



# The perspectives of pharmacy student preceptors on a service-learning program in primary health care: A qualitative study

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## ABSTRACT

**Background:** There are a few studies about preceptorship in primary health care settings, but they didn't assess all possible contributions of this experience, such as preceptor behavioral changes and impact on health services.

**Objective:** This study aimed to analyze the perspective of pharmacy student preceptors on a service-learning program carried out in a primary health care setting.

**Methods:** This was a qualitative descriptive study, with semi-structured interviews and thematic analysis. The themes were defined deductively, according to levels of Kirkpatrick's theory about the impact of educational activities.

**Results:** The preceptors showed positive and negative reactions to the structure of the service-learning program, developed their knowledge, changed behaviors such as collaborative interprofessional practice, and reported improvements in the health units.

**Conclusions:** From the perspective of pharmacy student preceptors, the service-learning program had an impact on all levels expected for an educational activity according to Kirkpatrick's theory: reaction, learning, behavior, and results. These findings may inform the design of service-learning programs.

## 1. Introduction

Service-learning (SL) is an experiential learning method in which students engage in community service, apply knowledge acquired in their course, and make contributions to their communities.<sup>1</sup> Primary health care settings are suitable for SL regarding their characteristics of teamwork and shared accountability. Experiential learning in primary healthcare may impact favorably on the development of competencies by pharmacy students.<sup>2,3</sup> Preceptors should foster learning through guiding and serving as a professional role model to the students.<sup>4</sup>

There are a few studies about the experience of preceptorship in primary health care settings.<sup>5-7</sup> According to these qualitative studies, the preceptors pointed out positive and negative aspects of their experience and reported learning with the students.<sup>5-7</sup> Positive aspects included satisfaction with transmitting knowledge to the students and serving as a professional role model to them.<sup>5,7</sup> Negative aspects

included excessive daily workload and insufficient recognition of the preceptorship from the institutions in which they are affiliated.<sup>5-7</sup> Preceptors reported learning with the students because the preceptorship demands them to update their knowledge and qualify their practice.<sup>5,7</sup>

According to Kirkpatrick's theory,<sup>8</sup> one educational activity may change reactions from the learners, develop knowledge and skills, modify behaviors, and inform results such as organizational changes. The previous qualitative studies about preceptorship in primary health care<sup>5-7</sup> didn't assess all possible contributions of one educational activity like the preceptorship, such as preceptor behavioral changes and impact on health services. They also didn't include pharmacy student preceptors. It is needed to assess the perspective of pharmacy student preceptors on preceptorship in primary health care, including the impact on preceptor professional development and health services. This research topic may inform the design of experiential learning activities for pharmacy students, such as SL, practice experiences, and internships.

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Evidence-based experiential learning programs may foster student and preceptor learning and prepare them to better address patient needs.

This study aimed to analyze the perspective of pharmacy student preceptors on a service-learning program carried out in a primary health care setting.

## 2. Methods

This was a qualitative descriptive study, with phenomenology as the main theoretical approach. The study involved semi-structured interviews with preceptors to elicit an in-depth understanding of the experience of precepting pharmacy students in one service-learning program conducted in a primary health care setting. Qualitative research was chosen to analyze the nuanced perspectives that quantitative studies may not capture adequately. Ethical approval was obtained from the Ethics Committee of the Federal University of Minas Gerais (CAAE 79472017.8.0000.5149). All participants provided written informed consent. The consolidated criteria for reporting qualitative studies (COREQ) was used for the reporting of the data.

### 2.1. Study setting and participants

The SL program analyzed in the current study was granted by the Brazilian Ministry of Health. The program was titled *Pet-Saude/Gradu-asus* and was carried out from May 2016 to March 2018. It was aimed at fostering service-teaching-community integration and interprofessional practice in the Brazilian public health system. This SL program included groups, composed of preceptors from public health services, faculty members, and health professions students. The participation of the undergraduates in this program was elective. In the municipality of Belo Horizonte, Brazil, eight pharmacy students took part in this program, composing a group with five preceptors from basic health units and three faculty members from one public federal university. The five preceptors (four pharmacists and one nurse) were workers of the Belo Horizonte Municipal Health Department, and this institution selected them for granted participation in the SL program. One nurse was included in this group as a preceptor because one of the aims of the SL program was to foster interprofessional practice. For a coincidence, all five preceptors were of female sex. The majority of the health workforce in Brazil are female.<sup>9</sup> The learning experience of this group was designed by the faculty members according to the principles of experiential learning<sup>10</sup> and competence-based teaching.<sup>11</sup> The activities of the SL program are presented in Table 1.

All five preceptors (four pharmacists and one nurse) who took part in the SL program and supervised pharmacy students in Belo Horizonte, Brazil were included in the research. They were workers of different public basic health units. It was not possible to assess the perspective of other pharmacy student preceptors, because only five professionals were selected to participate in this experience.

### 2.2. Data collection

Qualitative studies on preceptorship in primary health care pointed to positive and negative aspects of the experience and reported preceptor learning with the students.<sup>5-7</sup> The interview guide included semi-structured questions based on findings of these previous studies<sup>5-7</sup> and at the same time designed to gather more information about the impact of SL on health services and preceptor development. The questions were: 1. "What changed in your personal and professional life with the participation in the service-learning program?", 2. "What were the positive and negative aspects of the service-learning program?". The same questions were asked of all preceptors.

Face-to-face interviews were conducted by one faculty member experienced in qualitative research who took part in the experience with the preceptors from May to June 2018. One of the researchers who didn't take part in the SL program transcribed the recordings of the

**Table 1**  
Activities of the service-learning program.

Activity	Description	Learning goals
Observation	In the first three months of the program, the students observed the activities and sectors of the basic health unit through a structured checklist. For each activity, students should describe, reflect, and list improvement suggestions.	Develop student understanding of the structure of primary health care and critical thinking skills.
Case studies	In the first three months of the program, students answered case study questions about primary health care, pharmaceutical services, and health education. They established a relationship between theory and the practice observed in the basic health unit.	Develop student understanding of the structure of primary health care, pharmaceutical services, and health education activities.
Monthly reports	During the whole program, students should fill out a monthly report of the activities developed in the last month, with reflections about them and improvement suggestions.	Develop student critical thinking and ability to generate ideas and solutions.
Monthly meetings	Students, preceptors, and faculty members took part in monthly meetings to reflect on the activities performed in the last month and plan the ones for the next month. Faculty members guided the preceptors and the students in planning activities that address the population's needs and at the same time can be carried out with workers or students of different health professions.	Develop student and preceptor knowledge about other health professions, foster interprofessional collaborative practice, and ability to generate ideas to address the population's needs.
Practical activities in the basic health unit	Students carried out practical activities in the basic health units under the supervision of the preceptors. Five granted students spent eight hours per week and three non-granted students spent four hours per week in the basic health unit. The activities included health education, medication therapy management, management support, and the production of printed health information materials. The activities were meant to address the needs of the population of the health services and were performed with students or workers of different health professions whenever it was possible. The pharmacist preceptors supervised the students in all the activities. The nurse preceptor supervised the students in all the activities, except the medication therapy management, which was supervised by one pharmacist. All student activities were performed under the supervision of a health professional to avoid risks to the patients.	Foster student and preceptor interprofessional collaborative practice and ability to perform actions to address population's needs.

interviews. The data was typed in a Microsoft Excel spreadsheet. The names of the preceptors were replaced by codes (P1 to P5) to preserve their privacy. Each preceptor contributed to the study data with new insights. It was not possible to assess if the addition of more preceptors to the sample would reach the saturation point because all preceptors selected for this experience were interviewed.

### 2.3. Data analysis

The data were analyzed with thematic analysis, adopting the six phases described by Braun and Clarke.<sup>12</sup> In the first phase of becoming familiar with the data, the researchers figured out that the data could fit into the levels of Kirkpatrick's theory<sup>8</sup> about the impact of educational activities: reaction, learning, behavior, and results. Since this moment, the themes were defined deductively, establishing a relationship between them and each level of Kirkpatrick's theory. Subthemes were defined inductively. The classification into themes and subthemes was performed by two researchers experienced in qualitative research independently and disagreements were solved through consensus in meetings with the three authors of the manuscript.

## 3. Results

In the research, four themes were found: reaction to the structure of the program, preceptor learning, preceptor behavioral changes, and results of the experience in healthcare service. The description of themes, subthemes, and examples of quotes was presented in Table 2 and Table 3.

### 3.1. Reaction to the structure of the program

Positive and negative reactions to the SL program were identified among the preceptors. They felt satisfied with their relationship with the faculty members. The preceptors felt satisfied with the students who had experienced primary health care and wished they had this opportunity when they were undergraduates.

One of the negative aspects reported by the preceptors was the inappropriate physical structure of some health units. However, the preceptors stated that is important for the students to know these barriers in the health system and learn to deal with them.

### 3.2. Preceptor learning

The experience of precepting the students let the preceptors develop didactic skills, their learning, and understanding the roles and contributions of other health professionals.

The preceptors perceived themselves as educators and not only as professionals in their health units. The participants became aware of their responsibility to be a model of professionalism, flexibility, resilience, and commitment.

The preceptors reported that they developed their learning beyond contributing to student learning. They informed that there was an exchange of information between the preceptor and student, with the first one contributing with practical knowledge and the second one with their academic knowledge recently acquired in the faculty.

### 3.3. Preceptor behavioral changes

The preceptors informed their behavioral changes with the preceptorship experience, such as improved interprofessional collaborative practice and motivation in their work in the health unit.

In the preceptorship process, the preceptors had to integrate the students into the teamwork of the health unit and plan activities for them to carry out in partnership with undergraduates or workers of other health professions. To address this task, the preceptors reported that they improved their interprofessional communication, became

**Table 2**  
Description of the themes "Reaction to the structure of the program" and "Preceptor learning".

Theme	Subthemes	Example of quote
Reaction to the structure of the program	Satisfaction with the insertion of pharmacy students in activities	"I realize that this program is such a great opportunity for the students to experience the practice that they learn here. I didn't have it as an undergraduate, so I would have loved this opportunity to see how the practice is..." (P1, pharmacist)
	Satisfaction with the relationship with the faculty members	"We have the faculty members. I think it is a very open channel. If we had something that had not been working well, I had the full freedom to discuss." (P1, pharmacist)
	Dissatisfaction with the physical structure of some health units	"Sometimes the physical structure of some health units is not very appropriate to receive these students, maybe they think it is hard to share the same room with another health professional or going to the unit on another day more suitable. Despite this situation being uncomfortable for the students, they must start to deal with this reality because when we finish the undergraduate degree, we go to that kind of place" (P3, pharmacist)
Preceptor learning	Development of didactic skills and awareness of the educator role	"For me, the experience was very positive, it changed how I saw myself, as an educator. In the basic health unit, usually, we see ourselves as workers inserted in the context, and with this program, I felt like an educator, responsible for what I was transmitting to the students" (P1, pharmacist)
	Improvement of knowledge with the students	"We received the students, and they came thinking that we preceptors will teach them, and they will learn with us. But it is not exactly that. When the students arrived, they brought many things for us too. This is a great interaction, it is a very important exchange for the health system and for us as a human" (P4, pharmacist)
	Development of knowledge about other health professions	"I'm not from the pharmacy field, but this opportunity lets you view and broaden. When you work with another profession, you become to broaden the possibilities of work actions. Another question is also the possibilities of intervention performed by the pharmacists, especially in clinical pharmacy and health education" (P5, nurse)

more aware of the roles, responsibilities, and perspectives of other health professionals, and strengthened their relationships within the health care team. One nurse preceptor reported that became more aware of the clinical role of the pharmacist and started to consider the work of this professional in the intervention's planning.

### 3.4. Results of the experience in healthcare service

The SL program impacted improvements for the basic health units that took part in the experience. The enrollment of the preceptors in the SL facilitated the establishment of one pharmacy internship program and since then other pharmacy students have had the opportunity to take part in it.

**Table 3**

Description of the themes “Preceptor behavioral changes” and “Results of the experience in healthcare service”.

Theme	Subthemes	Example of quote
Preceptor behavioral changes	Changes in interprofessional collaborative practice behavior	<i>“I think it is the nature of the program, this interdisciplinary and interprofessional work. I have worked in primary health care, which is essentially interprofessional work, but this program lets us break some limits. You need to show the students a specific sector, so your interaction with other professionals becomes strengthened. When the students were in the health unit, I always thought: ‘Let’s think about one activity that includes the highest number of health undergraduates to let them have this opportunity. Automatically, we became to live this experience too, and this improved interaction with other professionals. Automatically, we became to know better the work routine of other professionals, their point of view, and this teamwork become improved.” (P3, pharmacist)</i>
	Changes in attitudes toward working in the health unit	<i>“We have this motivation in our daily work. Sometimes our daily work becomes tedious. And when we have a program like this we change, we become to have a broader view, this program let it to happen” (P4, pharmacist)</i>
Results of the experience in healthcare service	Establishment of one pharmacy internship program	<i>“The program brought some fruits, such as the pharmacy internship followed by the hiring of the students that took part in it.” (P2, pharmacist).</i>
	Contributions to clinical, educative, and management activities	<i>“...and beyond that, the program supported the management. The pharmacist thinking about facilitating the management, for example, the management of stages of life, pregnancy, diabetes.” (P5, nurse)</i>

The engagement of the students facilitated that health units carry out clinical and educational activities. The SL program also facilitated the qualifying of the management of care in the health units. The students formulated tools to improve the management of clinical conditions, such as pregnancy and diabetes.

#### 4. Discussion

In the current study, the pharmacy student preceptors shared their perceptions of the SL program in a primary health care setting. They informed their reaction to the structure of the program, their learning and behavioral changes with the preceptorship, and the results of the experience in healthcare service. Considering this, the SL program had an impact on all levels expected for an educational activity according to Kirkpatrick’s theory<sup>8</sup>: reaction, learning, behavior, and results.

The preceptors reacted to the structure of the SL program pointing out positive and negative aspects. In opposition to other studies,<sup>6,7</sup> they didn’t complain about excessive workload with the preceptorship. It may be explained by the design of the SL: one preceptor supervised one or two students, four to eight hours a week. One negative aspect of the program informed by the preceptors was the insufficient structure of some health units. The faculty members, preceptors, and students discussed these problems and understood they couldn’t change the physical

structure of the services but could find solutions for running the program activities. Some educational activities were performed outside the health units through partnerships with government and community institutions. As observed in a study about nurse preceptorship,<sup>13</sup> the preceptors in the current research judged the insufficient structure of some health units as a problem and an opportunity at the same time. It is a problem that can limit some activities of health professionals, but it is an opportunity for students to learn to deal with these barriers.

With the preceptorship, the preceptors reported they developed their learning. Preceptors and students shared practical and academic knowledge. The structure of the SL program may have facilitated the preceptor learning. The preceptors guided the students on their answers to the observation checklist and the case studies, in which they had to describe and reflect upon the activities of the basic health unit. In this guiding process, the preceptors had to improve their knowledge about the structure and functioning of primary health care and the roles and responsibilities of other health professionals in the team. Other studies in primary health care found that the preceptors learned with the students because the preceptorship required them to update their knowledge and qualify their practice.<sup>5,7</sup>

The preceptors informed their behavioral changes with the experience of preceptorship, such as improved interprofessional collaborative practice behavior. In monthly meetings of the SL program, faculty members guided the preceptors in planning activities that could be carried out with students or workers of different health professions. This guidance may have facilitated the improvement of preceptor communication with other health professionals and the enhancement of the interaction within the healthcare team.

The SL program resulted in noteworthy organizational improvements within the healthcare units. It facilitated the establishment of a pharmacy internship program and the implementation of various activities, including management tasks, clinical services, and educational initiatives. The period of the SL (two years) possibly contributed to these findings, because organizational changes may take years to occur.

This study has some limitations. It included a small sample size, and maybe the inclusion of more preceptors could elicit new insights or themes. Potential interviewer bias may have occurred. The interviews were carried out by one faculty member who took part in the experience with the preceptors, which could have elicited more positive comments about the relationship with the university staff. Future research can overcome these limitations through interviews of one large number of preceptors by external researchers who didn’t integrate the learning experience.

#### 5. Conclusion

The SL program in primary health care had effects on all levels expected for an educational activity from the perspective of the pharmacy student preceptors: reaction, learning, behavior, and results. The preceptors reacted to the structure of the program informing positive and negative aspects, reported their own learning and behavioral changes, and informed results of the experience in healthcare service. Faculty standardized activities facilitated preceptor learning and the development of interprofessional collaborative practice behavior. These findings may inform the design of experiential learning programs that enhance the educational experience for all participants. Future studies can add to this topic through longitudinal analysis of one large number of preceptors in primary health care settings.

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#### Declaration of Competing Interest

The authors declare the following financial interests/personal

relationships which may be considered as potential competing interests.

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