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Elective Course for Medical Students: Topicality, Development, Implementation, Benefits

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Abstract

A growing trend in Latvia's healthcare is patients' choice to use phytotherapy alongside pharmaceutical drugs both as a preventive measure and means of therapy for various diseases. A number of medical students of the Faculty of Medicine at Rīga Stradiņš University (hereinafter – RSU) plan to become general practitioners in the future. These specialists should have an overall understanding of phytotherapy, skills to evaluate its effects on the body and possible side effects in order to professionally advise and give suggestions to their patients. Therefore an innovative elective course Medicinal Plants and Their Use was introduced in the curriculum of the Medicine programme in 2011. In order to be chosen by the students the course must correspond to the highest quality standards. Important aspects of quality are the evaluation of implementation and perfection. The university by involving students in the content creation of elective courses promotes the belonging of students, extends the range of courses, develops maximum practical benefit of students and is able to ensure high quality of education. The article summarizes the experience in developing the elective course, analyses its implementation, evaluation and perfection as well as benefits for medical students.

Keywords: Elective course; medical students` benefits; analysis of the experience; implementation; evaluation; perfection

Introduction

Rīga Stradiņš University (hereinafter – RSU) is a modern, prestigious university acknowledged in Europe and the world in the field of healthcare and social sciences, with the human being at its centre of attention. Our mission is to train highly qualified experts in the field of healthcare and social sciences, so that they can serve the society of Latvia, the European Union, as well as the world. So that the knowledge, skills and attitude they have acquired during their studies would comply with the EU standards and humane traditions, and it would form a firm basis for lifelong learning (RSU, 2016). RSU Academic Regulations stipulate that in addition to the compulsory study programme, a student shall choose different elective study courses during the six-year study programme. Thus each semester a list of courses is provided and students choose one elective course. To ensure that the study course complies with the highest quality standards and is interesting for the students, five consequent stages are taken into consideration, namely, appraisal of offers, development, implementation, evaluation and perfection. One such elective course Medicinal Plants and Their Use was developed in 2011 by the Department of Biology and Microbiology. Students take the course for one semester acquiring 3 credit points (Number of ECTS points 3), the study language of the course is Latvian or English. In the period of six years a total of 553 students have chosen this course as an elective course. Four lectures and eight practical classes are planned for the acquisition of the contents of the course. The main emphasis in the acquisition of the content is put on research skills. During the implementation of the course frequent evaluation and perfection have taken place. Evaluation and perfection are important aspects in ensuring quality as they entail the analysis of the foregoing stages of development and implementation.

The aim of the research: establishment of a long-term development model of elective study courses.

Context of the Study Course Development and Implementation

Students of the Faculty of Medicine at RSU planing to become general practitioners in the future will have to develop an understanding within their competence of the use of medicinal plants both as a means of therapy and preventive treatment. Upon review of RSU study programmes it was concluded that none of the existing study courses offer knowledge in this matter of subject and therefore difficulties in the practical work of aspiring medical specialists due to an inability to adequately assess the potential benefits and risks of phytotherapy could arise. Thus the development of the innovative elective study course Medicinal Plants and Their Use was begun. It posed a significant challenge for lecturers because the elective course must be

relevant in the society, qualitative, interesting and necessary for the medical student in order to be chosen amongst others (Bower, 2006).

University's researchers on pedagogy stress that it is the task of lecturers to offer up-to-date study contents, interesting possibilities for studying and modern study environment, one in which anyone involved could be able to find important study contents and the most appropriate way of studying for oneself as well as a study environment susceptible to change where participants of the study process actively engage, analyse, research and improve their studying, thus perfecting their competence (Walvoord & Banta, 2010). Consequently the subsequent stages were taken into consideration when developing and implementing the elective course Medicinal Plants and Their Use:

Development of the offer;

Implementation;

Evaluation;

Perfection (Peterson, Wittstrom, & Smith, 2011).

Initially the aim and the results of the study course were defined when developing the study course. To formulate the results of studies the focus was set on specific knowledge and skills in phytotherapy that are necessary for young specialists such as abilities to analyse the patient's situation, to argue, logically express and justify one's opinion in regard to the therapeutic effects of medicinal plants and the choice of medicinal plants in accordance with the overall goal, to foresee the potential side effects, to recognize medicinal plants, to explain the requirements for collecting, drying and storing medicinal plants, to justify the use of medicinal plants in the treatment of particular diseases, to explain their effects on the body, to recommend calming and vitamin teas for daily use, to demonstrate biogenic substances in plants, to prepare tinctures, pastes, ointments, creams, decoctions, to use databases of Drug Register and Nutritional Supplements, to discuss the use of herbs in therapy, preventive treatment and others. Alongside knowledge about chemical therapy, students would acquire knowledge in phytotherapy that complies with the aims set out by the World Health Organisation (WHO, 2013).

The following step was to plan resources necessary for the implementation of the aims and results of studies. This entailed both the recruitment of skilful lecturers and provision of an appropriate study environment, for example, cooperation with lecturers of the Department of Pharmacology as well as collection of medicinal herbs and purchase of the necessary technical equipment for the implementation of lectures and practical classes. While developing the study course, several experienced phytotherapists were interviewed and their suggestions were taken into account (A. Teresko &V. Enina, personal communication, Julay 6, 2011.). When the study course was finalized both theoretically and practically, it was offered as an elective study

course for students. In the second semester of the academic year 2011/2012 55 students chose the course and the number increased by each semester (2012/2013 N=97; 2013/2014 N=112; 2014/2015 N=138; 2015/2016 N=151). These data are consistent with trends in other medical institutions (Allen Greiner, Murray, & Kallail, 2007). In order to perfect the study course it was frequently evaluated which is one of the cornerstones of long-term development of a study course (Peterson, Wittstrom, & Smith, 2011). Lecturers, supporting staff and students participated in the evaluation. Evaluation and perfection are key aspects to ensure quality as they include the analysis of the preceding stages of development and implementation. The evaluation is based on the analysis of two basic components, namely, the evaluation of the process and the result, process being the way leading up to the result. The evaluation never serves only as a purpose of establishing facts. Its most important task is that of mobilization that propels perfection and innovation (Peterson, Wittstrom, & Smith, 2011).

Outcomes of Course Evaluation

The organization and course of the research. The pedagogic research conducted in the framework of the study course Medicinal Plants and Their Use was carried out by the Department of Biology and Microbiology from 2012 to 2016. Five lecturers of the study course, three supporting staff employees and 304 students were involved in this research. Qualitative and quantitative methods were used for acquiring data: focus group discussion of lecturers, as well as supporting staff and student surveys. Methods of data processing and analysis were transcript coding of focus group discussions (NVivo 11) and student surveys analysis (SPSS 22).

The aim of the discussions of the focus group was to determine whether the contents of the course conform to the interests and needs of the students and if the methods, resources and time planned for the acquisition of the content are appropriate. The obtained data were compared with the data of student surveys. There were a total of six focus group discussions organized once per semester for the lecturers and supporting staff after the conclusion of the study course. When the data were obtained discussions of the focus group were transcribed and four main evaluation categories of contents were obtained:

Volume of contents and their compliance with the aim;

Time of implementation of the study course in the course of a semester;

Sufficiency of resources;

Benefits for medical students.

Surveys were conducted to acquire students' opinions. During the period from 2012 to 2016 surveying was conducted at the end of each semester after the conclusion of the study course comprising a total of 10 surveys. 171 international students who acquired the course in English and 133 students who studied in Latvian were

surveyed. The questions included in the survey corresponded to the categories obtained in the discussions of the focus group. Upon analysis and by comparing the results of student surveys and discussions of the focus group, categories of evaluation of contents of the elective study course were established.

Table 1. Categories of evaluation of contents of the elective study course

Category	Evidence obtained in the student survey
Volume of contents and their compliance with the aim	Student satisfaction with content: 67% fully satisfied, 33% partially satisfied. Student comments: „theory could be learnt during practical classes and not lectures" „put more emphasis on the more important plants, there are so many it is difficult to remember all of them".
Time of implementation of the study course in the course of a semester	89% fully satisfied, 11% partially satisfied. Student comments: „there could be less practical classes or the classes could be longer because we had to stay longer after the class to finish our work".
Sufficiency of resources	100% fully satisfied. Student comments: "it was nice when we had the necessary appliances and substances in our work place".
Benefits for medical students (detailed analysis see figure 5.)	Student comments: "I have learnt titration". "I will be a better doctor if I know the basics of phytotherapy". "It can be beneficial when travelling in nature/outdoors and there isn't pharmacy nearby".

According to the replies received from students and lecturers, it was concluded that the content covered by some classes was too extensive and students suggest putting an emphasis on acquiring practical skills. For example, the content of the lecture about types of medicines could be covered during the practical class by preparing them by themselves. After the first focus group discussion of the lecturers it was decided to create a new practical class in which the existence of vitamin C in medicinal plants and herbs could be proved. Students would use titration that they have learnt in Chemistry in high school and in Medical Chemistry. As a novelty in this study course a hypothesis and a problem statement mentioned in the situation description

would be put forward that certain plant leaves contain more vitamin C than berries, for example, black currants (European pharmacopeia, 2014). In order to manage this practical class, the lecturers attended a practical seminar with the lecturers of the Department of Human Physiology and Biochemistry. In the next semester this practical assignment was implemented and the high appraisal of this class confirms the conformity of the problem statement with students' interest to carry out practical work in order to prove or disprove the hypothesis.

When evaluating the quality of the study course content it was important for the lecturers to learn if students fulfilled their intentions by choosing this course. 67% of students wrote that their intentions were completely fulfilled with some commenting that 'even more than expected', 'I did not only gain knowledge but also an understanding of where to look for information'. 33% of students responded that their intentions were partially fulfilled because 'I didn't think that I will have to learn about plants' leaves and types', 'I wanted more case studies', 'I wanted to go into details about the effects of certain plants'.

Time. When analysing data in regards to the time for the implementation of this study course, students' suggestions were taken into consideration which were not to plan the study course after the conclusion of compulsory study courses but to have it alongside compulsory study courses once a week throughout the semester.

Resources. First of all, an assessment of resources at the Department and their compliance with each practical class was carried out. In the years 2012 and 2013 the lacking resources were borrowed for practical classes from other departments and only alongside with increasing number of students the necessary resources were gradually purchased. As a result each practical class has a list with the most appropriate resources. A timely plan of resources is an important part of successful work organization (see Fig.1.,2.,3.,4).

Figure 1. Students prove anthracene derivatives

Figure 2. Students prove alkaloids

Figure 3. Students prove C vitamin

Figure 4. Students look at medicinal plants in the Botanical Garden of Latvia

To obtain information about the benefits, students were asked to write two to five most important ones while studying this course. In total there were 548 benefits mentioned, on average two to four per survey (see Fig.5).

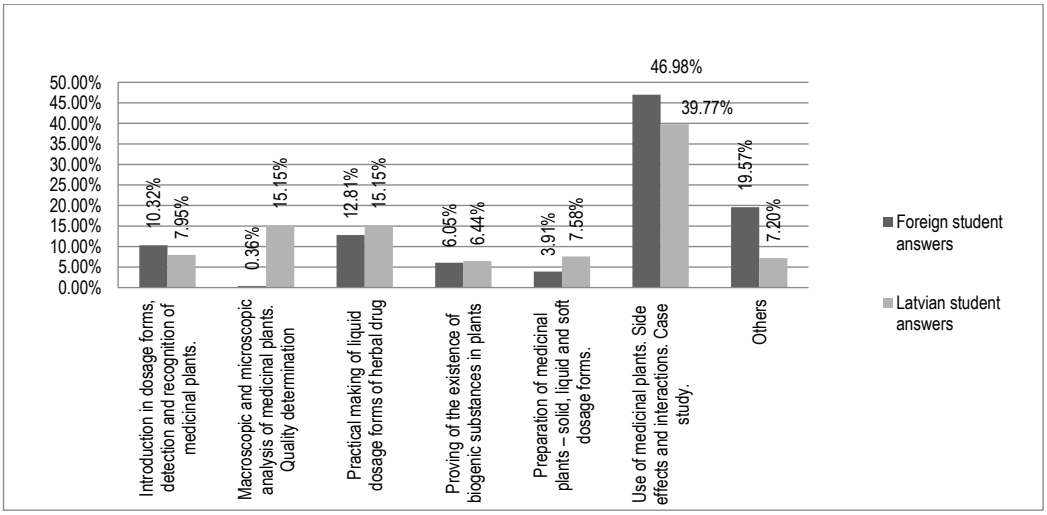

Figure 5. Students Benefits from elective course compare

The prevailing benefits were the practical use of acquired knowledge, work with pharmacological databases, case studies, predicting possible side effects and contraindications. When analysing case studies students looked for the therapeutic effects needed according to the complaints of the patient in order to relieve the patient's condition and to solve the problem. They analysed which medicinal plants, herbs and preparations could be used for phytotherapy and what the possible side effects and contraindications are upon use. Lecturers commented how students used the available information resources including databases. It is crucial for the students to check if the use of medicinal plants in combination with prescribed medications is

safe and what the possible side effects and contraindications are. According to the lecturers and students these skills will be necessary in the practice of a doctor.

39.7% of local and 47% of international students wrote that 'I will know medicinal plants and will be able to advise on their use', 'I will know where to find information about plants', 'I found out which herbs can be used to prepare decoctions and tinctures', 'I will be a more confident gatherer of teas', 'I learnt how to work with databases and what interactions with medications are (what can and cannot be used together with medicinal plants)'. Both student groups equally appreciated the benefits of learning how to prepare decoctions (15.1% of local students and 12.8% of international students) and proving biogenic substances (6% in each of the groups). Differing results were obtained in regards to the collection, drying, storage and evaluation of quality of medicinal plants and herbs. Macroscopic and microscopic analysis of medicinal) with only 15.1% of local students seeing it as beneficial and 0.36% of the international students perceiving it as a benefit. 26.7% of students wrote that they have acquired other new practical skills, for example, of preparing decoctions and extracts, made solid, liquid and soft dosage forms of herbal drugs. In the focus group discussions lecturers commented upon their observations made during practical classes. For example, students had been surprised about the correct preparation techniques of specific herbs because usually hot water is poured over the herbs, however particular herbs have to be prepared by pouring water at room temperature and then it can be used after 30 minutes. Students were interested in finding out which herbs and why had to be prepared this way. In comparison students considered attaining the least in the practical class about the morphology of medicinal plants. Therefore it was decided to work on this class bearing in mind that this information is necessary for students especially the ones planning to collect herbs on their own. The skills of recognizing medicinal plants similar to poisonous plants were emphasized. The analysis of students' responses provides assurance to lecturers in regards to the relevance of the content of the course and ensures further improvement. The opinions of students is important, thus frequently renewing and perfecting study programmes and courses, lecturers improve the overall quality of education provided by RSU. By summarizing the experience, a long-term development model of elective study courses has been established (see Fig.6). Its key criteria are appraisal of topicality, development of an offer and implementation considering different types of resources, progress towards perfection and innovation by constantly evaluating the quality of a study course.

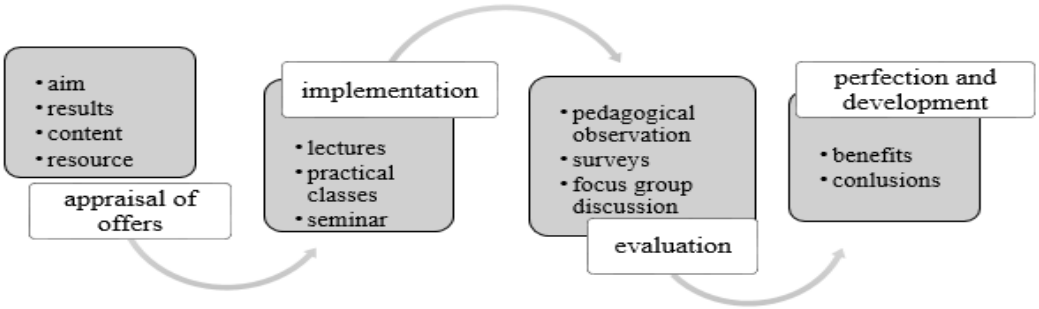

Figure 6. Long-term development model of elective study courses

Discussion and Conclusion

Provision of thorough theoretical and practical knowledge is crucial in the implementation of a study course. It is confirmed by data in which students stress that the acquired knowledge has practical application. Students consider the skills acquired during practical classes of utmost importance. The longevity of a study course can only be ensured by constant evaluation and perfection of its contents.

The research experience allows to define two essential criteria for the long-term development of a study course:

Continuous analysis of accomplished work, which takes a vital role in the survey of student opinions and their integration and implementation in the organization;

The popularization of gained experience among faculty and students ensures growing interest in a study course.

An elective study course can be implemented only if students choose to learn it, so it is important to ensure its high quality which would meet students' interests and needs.

An important prerequisite of an elective study course is its quality. It has to be understood as the topicality of the contents and their conformity with the interests and necessities of students. The accomplished work is considered a good example and can serve as a source of incentive for lecturers developing and implementing a new study course.

References

[1] Allen Greiner, K., Murray, J. L., & Kallail, K. J. (2007, September). Medical Student Interest in Alternative Medicine . The Journal of Alternative and Complementary Medicine, 6(3), pp. 231-234. doi:10.1089/acm.2000.6.231.

[2] Bower, H. F. (2006, December). Designing quality course management systems that foster intra-professional education. Nurse Education Today, 26(8), pp. 726-731. doi:10.1016/j.nedt.2006.07.007

[3] European pharmacopeia (8th ed.). (2014). Strasbourg: Council of Europe.

[4] Peterson, S., Wittstrom, K., & Smith, M. (2011). A Course Assessment Process for Curricular quality improvement. American Journal of pharmaceutical Education, 75(8), p. 157. doi:10.5688/ajpe758157

[5] RSU. (2016). RSU Mission and Vision. Retrieved from RSU: http://www.rsu.lv/eng/about-rsu/strategy-and-structure

[6] Walvoord, B., & Banta, T. (2010). Assessment Clear and Simple: A Practical Guide for Institutions, departments and General Education (2nd ed.). San Francisco: Jossey-Bass.

[7] WHO. (2013). WHO Traditional Medicine Strategy: 2014-2023. Geneva: WHO Press. Retrieved from http://apps.who.int/iris/bitstream/10665/92455/1/9789241506090_eng.pdf?ua=1