Short Communication

An active learning assignment to improve pharmacy students' knowledge of herbal medicine

Sameh AbouZid

Pharmacognosy Department, Faculty of Pharmacy, Beni-Suef University, Beni-Suef 62111, Egypt.

ARTICLE INFO	ABSTRACT

Medicinal plant courses represent an essential part of the applied sciences component in the curriculum of pharmacy education in Egypt. One of the intended learning outcomes of these courses is to demonstrate knowledge and understanding in the theory and practice of herbal medicine. The aim of the current work was to improve pharmacy students' knowledge and understanding of the herbs used for medicinal purposes. The students, in groups, conducted direct interviews with staff members of the university using a semi-structured questionnaire. The questionnaire included questions about medicinal herbs used by the participants, purpose for use, method of preparation, and sources to obtain. The educational impact of this assignment was evaluated by a questionnaire distributed to the participated students. The majority of students agreed that carrying out the assignment helped them in improving their knowledge and understudying about medicinal herbs. Moreover, their oral communications skills were improved. The described active-learning assignment offered a great opportunity for the students to improve their communication skills and to gain knowledge about the commonly used medicinal herbs in their community.

INTRODUCTION

Egypt has the largest number of pharmacy schools in the Middle East (Soliman et al., 2013). Some of these schools are sponsored by the government while others are privately funded institutions. Undergraduate Pharmacy education in Egypt consists of 5-year program including basic and applied components. It is mainly based on the pharmaceutical sciences; with a little focus on pharmacy practice (El-Awady et al., 2006). Medicinal plant courses represent an essential part of the applied pharmaceutical sciences component of the curriculum. These courses include botany and medicinal plants, pharmacognosy, phytochemistry, herbal medicine, and quality control. Totally, these courses represent 24 credit hours of the 180 credit hours required for pharmacy specialization. The main intended learning

outcomes of these courses are to demonstrate knowledge and understanding in morphological and histological characters of natural drugs, chemistry of natural products, and quality of medicinal plants products. Moreover, student should be able to define theory and practice of herbal medicine. According to the national academic reference standards for pharmacy education in Egypt, pharmacists should possess in-depth knowledge and understanding on complementary therapies, including herbal therapies.

Moreover, they should possess certain skills to communicate orally and in writing with other health care professionals in specialized language and express complex issues in terms that lay people can understand (Al-Azizy, 2007). This requires innovative teaching methods that depend on active learning. Active learning strategies, including team-based learning, will improve students' knowledge and skills and meet curricular standards (Stewart et al., 2011; Allen et al., 2013; Young et al., 2013). The assignment described in this article was carried out by 2nd year pharmacy students registered in pharmacognosy course.

───────────────
* Corresponding Author
Dr. Sameh AbouZid, Department of Pharmacognosy, Faculty of Pharmacy University of Beni-Suef, Beni-Suef 62111, Egypt.
E-mail: sameh.zaid@pharm.bsu.edu.eg

Table. 1: Plants names, uses, preparation method, and times mentioned by participants in the questionnaire.

Plant name	Use	Preparation method	Times mentioned
Allium sativum L. (Alliaceae)	GIT antiseptic	Chewing fresh bulbs	2
Apium graveolens L. Var. dulce DC. (Apiaceae)	Cough	Decoction	1
Artemisia herba-alba Asso. (Asteraceae)	Colic in GIT	Decoction	6
Boswellia Carterii Birdw.(Burseraceae)	Cough	Overnight infusion on empty stomach	1
Camellia sinensis L. Kuntze(Theaceae)		Infusion / decoction	61
- Black tea	Stimulant		
- Green tea	Diet, anticancer, High cholesterol		
Capsicum annum L. (Solanaceae)	Appetizer	Powder	2
Carum carvi L. (Apiaceae)	Colic in GIT	Decoction	21
Carum petroselinum Benth & Hook (Apiaceae)	Lowering fats	Green herb	4
Caryophyllus aromaticus L. (Myrtaceae)	Mouth antiseptic	Lozenge	1
Cinnamomum zylenicum J. Presl (Lauraceae)	Colic in GIT, Common cold	Decoction	25
Citrullus colocynthis Schrad. (Cucurbitaceae)	Mideterranean	Tablet	1
Citrus lemon (L.) Burm. F. (Rutaceae)	Common cold, Colic in GIT	Juice	10
Cladium mariscus (L.) Dohl (Cyperaceae)	Common cold, Kidney pain	Decoction	2
Coffea arabica L.(Rubiaceae)	Stimulant	Decoction	20
Corchorus olitorius L.(Tiliaceae)	Constipation	Soup	2
Coriandrum sativum L.(Apiaceae)	Colic in GIT, Indigestion	Green herb	8
Cuminum cyminum L. (Apiaceae)	Colic in GIT, High cholesterol	Powder	18
Curcuma longa L. (Zingiberaceae)	Liver stimulant, indigestion	Powder	4
Daucus Carota L. Var. sativa DC. (Apiaceae)	Enhance vision	Fresh roots	7
Eruca sativa Mill (Cruciferae)	Hyperprolactinaemic	Green herb	4
Foeniculum vulgare Mill. (Apiaceae)	Kidney stones, Colic in GIT	Decoction	5
Hibiscus sabdariffa L. (Malvaceae)	Hypertension	Infusion / decoction	78
Hordeum vulgare L. (Graminae)	Kidney stones	Decoction	4
Hyphaene thebaica Mart.(Palmae)	Hypertension	Decoction	1
Lactuca sativa L. (Asteraceae)	Diet	Green herb	3
Lavendula officinalis Chaix (Lamiaceae)	Anxiety	External bathing with essential oil	1
Maticaria chamomilla L. (Asteraceae)	Colic in GIT	Decoction	6
Mentha piperita L. (Lamiaceae)	Colic in GIT, Flatulence	Infusion / decoction	103
Morus nigra L.(Moraceae)	Diabetes	Decoction	2
Nigella sativa L.(Ranunculaceae)	Immunostimulant, cold	Powdered seeds	5
Olea europaea L.(Oleaceae)	Diabetes	Decoction	1
Origanum majorana L.(Lamiaceae)	Diabetes	Decoction	3
Pimpinella Anisum L. (Apiaceae)	Common cold, Colic in GIT	Infusion / decoction	104
Psidium guajava L. (Myrtaceae)	Cough, Common cold	Decoction	4
Raphanus sativa L. (Cruciferae)	Hyperprolactinaemic	Fresh herb	1
Thymus vulgaris L. (Lamiaceae)	Colic in GIT	Decoction	1
Tilia sylvestris Desf. (Tiliaceae)	Common cold	Infusion	5
Trigonella foenum-graecum L. (Fabaceae)	Colic in GIT, Hyperprolactinemic, nutitive	Decoction	45
Vitis vinifera L. (Vitaceae)	Diabetes	Decoction	1
Zingiber officinale Roscoe(Zingiberaceae)	Common coldm Laryngitis, Memory enhancer	Decoction	11

The overall aim of this course is to provide comprehensive information on natural drugs. The main teaching and learning methods used in this course is lectures, practical sessions, and research assignments. The students are assessed using written semester work, periodical exams, practical exam, midterm exam, and final written and oral exams. There is no course note to this course; otherwise students have to depend on essential and other recommended books available in the library (Wallis , 1985; Evans & Trease, 2009).

The main objective of the described assignment was to improve knowledge and understanding of the students for the commonly used herbs used in their community. In addition, students were given the chance to orally communicate with many people of different ages and background about their studied topics.

MATERIALS AND METHODS

The students worked in 25 groups, each group consisted of 3-4 students. The main task was to conduct direct interviews with academic and non-academic staff members of the university. The interviews were carried out by visiting the participants at their work place.

The interviews included a semi-structured questionnaire prepared by the course instructor. It consisted of questions about whether the participants use medicinal herbs for treatment, and whether they prefer it to conventional medicines. The participants were asked to name the most common herbs they use, against what type of disease, method of preparation, and sources to obtain these herbs.

The plants mentioned by the participants were botanically identified using the available literature available in the library of the department (Boulos, 1991; Bedevian, 1994).

RESULTS AND DISCUSSION

The results of the group of students who conducted the interviews with the largest number of participants (164) is described here as an example. Analysis of the questionnaire results

showed variation in age of the participants between 20 to 70 years old. Nine participants aged between 20-30, 118 were between 30-40, 30 were between 40-50, 4 were between 50-60, and 3 were between 60-70.

Fifty-five participants were from the countryside and 109 living in city. The majority of participants (159) stated that they use medicinal herbs in treatment, whereas only five participants do not use it. Most of the participants (123) preferred using medicinal herbs than conventional medicine for the following reasons: availability, safety, cheaper price, and suitability for the elderly people. Forty-one participants preferred using conventional medicines because of its faster action, effectiveness, standardization, and purity. Some participants claimed they have not enough knowledge about medicinal herbs.

The result of the questionnaire is presented in Table 1. The plants are arranged in alphabetical synopsis. The following information is provided for each plant: binomial nomenclature, family name, disease treated, method of preparation, and times the plant was mentioned by the participants. Forty plant species were mentioned in the questionnaire.

The plants with highest number of uses mentioned were *Pimpinella anisum* (104), *Mentha piperita* (103), and *Hibiscus sabdariffa* (78). This result is in agreement with the data of previously reported ethnobotanical survey conducted in the same governorate (AbouZid & Mohamed, 2011).

The students performed this assignment as part of the semester work of pharmacognosy course taught to second year pharmacy students.

This represents 10% of the weight of the total assessment. In addition, the educational impact of this assignment was evaluated by a questionnaire distributed to the participated students. Sixty percent strongly agree to carry out this activity, and 40% agree. Sixty five percent considered this activity as useful teaching method to be included in the curriculum. Thirty six percent strongly agreed on this point while 8% opposed. Forty four percent of the students agreed that this activity helped them in gaining knowledge and understanding about medicinal herbs, while 36% strongly agreed and 16% opposed. Eighty percent strongly agreed that this activity enhanced their communication skills and 20% agreed.

The students were also allowed to give their opinion about the activity. Most of the students expressed positive opinions and were satisfied. Many students indicated that this activity contributed to gain knowledge about medicinal plants and let them appreciate the importance of this course. Some of them mentioned that they learnt names of new plants and their medicinal uses. Some suggested conducting the questionnaire using the internet to expand the number of participants.

The majority of the students emphasized that their communication skills were greatly enhanced by having chance to talk to many people about their studied subjects. One student complained that the informants were not positively responding to him.

CONCLUSION

In conclusion, this activity offered a great opportunity for students to enhance their communication skills and gain knowledge and understanding about the commonly used medicinal plants in their community. They worked in groups of 3-4 students and used a semi-structured questionnaire prepared by the course instructor.

The main goals were to gain knowledge about medicinal plants in accordance with intended learning outcomes of pharmacognosy course. This was largely achieved among most of the students. Moreover, the students communicated with the public about their studied subjects.

REFERENCES

AbouZid SF, Mohamed AA. Survey on medicinal plants and spices used in Beni-Sueif, Upper Egypt. J Ethnobiol Ethnomed, 2011; 7:1-6.

Al-Azizy MM. 2007. National Academic Reference Standards - Pharmacy. Cairo, Higher Council for Egyptian Universities Publications.

Allen RE, Copland J, Franks AS, Karimi R, McCollum M, Riese DJ, Lin AYE. Team-Based Learning in US Colleges and Schools of Pharmacy. Am J Pharm Education, 2013, 77(6), Article 115.

Bedevian AK. 1994. Illustrated Polyglottic Dictionary of Plant Names. Cairo, Madbouli Bookshop.

Boulos L. 1991. Flora of Egypt. Cairo, Al-Hadra publishing Inc.

El-Awady EE, Moss S, Mottram D, O'Donnell J. Student Perspectives on Pharmacy Curriculum and Instruction in Egyptian Schools. Am J Pharm Education, 2006, 70(1), Article 9.

Evans WC. 2009. Trease and Evans' Pharmacognosy. Elsevier Health Science Publications.

Soliman AM, Hussein M, Abdulhalim AM. Pharmacoeconomic Education in Egyptian Schools of Pharmacy. Am J Pharm Education, 2013, 77(3), Article 57.

Stewart DW, Brown SD, Clavier CW, Wyatt J. Active-Learning Processes Used in US Pharmacy Education. Am J Pharm Education, 2011, 75(4), Article 68.

Wallis TE. 1985. Text Book of Pharmacognosy. Delhi.

Young S, Griffin B, Vest K. Active-Learning Instruction on Emergency Contraception Councling. Am J Pharm Education, 2013, 77(5), Article 104.