Faculty.

Aims: The main objective of this project is to give visibility to research that is carried out in the Faculty and to reward the best experimental works of undergraduate students in their last year.

Method: Research articles and summaries of faculty activities are submitted by students and teaching staff while correction, layout and publication are performed by Salamanca University Press.

Results: FarmaJournal was first published on February 2016, it is a free, semestral, on line journal, which is becoming a reference for pharmacy students. Since then, three editions have been published, including more than 30 researching articles and more than 25 conferences. The journal is available through http://revistas.usal.es/index.php/2445-1355/index.

P-3 Enhancing data retrieval and analysis skills among Doctorate of Pharmacy students

Maresca Attard Pizzuto, Francesca Wirth, Anthony Serracino-Inglott, Lilian M. Azzopardi

University of Malta, Msida, Malta

Introduction: The Drug Information and Statistics module is one of the study-units within the Doctorate of Pharmacy programme, being offered by the University of Malta in collaboration with the College of Pharmacy of the University of Illinois in Chicago. This unit presents an overview of drug information sources that are used in healthcare. Students are exposed to the critical evaluation of literature in a systematic approach. Aspects required in the use of evidence-based medical literature, in the retrieval and analysis of information and literature evaluation for disease state management policies are discussed.

Aims: To evaluate the outcomes of an assignment given to students to enhance their skills in the retrieval and analysis of data.

Method: A three-hour tutorial focusing on a discussion regarding the off-label use of orphan medicinal products for rare diseases, using an article by Dooms *et al.*[1], was held. Students were given a set of questions to reflect on the article and were asked to find other relevant literature to support the topic chosen. They were given one month to complete the assignment, after which they were provided with an evaluation sheet to rate, on a 5-point Likert scale, their reflections on the academic exercise.

Results: All students (N=9) registered for the Doctorate in Pharmacy programme participated in the tutorial, of which five were female. The mean age was 29 years (range 23-47). All students strongly agreed that the topic selected was interesting, whilst six students strongly agreed that the level of detail requested in answering the assignment questions was appropriate. Seven students agreed that the one-month timeframe to complete the assignment was adequate. Eight students strongly agreed that the assignment stimulated them to learn more about the subject, whilst four strongly agreed that the skills achieved helped them in other study units within the course.

Discussion: This evaluation shows that the students found value in the tutorial and assignment given. The Doctorate in Pharmacy programme leads students to develop critical analysis and literature evaluation within the context of translational and applied evidence-based research in pharmacy.

Reference

[1]Dooms M. *et al*. (2016). *Orphanet Journal of Rare Diseases*, **11**, 144-152.

P-4 Introducing journal club session for Doctorate in Pharmacy students

Maresca Attard Pizzuto[1], Louise Grech[1], Nicolette Sammut Bartolo[1], Janis Vella[1], Francesca Wirth[1], Jennifer Pham[2], Christina Haaf-Mactal[2], Alan Lau[2], Anthony Serracino-Inglott[1], Lilian M. Azzopardi[1]

[1]Department of Pharmacy, University of Malta, Msida, Malta

[2]College of Pharmacy, University of Illinois, Chicago, USA.

Introduction: The 'Clinical Rotations' module within the Doctorate in Pharmacy programme, being offered by the University of Malta in collaboration with the College of Pharmacy of the University of Illinois at Chicago, presents two clinical practice experiences of four weeks duration. Each student is attached with a preceptor who will meet the student for one hour per week. At the end of each experience, two seminars of three hours each and two journal club sessions are held.

Aims: To review the method by which a journal club session within the Doctorate in Pharmacy programme is undertaken

Method; Students are sent a recent article from a peer-reviewed journal a month before the journal club session is to take place. They are requested to read and analyse the article well and fill in a 'Critical Appraisal Skills Programme (CASP)' tool[1,2] before attending the session, to help them gain a better understanding of the article content. Students are asked to find two additional articles related to the topic to stimulate further discussion. In preparation for the session, preceptors organise a presentation which engages the student in the discussion and ensures they are acquiring the necessary critical appraisal skills. Preceptors grade students on an assessment sheet designed to evaluate student participation in the journal club session and on the critical analysis of literature.

Results: The CASP tool is made up of a series of questions which help students acquire critical appraisal skills needed to evaluate the content of the article. With respect to the presentation that preceptors prepare, questions such as "Is the literature review comprehensive and well-researched?" and "Would you make any amendments to the data collection method?" are asked during the session. The documentation sheet used by preceptors to evaluate student participation is made up of six statements, rated on a 5-point Likert scale. The statements are intended to assess students' understanding of the introduction, subjects and study design, results, discussion, assessment of CASP tool and analysis of related articles.

Discussion: Journal club sessions help students how to critically assess clinically relevant data to facilitate monitoring and management of drug treatment plans in a practice scenario. Additionally, they will help students in the proper collection, analysis and application of literature sources for the appropriate clinical management of patients.

References

[1]Guyatt G.H. *et al*. (1993). *JAMA*, **270**(21), 2598-2601.

[2]Guyatt G.H. *et al*. (1994). *JAMA*, **271**(1), 59-63.

P-5 The first steps in study course programme design for students training in industrial pharmacy

Ilze Barene[1], Baiba Galvina [1, 2]

[1]Rīga Stradiņš University, Riga, Latvia

[2]JSC "Grindeks", Riga, Latvia

Introduction: In accordance with creating a joint postgraduate study programme "Industrial Pharmacy" together with the Faculty of Materials Science and Applied Chemistry of Riga Technical University the Faculty of Pharmacy of Rīga Stradiņš University (RSU) organises study opportunities to obtain the qualification of industrial pharmacist for persons already having a degree in pharmacy.

Aim: The aim of the study course is to give students currently working or intending to work in the pharmaceutical industries an understanding of the fundamentals of pharmaceutical technology relevant to product formulation, development and production.

Method: The "Industrial Pharmacy" study programme was developed, and a standard for the profession of industrial pharmacist study courses programme "Good manufacturing practice", "Dosage forms", "Registration of Medicine" was developed. The content of the study courses is based on the possibility of students possessing not only theoretical knowledge, but also developing professional skills with practical experience.

Results: Industrial pharmacy professionals are involved in the realisation of study courses "Good manufacturing practice", "Dosage forms", "Registration of Medicine".

The theoretical knowledge obtained according developed programmes students strengthened with practical experience visiting pharmaceutical industry for practicals, workshops and regulatory lectures.

Discussion: The obtained theoretical and practical knowledge demonstrate to graduates that a strong pharmaceutical background is a mandatory pre-requisite to ensure that medicinal products are designed and developed according to Good Manufacturing Practice requirements.

P-6 Reflective integrated seminars

Jörgen Bengtsson, Ann-Marie Falk, Emma Lundkvist

Faculty of Pharmacy, Uppsala University, Sweden

Introduction: In the last years, the Faculty of Pharmacy has discussed issues on students' attitude to their studies and how we can help students to acclimatise to the academic culture. Previously, we had meetings with first year students. However, there was a need for involving students at higher semesters in order to increase the exchange between students and teachers, provide a holistic view of education, and an opportunity to reflect on their studies. Another need was an increased awareness of the future professional role.

Aim: The project aimed to develop and implement a model of reoccurring seminars, with students from different semesters within our two programmes, as well as an increased element of reflection among our students.

Method: The project was conducted in collaboration with the Pharmaceutical Student Union. We created heterogeneous groups of approximately 12 students from different semesters (1-6) within the two programmes (Master and Bachelor of Science in Pharmacy). The group meet once every semester for a seminar on a specific theme. Each group has a teacher as mentor and / s/he follows the group through their education. Before the seminar, the students have to read provided material and write a short reflection. These reflections acts as a basis for the discussion during the seminar.

Results: Since spring 2016 three seminars were organised which discussed the following topics: "Regulated profession", "Procrastination" and "The society's knowledge of our professions". With this approach, students from the two programmes are integrated. Students who have come further in their education can contribute with their experience of how and why early courses are important at a later stage.

When evaluating the seminars it was observed that students and mentors have diverse opinions. Many students find the seminars nice but unnecessary and a waste of time. They would rather spend their time preparing for the next exam. The mentors appreciate these informal meetings and the opportunity to gain a greater understanding of the students. The project group observe that many students need training and guidance in how to reflect and what benefit they can achieve from this.

Discussion: These seminars can help the students to get a better understanding for their education and profession, but we are not sure of how we can make the students realise this. Since it is necessary for the project to have a form of consensus, we find it hard to continue with the seminars in the same setup. However, ideas from the project could be used in the revised Master of Science of Programme in Pharmacy that will start during Autumn 2017.

P-7 Sense of community of native and ethnic minority students in the Utrecht Bachelor of Pharmacy programme: Validation of Rovai's Classroom Community Scale

Liesbeth Bijlsma, Merel van Nuland, Andries Koster, Irma Meijerman

Department of Pharmaceutical Sciences, Utrecht University, The Netherlands

Introduction: Feelings of social cohesion facilitate collaborative learning, and are associated with enhanced quality of learning. A previous study in the Bachelor of Pharmacy programme at Utrecht University has suggested that students of non-Dutch origin (around 40%) are less successful in Year 1 of their study. We hypothesise that this may be related to differences in social cohesion between students of different ethnic origin.

Aim: Assess sense of community in ethnic minority versus native students using a Dutch translation of Rovai's Classroom Community Scale (CCS)[1].

Method: Students in Year 1 were asked to fill in the questionnaire twice (end of semesters 1 and 2). Ethnic background was determined on basis of the country where the student, or at least one parent, was born.

Results: Factor analysis confirmed the 2-factor structure of the CCS with the dimensions 'connectedness' (α=0.843) and 'interactive learning' (α=0.809). Both connectedness and interactive learning were significantly lower in ethnic minority students compared to native students at the end of the first semester (scores 18.2±0.8 vs 20.8±0.4, p=0.003; and 23.7±0.9 vs 27.1±0.5, p<0.001, respectively). This difference was no longer detectable at the end of the second semester.

Discussion: The Dutch translation of the CCS is a reliable tool for assessing sense of community. The lower sense of community among ethnic minority students suggests that the level of social integration may be a relevant factor for study success.

Reference

[1] Rovai, A.P. (2002). Development of an instrument to measure classroom community. *Internet and Higher Education*, **5**, 197–211.

P-8 Doctoral study programme of Biomedicine

Borut Božič, Irena Mlinarič Raščan, Iztok Grabnar, Tanja Kadunc, Aleš Obreza

University of Ljubljana, Faculty of Pharmacy, Ljubljana, Slovenia

Aims: The aim of oral or poster presentation is the information on the organisation of the interdisciplinary doctoral study programme Biomedicine. The field of biomedicine encompasses knowledge from the areas of medicine, biochemistry, laboratory biomedicine, genetics, microbiology, pharmacy, public health, toxicology and veterinary medicine.

Method: Overview of yearly reports of the study programme.

Results: Biomedicine is a programme of the University of Ljubljana and not of single member faculties. The programme has been conceived in agreement with all the requirements and legislation of the Republic of Slovenia and meets all criteria for doctoral study established by the European University Association (EUA). It is jointly executed by Faculty of Pharmacy, Biotechnical Faculty, Faculty of Chemistry and Chemical Technology, Faculty of Medicine, Veterinary Faculty, and three institutes: The Jožef Stefan Institute, The National Institute of Chemistry, and The National Institute of Biology. This approach enables the collaboration of researchers from separate scientific fields, thus forming a broader interdisciplinary field. The Faculty of Pharmacy is responsible for the following fields: Pharmacy, Clinical Biochemistry and Laboratory Biomedicine, Toxicology. Yearly between 60 and 85 students are enrolled on all three scientific fields and 15-30 doctoral thesis are successfully defended.

The primary emphasis of the study programme is on research, two thirds of ECTS are intended for individual research work under the supervision of a mentor, who has to fulfil requirements regarding scientific and pedagogic excellence. As the end result of the research work, the publishing of at least two scientific articles in magazines, indexed by impact factor is necessary. At least one of them has to be a research article, based on the hypothesis of the candidate's doctoral thesis and the candidate must be first or corresponding author.

Based on recommendations of the EUA, international student exchange is also encouraged, the courses are more or less in the form of individual consultations, depending on the number of students and are mostly in English if foreign students are present.

Discussion: The Biomedicine programme is recognised by the industry, especially pharmaceutical companies in Slovenia, which include their employees in the study to further educate highly qualified experts in the fields of their everyday work. They also provide mentors and co-mentors, help with research infrastructure and provide tuition fees for their students. In some cases Masters of Pharmacy students in the course of their specialisation are included in selective courses of Biomedicine programme.

P-9 Educafarma: A programme for continuous training of teachers and students of the Faculty of Pharmacy

Sergio A. Castrillejo, Antonio Muro, Jonás Samuel Pérez Blanco, Francisco González López

Faculty of Pharmacy, University of Salamanca, Spain

Introduction: Educafarma emerges as a programme of free and eminently practical courses that could accommodate the training demand originated by the rise of new technologies in higher education. This programme aims to inform about the management of tools that improve and facilitate the elaboration of research works, teaching material, final projects for degrees by students and teachers of the Faculty of Pharmacy of Salamanca, Spain.

Aim: The main objective of the programme is the communication of knowledge and skills in topics and tools that may be of interest to the biosanitary community and aims to satisfy training needs that can complement the excellent offer of specific courses by the University of Salamanca.

Method: The main resources available are the teaching staff to deliver the courses, interested students and infrastructures. In addition, to the system "Eventum" (eventum.usal.es) to publish, promote and manage the courses.

Results: Twenty-nine courses were offered, in the previous year 2015-2016, to the university community in which they discussed and showed computer tools, topics of interest to the researcher and students of the biosanitary branch. The list of courses offered and information about them are available in the White Papers at https://issuu.com/jonassamuelperezblanco/docs/educafarma_4.0.

Discussion: The eminently practical nature, the dynamism in teaching by the teachers involved and the students' willingness to learn, seem to be the key points of high satisfaction with the courses, and the pillars that sustain the continuity of this project in future editions.

P-10 Ten years of pharmacy study at the University of Veterinary Medicine and Pharmacy in Košice, Slovakia

Zita Faixová, Juraj Pistl, Monika Fedorová, Jana Mojžišová

University of Veterinary Medicine and Pharmacy in Košice, Slovak Republic

Introduction: The University of Veterinary Medicine and Pharmacy in Košice (UVMP) was established in 1949. It is the sole university for veterinary education and one of two universities offering education in pharmacy in

Slovakia. In 2005, the University submitted a five-year full-time masters degree Pharmacy programme (study branch 7.3.1 Pharmacy) for approval to the Accreditation Commission of the Slovak Republic. As a result, the University of Veterinary Medicine in Košice (UVM) was granted the right to award the academic degree 'Masters' to its Pharmacy graduates since 2006.

Aim: Development of the Masters degree course in Pharmacy

Method: Some buildings at the university campus - particularly the pharmaceutical pavilion and the pavilion of chemistry disciplines, were adapted to better suit UVM's educational and research needs and gradually fitted with the necessary equipment. New staff (including external staff) were recruited and new departments were established: Department of Pharmaceutical Technology, Department of Pharmacognosy and Botany, Institute of Human and Clinical Pharmacology (Department of Pharmacology and Toxicology), Institute of Pharmaceutical Chemistry (Department of Chemistry, Biochemistry and Biophysics), Department of Retail Pharmacy and Social Pharmacy. On 15 January 2010 UVM's name was changed to the University of Veterinary Medicine and Pharmacy (UVMP) in Košice. The University logo was also changed by adding pharmacy scales to the original logo. The University set up its own pharmacy, created a medicinal herb garden and concluded agreements on student practice with pharmacies. In 2011, pharmacy students set up the Association of Pharmacy Students in Košice, which organises cultural and social events. UVMP cooperates closely with a professional organisation of pharmacists - the Slovak Chamber of Pharmacists.

Results: The Pharmacy study programme has been very popular. Since its introduction, the number of applicants had risen to its peak of 600 applicants in the academic year 2012/2013. On 31 October 2016, UVMP had 2038 students, of whom 247 were international students and 553 studied Pharmacy. Employability of graduates is an important criterion of a study programme's success. According to the data from the Central Office of Labour, Social Affairs and Family of the Slovak Republic, less than 1% of graduates in a given academic year are unemployed. Since 2015 UVMP has been conducting an *examina rigorosa* procedure in the study branch Pharmacy ("PharmDr."). There are accredited Ph.D. study programmes at UVMP for Pharmacy graduates as well. Science and research areas: study of central mechanism of food intake regulation and its pharmacological modulation and study of anticancer activity of selected natural compounds (human and clinical pharmacology), use of biocompatible polymer materials to create systems (micro- and nano-particles) with directed release (pharmaceutical technology), effective pharmacotherapy and its risks, Health technology assessment (retail pharmacy and social pharmacy), suitable medicinal plants and their extracts, a synergic effect of secondary metabolites of plants and probiotic bacteria products on inhibition of biofilm-producing pathogens (pharmacognosy).

Discussion: In 2016 UVMP became a member of the European Association of Faculties of Pharmacy and the European University Association. UVMP has concluded bilateral mobility agreements under the ERASMUS Programme with pharmaceutical faculties abroad. UVMP has been closely cooperating with the Faculty of Pharmacy of the Comenius University in Bratislava, Slovakia and the University of Veterinary and Pharmaceutical Sciences Brno, Czech Republic.

P-11 Experiential clinical rotations for students following a doctorate in pharmacy course

Louise Grech[1,2], Kathlene Cassar[1,2], Ruth Agius[1,2], Anthony Cutajar[1,2], Stephen Falzon[2], Anthony Serracino-Inglott[1], Lilian M. Azzopardi[1]

[1]*Department of Pharmacy, University of Malta, Msida, Malta*

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

Introduction: The post-graduate doctorate in pharmacy course is designed to stimulate the profession towards innovation and leadership incorporating evidence-based medicine and medical informatics into the medication use process. The course includes experiential clinical rotations which are run within a collaborative framework between the Department of Pharmacy at the University of Malta, the College of Pharmacy of the University of Illinois, Chicago and the Department of Pharmacy at Mater Dei Hospital, Malta's public acute general hospital.

Aims: To develop an experiential doctoral programme providing a comprehensive understanding of medication use process within an acute hospital setting.

Method: Students are offered a six week experiential training within a clinical speciality of their choice ranging from Cardiovascular, Endocrine, Neonatal and Paediatric Intensive Care, Respiratory, Rheumatology and Medicines Information. During the rotations students are introduced to the clinical setting by the clinical pharmacist who briefs them on the teamwork approach and the logistic background of the placement. The students attend clinician-led ward rounds and out-patient sessions. During clinical activities the students are expected to actively participate in team discussions, and identify and resolve pharmaceutical care issues. The students are 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 managed clinical case highlighting pharmaceutical care issues involved and participate in compiling and updating of treatment protocols or guidelines.

Results: During the placement each student compiles a weekly portfolio with reflections on the activities undertaken which are discussed with the preceptor. The student is assessed by the preceptor on the ability to integrate and apply the theoretical knowledge into the

clinical scenario and the proficiency developed to sustain clinical discussions with other healthcare professionals.

Discussion: Through this experiential doctorate of pharmacy rotation, students gain experience and develop critical thinking skills within an acute care setting covering specific clinical areas and drug information, based on drug use policy development as well as clinical and pharmacy services leadership skills.

P-12 The opinion of students and their mentors-pharmacists about the 6-month final internship in community pharmacy

Agnieszka Skowron[1], Lucyna Bułaś[2], Justyna Dymek[1], Karolina Chwastek[1]

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

[2]*Department of Pharmaceutical Technology, School of Pharmacy with the Division of Laboratory Medicine, Medical University of Silesia, Katowice, Poland*

Introduction: The 6-month final internship (6FIN) is an obligatory and integral part of pharmacy curriculum in Poland. During the 6FIN, pharmacy students should improve their skills in the formulation, medication dispensing, pharmaceutical counselling and pharmaceutical care. The rules and requirements of the involvement of the community pharmacies in the teaching process are regulated by the Ministry of Health.

Aims: The aim of our study was to collect the opinion of students and their mentors-pharmacists about the quality of the 6FIN.

Method: The survey study was conducted among students, who graduated in 2016 and their mentors from community pharmacies. We used role-specific questionnaires developed separately for students and the mentors. Ninety-two students from Faculty of Pharmacy in Krakow and 53 pharmacists from Krakow participated in the study. The data were collected between March and May 2016, when most of the students were finishing their internship.

Results: Students declared that during the 6FIN every day they were involved in dispensing of prescribed and over-the-counter (OTC) medication, counselling, and formulation. Quite rarely, less than a few times in the month, they had an opportunity to do some administrative and organisational work such as control of the expiration dates or the stock status of medicines. Students admitted that on the final month of the internship activities such as dispensing OTC medicines, counselling and formulation they did without direct supervision of their mentors, and the mentors supervised only the dispensing process of the prescribed and reimbursed medicines. More than 69% of the students declared that the internship was satisfying and it encouraged them to work as community pharmacists. About 50% of pharmacists admitted that at the beginning of the internship students had good knowledge and skills in formulation, and a good knowledge but no skills in dispensing and counselling. They declared their students were hard-working, willing to learn and scrupulous.

Discussion: Most of the participants, in both groups of respondents, declared their satisfaction with the practical aspects of the 6FIN. Students found the internship interesting and satisfying. However, some of them declared that they did not feel well prepared to do some organisation and administrative work in community pharmacy.

P-13 When e-learning replaces the classroom: Lessons learned during the development process of an online biotechnology course

Nataša Jovanovic Ljeskovic[1], Mirjam Blauuw[2], Herre Talsma[1], Andries Koster[1], Enrico Mastrobattista[1]

[1]*Department of Pharmaceutical Sciences, Utrecht University, The Netherlands*

[2]*Elevate Health, UMCU, Utrecht, the Netherlands*

Aim: To share our experience with transferring an introductory Pharmaceutical Biotechnology course from a classroom setting to an interactive online learning environment.

Method: An existing biotechnology course (Advanced Bachelor) was transferred to an online format to facilitate flexibility of studying, in addition to offering the course to professional pharmacists as a continuous education option. Course design is structured around the development trajectory for successful registration of a novel biosimilar, and introduces students to product definition, manufacturing, processing, quality/safety and registration requirements. The online environment (ElevateHealth) accommodates asynchronous interaction, a 24/7 log-in option, a clear overview of deadlines, progress and remaining activities and learning activities that can be completed sequentially or in parallel. We used different learning tools to accommodate different learning preferences: text reading, short web lectures, (multiple choice) questions, statements, discussion groups, wikis, polls, *etc*.

Results: The e-course was evaluated by 20+ regular pharmacy students that were asked to indicate what they 'liked about the course' and 'what could be improved'. Students very much appreciated the interactive learning, the diversity of learning tools, and the timing flexibility. They suggested creating smaller groups for some assignments and a lowering of study load.

Discussion: For an online course to be successful, it is important to keep learning activities short with clear objectives, explicit instructions and deadlines. Regular and frequent online feedback from course tutors on

student performance is necessary to maintain motivation and active course participation.

Acknowledgement: This project was supported by the Lifelong Learning Programme (www.phar-in.eu) of the European Commission.

P-14 Longitudinal changes of student learning patterns in a six-year undergraduate pharmacy programme

Andries S. Koster

Department of Pharmaceutical Sciences, Utrecht University, The Netherlands

Introduction: In The Netherlands the pharmacy licensing degree is obtained after a three-year Bachelor plus a three-year Masters programme. The department 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.

Aim: The aim of this study was to assess longitudinal changes in processing and regulation strategies of students' learning during their progression in the curriculum.

Method: Processing strategies (deep vs. stepwise) and regulation strategies (self- vs. external) 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 ± sd). Effect sizes and a paired *t*-tests were used to assess statistical significance.

Results: 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 2.54 ± 0.64 to 3.03 ± 0.72 (p = 0.004; effect size 0.7). In contrast, stepwise processing and external regulation did not change significantly ($p > 0.13$; effect sizes ≤ 0.1) between Year 1 and 5 for the same students.

Discussion: An increase in deep processing and self-regulation strategies of students was observed. 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.

Reference

[1]Vermunt, J.D. & Vermetten, Y.J. (2004). Patterns in student learning: Relationships between learning strategies, conceptions of learning, and learning orientations. *Educational Psychology Review*, **16**, 359-384.

P-15 Personal discussions with teacher tutors in Bachelor of Pharmacy studies in the University of Eastern Finland

Krista Laine, Kirsti Vainio

School of Pharmacy, University of Eastern Finland, Kuopio, Finland

Introduction: Annually more than 180 new students begin their Bachelor of Pharmacy (B.Pharm.) studies at the School of Pharmacy in the University of Eastern Finland. Due to large class size, study counselling has been provided as information sessions for the whole group, and personal study counselling has been limited to those students who have requested it. The majority of students have graduated to B.Pharm. without any personal discussions concerning their studies with teachers.

Aim: To enhance personal study counselling, a new obligatory course "Planning of Bachelor's studies in Pharmacy" (1 ETCS credits) was implemented in B.Pharm. curriculum from the beginning of the study year 2016–2017.

Method: In addition to lectures (ten hours) and making the student's own personal study plan, this course consists of a written preliminary assignment, and a discussion between the student and the respective teacher tutor. In the written preliminary assignment, the student self-evaluates study-related premises and skills, and later, this assignment serves as a basis for personal discussion with the teacher tutor. In addition to personal study counselling, discussions aim to enhance students' study motivation and lower the threshold to have future contacts with teachers.

Results: So far, teacher tutors have been very satisfied with the personal discussions. They have expressed that every discussion has been useful and the discussions have brought students and teachers closer together. However, several concerns or challenges, such as general well-being, coping with study life, learning difficulties, motivation problems, time management problems, and even mild depression, have come up during conversations.

Discussion: Teacher tutors have experienced that they need more support for the discussions, and therefore the University's study psychologist is consulted to educate tutors and plan forthcoming teacher tutor activities together with teacher tutors. Feedback from students will be collected at the end of the spring semester to obtain their opinions on the personal discussions, as well as, the new obligatory course.

P-16 The new programme of pharmacist' assistant studies – a successful example of cooperation between two higher education institutions

Baiba Maurina[1], Olga Kiselova[1, 2], Elita Ardava[1, 2]

[1]*Rīga Stradiņš University, Riga, Latvia*

[2]*Red Cross Medical College of Rīga Stradiņš University, Riga, Latvia*

Introduction: According to public health guidelines for 2014 - 2020 developed by Ministry of Health of the Republic of Latvia, the country currently faces a shortage of professionals (pharmacists and pharmacists' assistants) as compared to the number of pharmacies. One third of pharmacists' assistants in Latvia are aged over 50 years and pharmacists' assistants continue to work after retirement age. By 2016 the number of pharmacists' assistants annually increased by about 30 professionals every year, because this type of education was provided by a single higher education institution.

Aim: To improve the situation and in response to the warning of employers regarding staff shortages, Rīga Stradiņš University (RSU) set an objective to develop a new study programme for pharmacists' assistants in cooperation with the Red Cross Medical College which is under the supervision of RSU.

Method: In 2015 a working group was established, which included representatives from the RSU Red Cross Medical College and RSU Faculty of Pharmacy. It was decided that all professional education courses will be taught by RSU lecturers and most of the classes will be held in the University premises. Support in establishing programmes was also provided by Latvian employers as well as the Pharmacists' Society of Latvia.

Results: The first level of higher education study programme "Pharmacy" was created in accordance with the standards of a pharmacists' assistant's profession in a very short period of time, and in September 2016, 28 students began training in this programme. Employers were actively involved in attracting prospective applicants by motivating support staff who were employees in pharmacies. Even now almost all students in parallel with lectures and lessons, work a certain number of hours in pharmacies, thus getting acquainted with the professional environment and learning in practice the required tasks. Duration of full-time programme is 2.5 years, which equals 150 ECTS. In accordance with professional standards and the Regulations of Ministers Cabinet of the Republic of Latvia, on the first level professional higher education national standard, the programme includes courses to the amount of 112.5 ECTS, practice - 24 ECTS and qualification work to the amount of 13.5 ECTS, graduates acquire professional qualification of pharmacist' assistant.

Discussion: Alliance of College and University is a positive example of cooperation for efficient use of the limited resources - premises, equipment, lecturers of appropriate qualification. Unprecedented is the fact that the RSU Faculty of Pharmacy participates in the future education of their students, because pharmacists' assistants may continue their education in part-time studies at RSU to get a degree in pharmacy. Students are very different both in terms of previous education and age as well. Consequently, training of college students is a challenge for RSU lecturers' professionalism, with the attitude and individual approach to provide an opportunity for future pharmacists' assistants to acquire the knowledge, skills and competence required by professional standards.

P-18 Assessment of the internationalisation in the school of pharmacy websites around the world

Inês Nunes-da-Cunha[1], Fernando Martinez Martinez[1]; Fernando Fernandez-Llimos[2]

[1]*Faculty of Pharmacy, University of Granada, Granada, Spain*

[2]*Faculty of Pharmacy, University of Lisboa, Lisbon, Portugal*

Introduction: University websites are used as one of the most influential recruitment tools and they are the primary source of information for prospective international students.

Aim: To identify the information available on the websites of the universities with undergraduate pharmacy degree from the perspective of an international student.

Method: Pharmacy colleges and schools in the world were extracted from the International Pharmaceutical Federation (FIP) Official World List of Pharmacy Schools[1]. The existence of a website was investigated using Google. A web content analysis was performed, and data about languages, available information items about the pharmacy degree, syllabus presence, and its quality were collected from each college website. A scoring method was created to quantitatively compare the websites.

Results: The results showed that from a total of 1839 colleges of pharmacy 13.4% had no website. Almost half of pharmacy colleges with websites do not have a complete English version of the website, and 15.2% had website partially translated into English. The information available on the pharmacy college websites was not always current, complete or accurate. Academic information usually considered important by students, such as the syllabus, admission requirements, programme costs, and faculty directory, was not always available. Europe, North America and Oceania were the regions with pharmacy college websites that provide more information for international students.

Discussion: There are still a high proportion of pharmacy colleges without websites. To attract international students, websites with complete English versions, considered the academic *lingua franca*, are crucial. To

fulfil the information needs of the international students, an English version of the website should have, at least a complete syllabus of full disciplines, financial aspects (costs and grants), complete faculty directory, and all the administrative requirements.

Reference

[1]International Pharmaceutical Federation (2014). Official world list of pharmacy schools (online). Available at: http://academic_institutional_membership.fip.org/world-list-of-pharmacy-schools/. Accessed 16th January, 2014.

P-19 Erasmus international mobility of UAH outgoing pharmacy students

Jesús Molpeceres, Fidel Ortega, Maria Victorina Aguilar, Maria Guinea, Lucinda Villaescusa

Faculty of Pharmacy, Campus Universitario Alcalá de Henares, Madrid, Spain

Introduction: In 2010 there was a change in the Pharmacy programme taught in Spanish universities. Accordingly, within the last five years there has been an overlapping of pharmacy students from the previous programme 57 and others already involved in the latest G57. Although both of them provide the students with similar competences the changes incorporated might potentially affect the way they participate in international mobility programmes such as Erasmus. In addition, some changes of Erasmus regulations might contribute as well.

Aims: The aim of this study was to comparatively analyse international mobility of outgoing Pharmacy students at Universita Alcalá de Henares (UAH) during the last five years.

Method: All the applications sent by Pharmacy students to the international relationships office from academic year 2011-2012 till 2016-2017 were analysed recording the programme, the academic year of student application, gender, type and duration of the activity, language level when available, destination country and ECTS credits included in the learning agreement.

Results: This section summaries the findings corresponding to the beginning and the end of the five-year period studied. In academic year 2011-2012, 39 applications were received (67% females) with 20% renounces. As high as 52% of students went to Italy, nearly 20% to Germany, 6% to Portugal and France and 3% to Malta, Belgium, Poland, UK and the Czech Republic. Fifteen out of the 16 students in Italy did basic or required courses, whereas five out of six students in Germany or the one in the UK developed research projects. In the rest of the countries activities were combined so that elective courses, hospital pharmacy training and/or research projects were carried out. In around 61% of cases the stage lasted the whole academic year. About 17% of the students in programme 57 applied while in the 3rd academic year, whereas applications from the 4th and 5th year were higher (43% and 40%, respectively). With regards to the activities developed during the Erasmus stage a total of 1678 credits were awarded. More than 70% were related to mandatory courses, 56% being related to courses taught in the fourth year. When the number of credits awarded to each student was normalised with the time period the highest frequency corresponded to six-seven credits per month. In 2016-2017, 26 students participated in the Erasmus programme (73% females) with three renounces. The distribution pattern was more balanced with 17% of students going to Italy, Germany and Czech Republic, 9% to France, Malta, Poland and Greece, and then 4% to Belgium, UK and Portugal. More than one half of the students (55%) applied for a lab placement to develop their final Masters thesis abroad and around 30% for training in hospital pharmacy. Students interested in doing courses applied for Italy or Czech Republic. With regards to language skills, 55% and 27% of students acquired C or B2 level either in English or French before leaving.

Discussion: Therefore, there are clear changes in the mobility pattern over the last five years related to the changes introduced in the Pharmacy degree.

P-22 Development of an evaluation method for post-graduate advanced experiential sessions in a pharmacy system setting

Nicolette Sammut Bartolo, Janis Vella, Anthony Serracino-Inglott, Lilian M Azzopardi

Department of Pharmacy, University of Malta, Msida, Malta

Introduction: The post-graduate professional Doctorate in Pharmacy consists of three components, lectures, research and an experiential component. During the experiential component, students take up rotations in different settings, which includes a pharmacy system setting with an emphasis on healthcare management, medication safety and patient support in transition of care.

Aim: To develop an evaluation method for advanced experiential sessions at post-graduate level in a pharmacy system setting

Method: The number of meetings with the preceptor was determined to establish a system with frequent contacts to enable the evaluation of the skills acquired during the rotation. A handbook which included a self-evaluation and planning form and a preceptor evaluation form was compiled and provided to students following the pharmacy system rotation.

Results: Each student was assigned to a preceptor and weekly meetings were held throughout the six-week experiential rotation. The self-evaluation and planning

form consisted of three sections. Students completed three sections, students characteristics, initial plan, and self-improvement goals, at the beginning of the rotation and discussed them during the first meeting with the preceptor. In the student characteristics sections, students had to list their strengths, areas for improvement and interests. In the initial plan section, a schedule of activities to be followed were listed. The self-improvement goals had to be ranked in order of importance. The student characteristics and initial plan were reviewed during the third week of the rotation and the self-improvement goals were reviewed at the end of the rotation. Criteria upon which the preceptor evaluated the student include the ability to apply knowledge to practical scenarios, skills to retrieve, analyse and interpret scientific literature and professional guidelines, manage and improve pharmacy systems, provide medication and practice-related education, and utilise medical information. The student was asked to prepare two presentations on topics related to the rotation and present them to pharmacy students and healthcare professionals respectively at the end of the experiential sessions.

Discussion: The evaluation method developed for advanced experiential sessions in a pharmacy system setting identified the competences and skills developed during the rotation. The inclusion of a self-evaluation and planning form empowers students with the opportunity to identify their strengths and areas for continuous improvement.

P-23 Development and implementation of a system to maintain contact with and assist outbound Erasmus+ students

Nicolette Sammut Bartolo, Janis Vella, Anthony Serracino-Inglott, Lilian M Azzopardi

Department of Pharmacy, University of Malta, Msida, Malta

Introduction: Students in the last year of the three-year Bachelor of Science in Pharmaceutical Technology (Honours) have the opportunity to carry out an eight-week placement at a university of their choice in Europe under the Erasmus+ programme. At the end of the placement, students are asked to present a logbook to the home institution with daily entries about activities carried out during their placement and related reflections.

Aim: To develop and implement a system to maintain regular periodic contact with students to assist them with any queries and with the compilation of logbooks during the Erasmus+ programme.

Method: The number of virtual contacts required was determined according to the length of the placement conducted to ensure that any problems are captured and tackled in time. The optimal period to provide feedback about the logbook within a reasonable timeframe was also considered, so that the student can apply any feedback in the following logbook entries.

Results: At the start of the traineeship mobility, before the students left for the hosting institution, a tutorial was held during which the developed system was explained. Students were contacted virtually three times, at the beginning, mid-point and one weeks before the end of the placement. On these three occasions, students were contacted by a designated mentor who also acted as the contact point with the home institution should any queries arise. During each contact, students were advised about the date of the following virtual communication and what was required of them. During the first contact, students were asked to discuss whether there are any issues related to the experience, such as problems with accommodation, adjusting to the new environment and the placement. During the second contact, students were asked to address any queries or issues they might have and to present the filled-in logbooks up-to-date. The mentor reviewed the logbooks and provided the students with feedback. For the third and final contact, students were asked to present up-to-date filled-in logbooks covering the period from the previous communication, for which feedback was again provided. Students were also reminded to ensure that they have all the required documentation.

Discussion: The developed and implemented system ensured that regular documented contact is maintained throughout the mobility. Students had a designated mentor to guide them throughout the experience and aid them should any queries arise.

P-24 Development of an applied pharmaceutical calculations study unit

Nicolette Sammut Bartolo, Janis Vella, Anthony Serracino-Inglott, Lilian M Azzopardi

Department of Pharmacy, University of Malta, Msida, Malta

Introduction: The entry requirements for the undergraduate degree Bachelor of Science (Honours) in Pharmaceutical Science, the first of two cycles to be eligible for a warrant to practice as a pharmacist, were changed to include mathematics at intermediate level. The change in requirements led to the need for a shift from teaching mathematical concepts to applied calculations for the pharmaceutical setting.

Aim: To develop a study unit for the teaching of calculations used in the pharmaceutical setting for the first year students reading for a Bachelor of Science (Honours) in Pharmaceutical Science.

Method: The study unit was developed by reviewing literature material related to calculations for pharmaceutical sciences. Topics to be included in the study unit were selected based on their use in the pharmaceutical setting, relating to both the clinical and pharmaceutical technology aspect. The number of lecturing hours allocated for the study unit were also taken into consideration.

Results: A total of 28 hours were allocated for the study unit which will be delivered as double lectures. A total of ten topics were selected. The calculations selected for the study unit include calculating the percentage error and ratio strength, calculation of doses, dilutions, intravenous infusions and calculations related to compounding.

Discussion: The introduction of this study unit will enable students to apply mathematical principles and calculations to the process of preparation of pharmaceutical dosage forms, pharmaceutical analysis and determination of doses of medicines. This study unit will help students to understand the fundamentals of pharmaceutical calculations and reinforce their knowledge about the need for these calculations in settings related to pharmaceutical and clinical pharmacy settings.

P-25 Multidisciplinary teaching of tobacco cessation – students' perceptions

Piia Siitonen[1], Paavo Tanskanen[1], Patrick Sandström[2], Jussi Kauhanen[3], Maija Suhonen[4], Marja-Leena Hyvärinen[5], Kirsti Vainio[1]

[1]*University of Eastern Finland, School of Pharmacy, Kuopio, Finland*

[2]*Finnish Lung Health Association, Finland*

[3]*University of Eastern Finland, School of Medicine, Kuopio, Finland*

[4]*Savonia University of Applied Sciences, Kuopio, Finland*

[5]*University of Eastern Finland, Language Centre, Kuopio, Finland*

Introduction: In Finland, about one in five adults use tobacco or other nicotine products constituting significant health risks and costs in health care[1]. These can be prevented by tobacco dependence treatment, which is most successful when carried out in multi-professional cooperation[1].

In University of Eastern Finland, tobacco cessation is taught in a multidisciplinary way for students of health sciences together with students of Savonia University of Applied Sciences. Firstly, students study independently in an e-learning environment the theoretical basis of tobacco addiction, health risks and, tobacco dependence treatment[2]. Secondly, the students independently interview a person using tobacco to evaluate the addiction, cessation and counselling. Thirdly, on a workshop day, short multi-professional lectures are given, and students are divided into multi-professional groups in order to discuss their interview cases and simulation profiles. Finally, the students evaluate their learning and ideas about multidisciplinary teaching by giving course feedback. The aim of this presentation is to describe students' perceptions of multi-professional cooperation.

Method: Data were collected as a course feedback using an electronic form in October 2016. Students' (N=145) experiences were assessed using Likert scale questions.

Results: Of the participants, 45% were pharmacy, 30% medicine, 11% health nurse, 8% dental hygienist, 4% nutrition, 2% dentistry and public health students. Ninety-two percent of students considered that the course helped them to perceive their professional role in tobacco cessation well or quite well, and 96% perceived that they skills in cessation counselling increased. 92% stated that there should be more multidisciplinary courses for students in health sciences.

Discussion: Students perceived that the multidisciplinary course increased their understanding of their own professional role as well as the role of other health professionals in tobacco cessation and counselling, and they expressed the need to have more multidisciplinary courses. Multi-professional cooperation in teaching tobacco cessation needs to be promoted to gain successful results.

References

[1]Sandström, P., *et al*. (2009). Sosiaali-ja terveysministeriön julkaisuja, 15

[2]Finnish Medical Society Duodecim and the Finnish Association for General Practice. (2011). Current Care Guideline: Working group

P-27 Developing critical appraisal skills of pharmacy students within different disciplines at Faculty of Pharmacy of Lyon, France

Hans-Martin Späth

Département de Santé Publique, ISPB - Faculté de Pharmacie - Université Lyon, Lyon, Paris

Aims: When setting up the last reform of pharmacy studies in 2011/2012, members of the Faculty of Pharmacy of Lyon, France, discussed with pharmacists working in community pharmacies, hospitals and pharmaceutical industry. These pharmacists pointed out that our students knew a lot when arriving in professional settings, but they had difficulties in analysing data and putting them into a professional context. Therefore we set up a multidisciplinary working group in order to strengthen the critical appraisal skills of our students.

Method: The working group included teachers of Clinical Pharmacy, Biostatistics, Public Health and Pharmacoeconomics and developed a step by step method: (1) critical appraisal methods of an article published in scientific literature in second year, (2) critical appraisal methods of documents presenting healthcare topics in general or pharmaceutical media (journals and websites) in third year, and (3) comparative

analysis of documents published in scientific, professional and general media about a current healthcare issue by teamwork in flipped classroom during fourth year.

Results: In second and third year, our students often question the usefulness of exercises about critical appraisal of a document published in scientific, pharmaceutical or general media. In fourth year, most students appreciate the teamwork about a current issue, such as access to innovative and costly cancer drugs. They also appreciate presenting their work to their colleagues, and understand that exercises done in earlier years were indeed useful.

Discussion: We should discuss how to make critical appraisal exercises in early years more attractive, for instance by developing and applying more interactive methods. As our students continue critical appraisal exercises during fifth year when specialising for community pharmacy, hospital pharmacy or pharmaceutical industry, they are well prepared for critical appraisal of their professional environment and within their daily activities when arriving in their professional settings.

P-28 Experiences of inter-professional simulation learning in pharmacotherapy education

Miia Tiihonen[1], Eeva-Riitta Ylinen[2], Riitta Turjamaa[2], Kirsti Laitinen[1]

[1]University of Eastern Finland, School of Pharmacy, Finland

[2]Savonia University of Applied Sciences, Unit of Health Care Kuopio

Aims: This study describes our experiences of inter-professional education (IPE) provided via simulation learning in pharmacotherapy with nursing and pharmacy students. A simulation was used to deliver a clinically realistic scenario of patient care. Our aim was to develop an inter-professional simulation learning environment to increase students' knowledge on the following topics; how to conduct a medication review.

Method: The IPE was carried out in the Savonia Simulation Center and delivered to fifth year pharmacy students (n=4) and third year nursing students (n=32) as part of their pharmacotherapy course. The implementation of the simulation was devised by a multi-professional team consisting of a Senior Lecturer in Nursing (design of simulation) and two Senior Lecturers in Pharmacy (validation of medication review). Nurse-pharmacist-student pairs were the actors in each simulation representing their own professional roles. The out-patient (standardised patient acted by a senior teacher) was a client living in a care home for the elderly, whose well-being, functioning and memory had deteriorated. The nurse and pharmacist visited her home (room furnished suitably for an aged patient) to assess her medication and health condition. At the same time, other students followed their actions on a monitor and made observations concerning the drug related problems found and inter-professional communication skills. Afterwards, a debriefing and evaluation were made by students and teachers. The students responded by filling in a questionnaire after the simulation.

Results: Most of the nursing students (88 %) and all pharmacy students found that inter-professional simulations increased their professional and communication skills. Most nursing students (94 %) and pharmacy students (75%) considered the simulations to be educational. Most of the nursing students (97 %) and pharmacy students thought that simulation learning had increased their ability to understand drug and health related problems. It also improved their skills to review a patient's medication. All students considered that their competence for medication counselling had increased.

Discussion: Our experiences of inter-professional simulation learning among nursing and pharmacy students were positive. Students found the simulations to be educational and useful for developing their professional roles. Simulations offer a possibility to undertake inter-professional collaboration to solve real-life situations. IPE should be incorporated in the curriculum for healthcare professional students and simulations could be an effective method to teach team communication and improve drug safety.

P-29 Longitudinal changes in autonomous and controlled motivation of pharmacists in the Dutch continuing education system

Sharon L.N.M. Tjin A Tsoi[1,2], Gerda Croiset[3,4], Anthonius de Boer[1,2], Rashmi A. Kusurkar[3,4], Andries S. Koster[2]

[1]Netherlands Centre for Post-Academic Education in Pharmacy, Zeist,, The Netherlands

[2]Department of Pharmaceutical Sciences, Utrecht University, Utrecht, The Netherlands

[3]VUmc School of Medical Sciences, Free University, Amsterdam, The Netherlands

[4]LEARN! Research Institute for Learning and Education, Free University, Amsterdam, The Netherlands

Introduction: Pharmacists' motivation for Continuing Education (CE) and Continuing Professional Development (CPD) play a pivotal role in the quality of learning outcomes and patient care. Autonomous motivation (AM) − in contrast to controlled motivation (CM) − is associated with deep learning, better learning outcomes, and less likely leads to burnout[1]. By understanding the dynamics of motivation a CE/CPD system might be designed that ideally fosters AM.

Aim: The aim of this study was to follow longitudinal changes in motivation of pharmacists participating in the Dutch CE/CPD-system during a two-year period (2013-2015).

Method: AM and CM was measured at three time points (0, 9 and 21 months) using 5-point Likert scales from the Academic Motivation Scale and Relative Autonomous Motivation (RAM) was calculated from the sub-scales[1]. Latent Growth Modelling was used to analyse the data.

Results: AM (3.35 ± 0.55) increased over 21 months (slope = 0.071 ± 0.031 per year), but CM (1.87 ± 0.64) increased more steeply (slope = 0.194 ± 0.035 per year). As a consequence, RAM decreased over time. Traineeship was the only factor, which significantly influenced the change in motivation. No subgroups with different developmental trajectories could be identified.

Discussion: The RAM of Dutch pharmacists for CE decreased over a 21-month period as a result of a relatively strong increase of CM. Further research is needed to gain a better understanding of the association between pharmacists' motivation and the characteristics of the current CE system.

References

[1]Tjin A Tsoi, S.L.N.M., de Boer, A. *et.al*. (2016). Factors influencing participation in continuing professional development: A focus on motivation among pharmacists. *Journal of Continuing Education in the Health Professions*, **36**, 144-150.

P-30 Evaluation of a post-graduate residency programme for community pharmacists in The Netherlands

Marnix P.D. Westein[1], Harry de Vries[2], Annemieke Floor[3], Andries Koster[4], Henk Buurma[1,3]

[1]Royal Dutch Pharmacists Association (KNMP), the Hague, The Netherlands

[2]HPC, the Human Perspective in Consulting, the Hague, The Netherlands

[3]SIR Institute for Pharmacy Practice and Policy, Leiden, The Netherlands

[4]The Department of Pharmaceutical Sciences, Utrecht University, Utrecht, The Netherlands

Introduction: In 2012 a modernised post-graduate two-year educational programme for Dutch community pharmacists was introduced. The programme focusses on residency training in order to develop seven competencies for community pharmacists on ten predefined task areas according to the CanMEDS framework[1]. Workplace learning is driven by programmatic assessment[2] of 40 Entrustable Professional Activities[3] (EPAs).

Aim: In 2014 the educational programme was evaluated with the aim of discovering the bottlenecks in the curriculum as experienced by pharmacist trainees and supervisors and to gather opportunities for improving the curriculum.

Method: Two focus groups with pharmacist trainees and supervisors were held. Three themes were discussed: trainees and supervisor workload, learning in the pharmacy workplace, and utility of the assessment system. The results were discussed with a review committee representing all relevant stakeholders.

Results: The pharmacist trainees and the supervisors each reported six bottlenecks in the current curriculum. On the basis of these results the review committee recommended for the following changes to be made: 1) Lower the quantity of formative assessments; 2) Clarify the assessment instruments used; 3) Make portfolio less administrative and more comprehensible; 4) Make the introductory course for supervisors more instructive; 5) Evaluate the impact and relevance of the additional central courses.

Discussion: The modernisation of the educational programme for community pharmacists was endorsed by all stakeholders. The competency framework consisting of seven CanMEDS competencies and ten task areas was considered valid. The programmatic assessment on the other hand needed adjustments. Of the 40 predefined EPAs ten were adjusted leading to a reduction of the total number of EPAs to 36. Also the number of formative assessments was reduced considerably from 156 to 92 (70% reduction). Finally, the user-friendliness of the portfolio and assessment-instruments was improved.

References

[1]Frank, J.R., Snell, L., Sherbino, J. (eds.) (2015). CanMEDS 2015 Physician Competency Framework. Ottawa: Royal College of Physicians and Surgeons of Canada.

[2]Van Der Vleuten, C.P.M., Schuwirth, L.W.T., Driessen, E.W., Dijkstra, J., Tigelaar, D., Baartman, L.K.J. & Van Tartwijk, J. (2012). A model for programmatic assessment fit for purpose. *Medical teacher*, **34**(3), 205-214.

[3]Ten Cate, O. (2005). Entrustability of professional activities and competency-based training. *Medical Education*, **39**(12), 1176-1177.

P-32 Educational initiatives for pharmacy students at Medical University of Białystok, Poland

Katarzyna Winnicka, Wojciech Miltyk, Michał Tomczyk

Faculty of Pharmacy with the Division of Laboratory Medicine, Medical University of Białystok, Poland

Introduction: Pharmacists are highly accessible healthcare providers and feature prominently in Polish healthcare system characterised by more demanding patients.

Aim: To ensure that recently graduated pharmacists are adequately prepared for this extended role, teaching methods utilising patient simulation, including standardised patients, are being used increasingly to ensure that students' practice is being assessed under conditions that reflect clinical practice or pharmaceutical care.

Method: In modern students' learning, it is extremely important to apply tools enhancing learning effectiveness of practical skills and professional development. During these studies, practical skills and pharmaceutical care are also taught. More educational initiatives to improve our students' education have been included. Students have the opportunity to work with the personalised remote response system to consequently check gained knowledge. Other educational techniques such as situation scenes including pharmaceutical care or professional patient information in our training pharmacy have also been applied.

Results: Recently, the teaching programme of pharmacy in Poland includes three internships: one month in pharmacy (addressed to 3rd year students), one month in hospital pharmacy (addressed to 4th year students) and six months internship (six months in pharmacy or three months in pharmacy and three months in hospital pharmacy, addressed to 5th year students). Despite obligatory internships, in Faculty of Pharmacy in Medical University of Białystok (MUB), additional opportunities to improve practical education are available. One of them is three months internship programme addressed to 5th year students of pharmacy entitled "High quality internship programmes at the Faculty of Pharmacy with the Division of Laboratory Medicine of MUB" co-financed by the European Union from the European Social Fund, the Knowledge Education Development 2014-2020 Programme. During these internships, students have the possibility to develop their skills not only in pharmacies, but also in scientific institutions and in pharmaceutical industry in Poland and European Union.

Discussion: An important element in the pharmaceutical education of our students is commitment to the activity of "Young Pharmacy" - student's section of the Polish Pharmaceutical Society, which co-organise periodical actions, like "Ask the pharmacist…hypertension", "Ask the pharmacist…diabetes". During these trainings, students attend seminars and have the ability to practice communication with patients *e.g.* in shopping malls.

P-33 Academic-led experiential learning through Erasmus mobility traineeships

Francesca Wirth, Maresca Attard Pizzuto, Lilian M. Azzopardi, Anthony Serracino-Inglott

Department of Pharmacy, University of Malta, Msida, Malta

Introduction: The Department of Pharmacy at the University of Malta is very active in the student Erasmus mobility programme. Pharmacy students may opt to carry out an experiential learning traineeship in a research laboratory or in a hospital in another European university for a minimum of two months during the first semester of the fourth year to obtain 20 ECTS.

Aim: To describe and evaluate Erasmus mobility traineeships for pharmacy students

Method: A preliminary information session for students interested in an Erasmus mobility, led by the Erasmus academic coordinators at the Department of Pharmacy, is organised every year, where students who have just returned from the mobility can share their experience with prospective applicants. A second information session with the Erasmus academic coordinators is held before the students' departure to explain the learning outcomes and the evaluation process to be applied, and to go through the specific handbook available. The student has to complete a student learning portfolio where the student has to reflect on learning expectations at the start (EP1) and mid-point (EP3) of the traineeship, document daily activities (EP2) and report on technical and personal skills gained (EP4). The evaluation process involves four virtual tutorials, including an introductory tutorial and three discussion tutorials, with an academic preceptor in Malta. EP1 is discussed during the introductory tutorial, while daily record sheets and EP3 are reviewed during the discussion tutorials. The preceptor assigns a mark for each discussion tutorial, together comprising 50% of the final mark. Upon return to Malta, each student delivers a final presentation to reflect on the experience and present EP4, contributing to 25% of the final mark. The remaining 25% of the final mark is the evaluation by the preceptor at the partner university who is asked to rate the student's performance for ten criteria specified in a developed evaluation form.

Results: In the past three academic years, 80%, 84% and 100% of fourth year pharmacy students took up an Erasmus mobility totalling 61 students. The students carried out the placements in 20 partner universities in seven countries namely: Belgium (Brussels), France (Grenoble, Lille, Paris), Germany (Bonn, Erlangen-Nürnberg), Italy (Bari, Calabria, Padova, Perugia, Urbino), Spain (Alcala, Granada, Madrid, Valencia), Poland (Krakow, Wroclaw) and the United Kingdom (Bradford, Cardiff). The students obtained a mean final mark of 86 out of 100 (range 74-94) in academic year 2014-15, 86 out of 100 (range 72-91) in academic year 2015-16, and 87 out of 100 (range 82-91) in academic year 2016-17.

Discussion: The academic-led experiential learning through the Erasmus mobility traineeships are providing a learning opportunity to students in another cultural environment which is being assessed and contributes to the students' academic grades.

P-34 Use of a learning portfolio in student professionalism education

Daisy Volmer, Anu Sarv

University of Tartu, Tartu, Estonia

Aims: Portfolios are important tools for promoting reflective practice and self-education and have been used to provide evidence about learning and development. Professional development and professionalism education are closely connected. The aim of this study was to evaluate how a learning portfolio as a study method helps pharmacy students at the University of Tartu (UT), Estonia, to identify, learn and develop their professionalism.

Method: Social pharmacy and drug safety (SPDS) I is a six ETCS course taught for 4th year pharmacy students and provides information about the operation of healthcare system including pharmacy sector in Estonia and EU. To improve student professionalism education, practicing specialists participated in SPDS seminars. Students (n=22) filled in their learning portfolio every week and described existing knowledge, acquired knowledge and analysed how new information contributed to their perceptions about professional roles of pharmacists. In addition students received a drawing assignment to picture a competent professional in pharmacy. Content analysis was used to evaluate the learning portfolio data and drawings. A questionnaire was applied to gather students´ feedback concerning the learning portfolio as a tool to educate professionalism.

Results: The learning portfolio contributed to students´ evaluation and analysis of existing and acquired knowledge about the healthcare system and handling of medicines. About half of the students tended to give description and not analysis of learned knowledge and its influence to their future professional performance. The drawing assignment clarified several professional roles of pharmacists. Students favoured pictorial presentation of professionalism as it helped better understand and visualise professional competence in pharmacy. Pharmacy students considered the learning portfolio as a moderate to slightly beneficial tool for evaluation and analysis of acquired knowledge and addressing students´ learning needs. However, continuous practical application of this type of data recording was considered unlikely.

Discussion: The learning portfolio was used for the first time to support professionalism education of pharmacy students at the UT. This tool presented structured information about development of students´ professional knowledge. In the future, repeated use of the learning portfolio would help to understand the impact of self-reflection and self-analysis in professionalism education.