



# Design, Implementation and Evaluation of a Student Mentoring Program for Pharmacy Students Based on Facilitation by the Pharmacist Assistant Website at the School of Pharmacy of Ahvaz Jundishapur University of Medical Sciences

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Received: 2020-12-23, Revised: 2021-03-05, Accepted: 2021-03-06, Published: 2021-06-30

## ARTICLE INFO

Article type:

Original article

Keywords:

Mentoring;

Pharmacy Students;

Health Plan Implementations

## ABSTRACT

**Background:** Mentoring is a learning and training process in which a qualified person with more experience (mentor) consults a person with fewer skills or less experience (mentee). The purpose of this study was to design, implement and evaluate the student mentoring program for entry Pharmacy students of academic year 2019-2020 (as mentees) and to use a website to communicate with students in order to use new methods of communication.

**Methods:** In this project, 2015, 2016 and 2017 entry students were used as mentors. After assessing the needs of senior students, the mentoring program was designed and after revision, mentors and mentees were introduced to each other. Considering the outbreak of Corona virus in the middle of the project, the Pharmacist Assistant website was designed as a virtual learning platform and made accessible to students for keeping the mentoring members in touch with each other.

**Results:** Preliminary results of a needs assessment showed that students prefer being consulted by senior students in the times of challenge. A survey of mentees showed that all mentees were satisfied with participating in the program and recommended its implementation, and almost half of them believed that the web design was successful in educating students during the pandemic.

**Conclusion:** Due to the high satisfaction of the mentees with the mentoring program and their familiarity with the academic challenges before facing them, running mentoring programs can be very functional and helpful in Schools of Pharmacy. In the case of coronavirus pandemic, one way to prevent damage to the mentoring program and to keep the mentor and mentees in touch is to design a virtual platform such as the Pharmacist Assistant website.

J Pharm Care 2021; 9(2):61-66.

## ► Please cite this paper as:

Khajavi M, Izadpanah M, Eslami K, Kouti L. Design, Implementation and Evaluation of a Student Mentoring Program for Pharmacy Students Based on Facilitation by the Pharmacist Assistant Website at the School of Pharmacy of Ahvaz Jundishapur University of Medical Sciences. J Pharm Care 2021; 9(2): 61-66.

## Introduction

As the role of the medical sciences students is undeniable in the health of society, training and educating these students are critical in order to bring productive and motivated workforces into the country's health system (1).

Studies show that if there is no suitable educational and psychological support system for students, they will always look for advice from senior students without a suitable pattern.

In this case, if the counselor lacks sufficient knowledge about the field of study and motivation, he can cause problems with ill-considered and unprincipled guidance (2). This issue is especially important for freshman students. The first year is a stressful one for students and any support provided at this time can be helpful (3).

One of the principled ways to solve these problems and train students is to design and implement student mentoring

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programs (4). Mentoring is a learning and training process in which a skilled person with more experience (mentor) encourages, supports, consults, and ultimately teaches a student with fewer skills or less experience (mentee) as a role model. The purpose of this work is professional and personality development. The relationship between a mentor and a mentee leads to the personalization of the program and ultimately professional and career growth as well as the mentee's satisfaction (5).

Generally, the responsibilities of mentors can be classified into four groups: supporting, training, facilitating, and feedbacks providing (6). Mentoring has been considered as one of the main items of medical schools to facilitate the successful achievement of their scientific goals. In fact, mentoring is recognized as a catalyst for career success, development and productivity. However, mentoring is often underestimated by academic institutions (7). Mentoring can be used for all students; whether for students needing more effort in terms of education or those who have high performances themselves. Considering the fact that mentoring is based on self-regulating stimulation of positive behaviors, it gives mentees a blameless approach to use their problem in the right direction. In addition, mentoring not only delivers the initiative to a mentee to generate his own solutions but also reassures him that the mentor's support is available if needed. Research has shown that students who resist entering the mentoring program often lack self-awareness skills, while mentoring provides them with programs to challenge their self-awareness and discover their blind spots. In general, mentoring focuses on empowering people to make a difference in their current situation and challenges the beliefs and assumptions that are often major obstacles to change. In fact, mentoring creates skills for students; So that they can solve their problems by themselves in the future (3).

The goal of Schools of pharmacy is to train professional pharmacists with the necessary skills and ability to make a difference in their professions. Schools are now looking for ways to integrate communication requirements with professional principles (8). Pharmacy students may face difficulties from the beginning of their education due to the great variety of courses and different job opportunities in the future. A support network can help students in these situations. Given the complexities existing in the field of pharmacy and future career of these students that is constantly increasing, certainty in the need for mentoring programs in this field is also increasing. The mentoring program is important for the professional training and development of Pharmacy students and future pharmacists (9).

In Iran, a new pharmacy curriculum has been designed and implemented since the first semester of academic year of 2015-2016. In the process of the curriculum changes, the basic sciences test was eliminated and a comprehensive 180-unit test was scheduled. This will cause the students to face Pharmacy specialized courses from the second semester. All of these factors make a Pharmacy student feel the demand to get consultation. Running a mentoring project in order to

familiarize and inform freshman students resulting in their academic and work success, can help educate students so that productive, capable and motivated workforces can enter the country's health system to play their undeniable role in different parts of the system in the best possible way.

The COVID-19 pandemic has led to unprecedented changes in medical education and career development, but technology can eliminate the distance between the mentor and the mentee and allow the creation of connections that are not geographically. Online operating systems can be used not only for text communication, but also for face-to-face interactions. It is very important that mentors and mentees adapt themselves with these critical and unpredictable situations and make the most out of mentoring relationships (10). Online education is in the spotlight, but this type of education is associated with issues related to student self-organization. An RCT was conducted to examine the effects of remote mentoring at a German University that has switched to online education due to the COVID-19 epidemic. Mentor and mentee met as one-on-one online to discuss topics such as self-organization and study techniques. In this study, positive effects of mentoring on motivation, behavior and success in exams of mentees and also, their capabilities were approved (11).

Considering the importance of mentoring and its proven positive effects on students supporting, the student mentoring program was designed and implemented at the School of Pharmacy in Ahvaz Jundishapur University of Medical Sciences. Due to the limitations of academic education caused by the Corona pandemic, the Pharmacist Assistant website was designed and made available to maintain the communication between the mentors and the mentees and to avoid gaps in the mentoring program.

## **Methods**

First, the mentoring project was registered at the university and its ethics code was approved. This project was implemented semi-experimentally in September of 2019 under the supervision of a group of professors, in order to guide the 2019 entry students as mentees and 2015-2017 entry students as mentors.

## **Needs assessment**

First, during a study of the target community of 90 people from the two entrances of the 2017 and 2018 academic years of the school, which was done in the first semester of the 2018 and 2019 academic years a needs assessment was conducted to assess the willingness of freshman students of School of Pharmacy to enter the mentoring program mentored by senior students. The study was conducted by questionnaire method and based on the percentages of responses of each student to each option and their willingness to the mentoring program was measured. Then, in the brainstorm sessions, with the presence of a number of the senior students of the school who were active in various fields and had a better critical thinking, the needs of a freshman student of the school were examined.

### ***Design and preparation***

After consultation with the mentoring program design team, the areas that the first-year students need support was determined, it was determined in what areas the first-year students need support, and during numerous meetings with the team members, a schedule was arranged to design and edit the project principles.

Qualified mentors were selected based on their resume, personal characteristics (including teamwork experience, grade point average, strong communication skills, etc.) and personal interests.

During a meeting attended by a number of professors and mentors, the necessary training was given to the mentors by the executer based on the guideline (which was written according to the conditions of the faculty) and the mentors were fully informed about the process.

The mentees also entered the study from the new entrance of the school, based on interest. In a separate meeting, the mentees were introduced to the mentoring, program rules and implementation process.

In each session, a brief information was taken from each mentor (including age, city of residence, dormitory status, etc.) and based on this information, each mentor was introduced to two mentees. The reason for doing this was to have the best coordination between the mentors and the mentees.

The entry of mentors and mentees into the program was completely voluntary, and both groups were assured that they could leave the program at any time from the start of the project if they wanted. Before starting the program, among the selected mentors, 4 people resigned due to their busy schedule and 4 mentors were replaced. 1 month after the start of the program, 4 mentees left the project. These mentees mentioned the inconsistency of the implemented mentoring program with their own perception of mentoring as the reason for their departure in spite of being satisfied with their mentors and the mentoring program.

The mentor of each mentee can seek guidance from the professors and the counselors of the school if he is unable to respond to his mentee's challenges by himself. In the design of the program, for the better management of the project and its positive impact on the mentees, two groups of mentors were used in addition to the main ones: 1) people who work in a specific field in the school, such as: Education Development Center, Science Olympiads, Union councils, sports activities, etc. entered the mentoring program to guide the mentees in the same specific area. If the mentees had questions in these cases, they were referred to the relevant mentor, 2) people who are professional in extracurricular activities, in a specific field such as: painting, photography, Photoshop, research and etc. If the mentees were interested in these areas, they could communicate with these mentors. These two groups of mentors cover the needs of mentees in every way and provide the necessary guidance for them in the best possible way.

### ***Implementation of the project***

Mentees can communicate with their mentors through

social networks, e-mail, phone calls, etc. (the way of communication is specified by each mentor). The mentor should meet his or her mentees at least once a month for discussion and interlocution.

At the beginning of the mentees' second semester, the outbreak of the Corona virus, followed by the cancellation of student classes, created a gap between mentors and mentees. This could cause damage to the mentoring program by separating the mentors from the mentees. Since the educational approach in the Corona pandemic era should move towards virtualization of courses and all academic programs, including mentoring, should continue, the members of the mentoring team decided to design a website to keep students connected to each other. Initially, reliable information sources were examined to find out what measures have been adopted in the world to manage university curricula during the Corona pandemic. At that time, most training programs were moving towards virtualization, but no similar research was conducted at that time to manage the mentoring program. Then, the website's proposal and its ethics code was finally registered at the university. Finally, the website was designed by a number of students in the School of Pharmacy. By making an introduction video, different parts of the site were introduced to students, including mentees and mentors, so they could use it in the best possible way. A section on the website was dedicated to the mentoring program. The mentors and mentees were pre-registered and by entering their usernames and passwords, they could access the facilities of the website. All the information that a Pharmacy student may need is regularly uploaded on the website. Also, the meetings that were originally scheduled to be in-person sessions to enhance the capabilities of mentors and mentees were held as webinars on the website.

The website is developed in PHP and a combination of WordPress CMS is also used for SEO, statistics and security (Wordfence). Server- data is in MySQL language. The website is SSL certified and uses User Sync technology which eliminates the need to re-register for other related and collaborative sites. The website is fully responsive and optimally displayed on phones. The website also has data analysis technology and the performance of people in this environment is examined.

### ***Assessment***

According to the initial planning, the evaluation had to be done by the combination of a questionnaire and an interview. However, due to the limitations caused by the pandemic, the mentoring program and the Pharmacist Assistant website were evaluated only by a survey.

A reliable and valid questionnaire was completed to survey the mentorship and website. This questionnaire was a researcher-made structural questionnaire with Likert scale. Questionnaire was completed by the mentees.

### ***Results***

Based on the results of the needs assessment from 2017 and

2018 entry students, 18.2% of students were willing to find the answer to their questions by referring to a professor or a relevant official. 3.4% of students respond to their challenges by visiting valid websites or channels. 17.5% of the students consulted with their classmates and finally 61.4% of the students preferred asking their questions from senior students. According to the needs assessment and the satisfactory results of mentoring programs in other schools, the necessary schedules were arranged and 24 groups of three people were formed, including a mentor and two mentees who are connected through a specified communication path.

**Website team members**

- 1) The main team including the scientific and ideate team and the technical and supportive team.
- 2) Groups that benefit from Pharmacist Assistant website including the mentoring team, mentor and mentee members, professors, companies and student associations created to help students.

**Part of the website**

The website consists of several parts, some of which will be discussed:

• Educational information

1. Educational videos
2. Educational content

This section was specifically designed for teaching the topics that a freshman student should know, but due to the pandemic of Corona virus, it was not possible to hold face-

to-face classes and the relevant content is uploaded in this section which is being updated constantly.

• **Webinar**

During the planning, it was decided that seminars would be held by Ph.D. students or residents of Pharmacy who had gotten their doctoral degree at Ahvaz School of Pharmacy and were familiar with the conditions of the school. The purpose of these seminars was to introduce different fields of study in Pharmacy and career opportunities to the mentees and mentors. Due to the limitations caused by the virus outbreak, these sessions were held virtually in the form of webinars. In addition, other useful educational information is provided to students through webinars so that while benefiting from the quarantine time, they can be present in the university fully prepared to resume educational activities. The platform used for holding the webinars is Skyroom.

• **Mentor and mentee members**

The profile of all members is available in this section and people can find each other, communicate or ask for help in various issues.

• **SS mentors (special students)**

Students with special talents such as sports, painting, photography, etc., who are professionals in their field, share their knowledge with users interested in that particular area. Users can interact with them and benefit from their experiences.

**Table 1.** Survey of mentees and results of them.

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
I think the nature of the mentoring program can help the freshman students solve their problems.	56.6	33.3	6.6	3.3	0
Participating in this project led to a better understanding and acceptance of the individual and social problems caused by entering the university for the freshman student.	36.6	40	20	0	3.3
Participating in the mentoring program made me, as a student, more targeted than other students (who did not participate in the program).	13.3	16.6	56.6	13.3	0
Although it was the first year of its implementation in the school, the mentoring program successfully achieved its goals.	13.3	60	13.3	10	3.3
As a mentee, I agree with running mentoring programs in my school.	63.3	36.6	0	0	0
I recommend running a mentoring program for 2020 entry students while maintaining its strengths and strengthening its weaknesses.	60	40	0	0	0
If needed, I am willing to help freshman students as a mentor in the future.	46.6	23.3	16.6	13.3	0
Conditions following the Corona pandemic disrupted the mentoring programs.	20	36.6	20	23.3	0
In the Corona pandemic, one of the best approaches that could be taken for the mentoring program was designing a website.	26.6	36.6	36.6	0	0
Different parts of the website can help me with different issues.	6.6	53.3	40	0	0
In my opinion, the website is at a good level in terms of content and design.	10	50	33.3	6.6	0
The website design was successful in educating students during the Corona pandemic.	3.3	46.6	43.3	6.6	0

The results of a recent survey of mentees shows that 100% of mentees are satisfied with the implementation of the mentoring program in their school and also, all mentees suggest running this program for their next entries while maintaining strengths and strengthening weaknesses. About 70% of them, if needed, are willing to work as mentors in the next years. This issue can show the positive impact of this project and the students' satisfaction. Approximately 64% of mentees believe that in the Corona pandemic situation, one of the best approaches that could be taken to maintain the mentoring program was to design a website. Nearly 50% of mentees agreed that the website was successful in educating students during the Corona virus pandemic (Table 1).

### Discussion

University life provides young people with opportunities for academic and personal development. It also comes with a variety of challenges including exams stress, financial anxiety, and coping with increased independence (12). In general, the mentoring program implemented in universities can cover these issues and challenges for freshman students.

One of the most important steps in starting a mentoring project is to assess the need for getting started. During the implementation of the mentoring project in Shiraz Medical School, telephone calls were made to senior students, their needs of were assessed by holding the meetings and the areas in which they need support were determined (1). To begin the project, the students of the last two entries of the department (2017 and 2018) were asked to answer a questionnaire that covered almost all of a students' needs during their school days; 61.4% of the students preferred to ask their questions from senior students. With this needs assessment as well as brainstorming sessions, the areas in which a freshman student needs support was determined.

In running a mentoring program, one of the key steps, with a huge impact on the result, is matching mentor and mentee. While in many studies, matching was done randomly (13,15) in the Chinese Medical School program, mentors were matched with mentees, computerized through their online profiles and based on the features of both sides (14) while in the study of the German Department of Neurology, the mentees selected their mentors based on the information found in the faculty website (15). In the present study, a combination of the first and the second methods was used. In fact, the necessary information was obtained from the mentors and mentees and then, one of the mentors whose features matched to a mentee's feature was selected randomly.

In the case of the mentor's age, while in many studies, the mentors were selected from graduated students or professors, some programs also used senior students and assistants. The benefit of the later method is a better mutual understanding and more detailed familiarity with the concerns and training

programs of younger mentors (16). In this study, because of the change in the pharmacy education curriculum since 2015, the entry students 2015 onwards were selected as mentors. These mentors were well acquainted with the curriculum and could advise the mentees properly. In general, one of the problems caused by a major age gap is the busy work schedule of the mentors in higher education and even their graduation. Also, the selection of mentors with a large difference in their academic year from those of the mentees is one of the barriers to proper communication and consequently, leads to dissatisfaction of both parties of the mentoring program (17).

In the design of the mentoring program of Shiraz School of Medicine, four professors entered the project. These supporting professors provided clinical, psychiatric, socio-cultural, and basic science support, and all mentors could use their guidance in these areas (1). In the design and implementation of the present mentoring program, in addition to the main mentors, two other groups of mentors were used for better program management and positive impact on the mentees: 1) people who work in a specific field 2) people who are professional in specific extracurricular activities. The first group of the mentors were used in different ways in various studies such as the study conducted by Zarabi et al., But the second group of the mentors were used for the first time in our school's mentoring project.

In today's world, web-based services are on the rise and cover many aspects of users' lives. If enough attention is paid to this field, it can facilitate access to information and progress in various fields (18). Especially in the Corona pandemic conditions, paying attention to these services is very critical and practical.

According to adult learning theory, these learners prefer to have control over their own education. A variety of distance education systems, including e-learning, can provide a conducive environment for adult education in this regard (19). In the conditions caused by the outbreak of Corona virus, while satisfying adult learners, the highest efficiency can be obtained from the students' quarantine time and as a result, students can return to the university fully prepared and with more abilities. At Shiraz School of Medicine, following the Corona pandemic, a social media platform was created that used mentors with small age gap. Mentors were senior medical students and mentees were freshman medical students. The platform was designed for the mentees to help them cope with the anxiety and stress caused by the COVID-19 pandemic. Mentors and mentees discussed the management of anxiety, stress and emotions. The best learning strategies for online classes were also discussed in this platform (20). The difference with our research website is that it was designed to continue the pre-started mentoring program tailored to the conditions of the Corona pandemic.

In conclusion, the high percentage of the mentees' satisfaction from the mentoring program and the positive performance of the mentors which includes training, support and facilitation can show the positive effect of the mentoring program on familiarizing the mentees with the conditions of the major and university and finally their adaptation to the new student conditions. Also, the mentees' satisfaction with the website design for mentoring management and studies on creating online platforms in student education, and also, on mentoring programs during the Corona pandemic, all show the positive effects of these platforms on student education. It can be concluded that creating a website to continue the mentoring project can be one of the best ways to manage this program in the current situation.

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