



# Factors Affecting the Quality of Undergraduate Pharmacy Students' Researches in Ambo University, Ethiopia: A Qualitative Study from Advisors' Perspective

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**Background:** One of the problems facing higher education institutions in developing countries such as Ethiopia is the poor quality of undergraduate students' academic work. However, there is a scarcity of empirical data on the specific causes of the poor quality of undergraduate study. Therefore, the aim of this research is to explore factors that influence the quality of undergraduate pharmacy students' research projects at Ambo University in Ethiopia, from the perspective of research advisors.

**Methods:** A qualitative study was held in Ambo University, Department of Pharmacy from March 2 to March 27, 2020. A total number of 15 research advisors were the participants of the study. A semi-structured interview questionnaire was prepared to explore participants' ideas about the current situation of research quality, underlying causes and perception towards outcomes of poor quality of undergraduate pharmacy students' research projects. The necessary data were collected through in-depth interview and qualitative content analysis was employed to analyze the data.

**Results:** The majority of the key informants thought that the quality of undergraduate pharmacy students research projects is decreasing from time to time in their university due to students' research knowledge gap, poor commitment, and motivation, lack of communication between students and advisors, plagiarism, financial problems, shortage of experienced research advisors, advisors less motivation and dedication, insufficient research facilities, lack of research fund, poor management support, and limitation of the undergraduate curriculum. They also revealed weak students' research capacity, absence of knowledge transfer through research publication and presentation, and inadequate baseline evidence for the policymakers are the potential outcomes of poor quality undergraduate pharmacy students' research projects.

**Conclusion:** Undergraduate research quality is a persistent problem in the department of pharmacy of Ambo University. The problem is exacerbated due to multiple factors. As a result, the university should establish a framework for collaboration among students, advisors, and university research leaders; it should also boost students' research capacity by hiring qualified researchers, equipping the research facility with appropriate technology, and instituting a system for monitoring and evaluating research project results.

**Keywords:** research, undergraduate, contributing factors, quality of research, Ethiopia

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## Background

Research is a systematic process that employs traditional methods to produce new information, science, or innovation.<sup>1</sup> Undergraduate research is an integral part of teaching-learning processes. It improves students' knowledge, skills, and self-confidence in

order for them to do things like choose a research subject, create a research goal, search and critically appraise research literatures, collect and analyze data, and present the results.<sup>2,3</sup> Undergraduate medical education is important not just for scientific learning but also for professional advancement.<sup>4</sup>

Factors contributing to the poor quality of undergraduate medical students' research projects are diverse.<sup>5-8</sup> This incorporates inability in selecting a research title, inadequate knowledge of study design, Internet inexperience, absence of past research training and exposure, which may hamper the quality of undergraduate medical students' research projects.<sup>5,7,9</sup> Also, curriculum overload, time limitation, restricted funding support and inadequately consideration given by the staff and organization could lead to poor quality health research.<sup>3,8,10,11</sup> Moreover, lack of research advisors, poor guidance and cooperation by the advisors, and lack of support through mentorship is also identified as contributing factors for the poor quality of undergraduate students' research project.<sup>6,12,13</sup>

Studies conducted in Iran and Pakistan revealed personal and organizational-related factors of undergraduate medical students' research activities. Inadequate knowledge of research methods, statistics expertise, and time and money related imperatives are all possible personal considerations. Limited access to information, limited access to facilities, and a lack of mentorship are all possible organizational factors.<sup>11,14</sup> In Iran, the two most common factors limiting undergraduate medical students' research operation were described as a lack of knowledge of research methods and restricted access to information sources.<sup>15</sup>

Factors related to infrastructure, such as access to the internet and laboratory facilities, have been identified as major contributing factors for poor quality research works in low-income countries that do not use research instruments to identify and solve problems scientifically.<sup>6,15</sup>

In Ethiopia, the pharmacy program was initiated as a four-year baccalaureate program then it was lengthened to a five-year program. In the previous curriculum, the focus was on the production of pharmaceuticals, however, after the introduction of the five-year program, the focus shifted from product-oriented to clinical-oriented considering the important role pharmacist can play in public and clinical health service. The Bachelor of Pharmacy (B. Pharm) degree is an undergraduate academic degree in the field of pharmacy that is required to work as a pharmacist in Ethiopia.<sup>16</sup> Pharmacy students do not

received a degree until they have produced and presented a research project on a chosen and agreed-upon topic of the research problem and received a minimum of "C" grade in their research paper.<sup>17</sup> In all pharmacy schools, advisors are assigned to supervise undergraduate research projects. The advisors are expected to help the students with problem identification all through the research works.

One of Ethiopia's higher educational institutions' problems, like those of many other African countries, is the low quality of undergraduate students' academic work.<sup>8,18</sup> According to a study conducted in three public universities in the country, factors affecting the quality of undergraduate research were mainly raised from academic institutions, supervisors, students, and undergraduate curriculum.<sup>8</sup>

Ambo University is one of Ethiopia's newest universities, with missions in academics, research, and community service. The University currently offers 51 graduate and 85 undergraduate programs through four main campuses and ten colleges, institutes, and schools. The College of Medicine and Health Sciences founded the Department of Pharmacy in 2010 with the goal of training highly trained pharmacists. Pharmacology, Pharmaceutics, and Social Pharmacy, Pharmaceutical Chemistry, and Clinical Pharmacy are the four course units that make up the department.<sup>19</sup>

Ambo University, as a higher education institution, follows the same strategies in developing undergraduate pharmacy students' study skills and competencies. However, there are several obstacles to overcome during the implementation process.

A better understanding of research advisors' perspectives on undergraduate pharmacy students' research projects could lead to a better understanding of the detailed underlying causes of Ambo University's undergraduate pharmacy students' research quality. As a result, the aim of this qualitative study was to look into the factors that influence the quality of undergraduate pharmacy students' research projects at Ambo University from the perspective of research advisors.

## Methods

### Study Area

The research was carried out at the Department of Pharmacy at Ambo University. The department had 25 academic staff members at the time of the research, 18 of whom were on duty and 7 of whom were on study leave

pursuing their PhD degrees. Only one female member of staff was on study leave abroad, while the remaining 24 members of staff were male. During the time of data collection, all of the academic staff members had a bachelor's and master's degree.<sup>19</sup>

## Study Design and Sampling

Qualitative in-depth interviews with flexible probing techniques were carried out from March 2 to March 27, 2020.

A semi-structured, open-ended interview questionnaire was used to interview research advisors. Purposive sampling methods were used to recruit participants based on their undergraduate research supervision experience. Academic staffs on study leave, staffs with no prior experience mentoring undergraduate research projects in the department, and technical assistance who are not permitted to advise undergraduate research projects were all excluded. To schedule interviews, the listed participants were contacted in person or over the phone. A total of 15 supervisors from Ambo University's Department of Pharmacy (13 lecturers and 2 assistant lecturers) were chosen for the interview, with efforts made to ensure that each course unit, where all courses of pharmacy education are offered, was represented.

## Data Collection

A semi-structured interview questionnaire was developed to elicit participants' ideas about factors influencing the quality of undergraduate pharmacy students' research at Ambo University (see [Supplementary Materials](#)).

The interview questionnaire was adapted from previously published works on the same subject<sup>5,6,9,15</sup> and there were two sections to the interview questions. The first section of the report focused on the advisor's personal and professional information, such as his or her age, sex, work experience, and educational background. The second section was designed to explore the advisors view on factors influencing the quality of undergraduate pharmacy students' research.

Two experts from the Social Pharmacy and Pharmacology Research Team evaluated the questionnaire for face and material validity. The two authors (ETG and DAG) prepared the interview questionnaire in English, translated it into Amharic, and then back-translated it into English to ensure message accuracy. To ensure the accuracy of the interviews, the principal investigator conducted them all in Amharic to encourage dialogue and avoid being hampered by a language barrier. The interview lasted between 25

and 40 minutes and took place in a private environment at the respondent's office during working hours, where it was unlikely to be interrupted or overheard. Data was gathered until a saturation point was reached ie when there is enough information to reproduce the study, the ability to gather additional fresh information has been gained, and further coding is no longer feasible. All of the interviews were taped and verbatim transcribed.

## Data Management and Analysis

Prior to data collection, a code book was created. The interviews were recorded in Amharic and then translated into English, with full transcripts prepared for all of participants. The notes were read thoroughly, and the raw data was organized into pre-determined coded themes. The current state of undergraduate pharmacy students' research, contributing factors, and the perceived impact of research projects in the university were identified as three major themes. Open Code 4.0 software was used to facilitate with the analysis. To ensure the trust worthiness of the findings, peer debriefing and researcher triangulation (ie data analysis done separately by the two authors and then brought together to agree on) were done. One of the recordings was translated and transcribed by a bi-lingual instructor and compared to the primary work to ensure that the translation was correct. Participants' anonymity was maintained by using codes when reporting the findings. Furthermore, the study's findings were communicated with a few research participants for authenticity of interpretations. However, because the study used deductive thematic analysis, which is motivated by the researcher's theoretical or analytical interests, it provides a more detailed analysis of specific parts of the data but a less rich description of the overall data.

## Ethical Approval

The Ethical Review Committee of the Department of Pharmacy, Ambo University, provided ethical clearance with reference number ERC/PHAR/69/2020, and approved the verbal informed consent. Before participating in the study, participants were asked to give their consent. They were informed about the study's purpose, why and how they were selected as a respondent, what was expected of them and the publication of anonymous responses during the consent process. Each respondent who participated in the study was also assured that it was completely voluntary. By avoiding any personal identifiers in the data presentations, the information's confidentiality and anonymity were preserved.

## Results

From the advisors' viewpoint, the study described here depicts an in-depth review of factors affecting the quality of undergraduate pharmacy students' research projects. A total of 15 advisors were interviewed, with all of the key informants being men in their 30s and 40s. Their career experience ranged from one to twelve years, and the majority held a master's degree (Table 1).

Three patterns emerged from the interviews as a pattern of responses. Advisors' perspectives on the quality of undergraduate pharmacy students' research projects, factors affecting research project quality, and the perceived outcomes of research projects on students' research ability, clinical practice, knowledge transfer, and local policymakers are addressed.

**Table 1** Socio Demographic Characteristics of Key Informants Working in Department of Pharmacy, Ambo University, Ethiopia, March 2020 (n = 15)

Socio-Demographic Profile	Number
<b>Gender</b>	
Male	15
Female	0
<b>Age</b>	
25–29	2
30–35	9
35–40	4
<b>Level of education</b>	
B.Pharm/ First degree	2
MSc	13
<b>Academic rank</b>	
Assistance Lecturer	2
Lecturer	13
<b>Speciality</b>	
Pharmacology	5
Clinical Pharmacy	5
Pharmacoepidemiology & Social Pharmacy	1
Pharmaceutical analysis	1
Medicinal chemistry	1
Not specialized	2
<b>Work experience</b>	
< 5 years	2
5–10 years	10
≥ 10 years	3

## Theme 1: Advisors' Attitudes on the Quality of Undergraduate Pharmacy Students Research Projects

From attitudes toward the significance of the research projects to the nature and quality of the research being done, key informants expressed a broad variety of opinions. Table 2 contains a list of responses.

The majority of the key informants mentioned that conducting undergraduate researches is very helpful and important. Some key informants also stated that the undergraduate pharmacy students' research projects are improving over time. Nonetheless, they are not satisfied with the quality of the research projects currently conducted at Ambo University (ADV 2, ADV 4, ADV 7, ADV 13).

They expressed significant concern that the majority of undergraduate pharmacy students' research projects were carbon copies designed to meet students' graduation requirements, and that it would be difficult to generate quality research projects in different pharmacy practice areas given the university's current undergraduate research culture (ADV 5, ADV 6, ADV 13).

The majority of the key informants observed that the research projects are not being conducted outside the affiliated University hospital and not addressed different practice areas of pharmacy (ADV 9, ADV 10).

## Theme 2: Factors Influencing the Quality of Research Projects Completed by Undergraduate Pharmacy Students

Key informants cited students, advisors, university, and undergraduate curriculum-related factors for the poor quality of undergraduate pharmacy students' research projects (Table 3).

The factors related to the students include lack of knowledge and experience about research methods, plagiarism, financial problem, lack of motivation, commitment and interest, and poor communication between the students and their advisors (ADV 1, ADV 3, ADV 8, ADV 14, ADV 15).

Shortage of experienced research advisors in the department and less dedication and motivation of the available advisors to supervise undergraduate research projects were also reported by the key informants as advisor-related factors (ADV 1, ADV 2, ADV 7, ADV 11).

Most key informants stated that poor infrastructure such as poor internet and computer access; absence of

**Table 2** Advisors Attitudes Over the Quality of Undergraduate Pharmacy Students Research Projects in Ambo University, Ethiopia, March 2020

Code I	Positive/Negative Attitudes Over the Quality of Undergraduate Pharmacy Students Research Projects in Ambo University
	<b>Positive Attitudes</b>
ADV 2	There is no any doubt that conducting undergraduate pharmacy students' research is so much crucial... There has been a significant change in the quality of undergraduate research in our department as a result of the current influence of globalization, which accelerates information, and the improvement of the country's pharmaceutical systems program.
ADV 4	Undergraduate pharmacy students research project have played a great role in improving students research skills. I have seen some changes in students' skill so far eg Becoming independent learner, developing their communication skills with advisors and other instructors, time management and thinking out of box.
ADV 7	The quality of undergraduate pharmacy students is increasing overtime due to the advancement of technology in recent years. It's quite better today than yesterday...
	<b>Negative Attitudes</b>
ADV 13	I am not happy about the quality of undergraduate research projects in our department. I see majority of researches were either a replica or fabricated from senior research paper. It did not fit to the ethical guideline...
ADV 6	In my opinion the quality of undergraduate research projects in our department [Pharmacy] is at risk. The projects was mainly conducted to fulfil students' graduation profile
ADV 9	It (undergraduate pharmacy students' research project) lacks addressing all domain of pharmacy education. I see majority of the projects were focused on pharmaceutical care
ADV 10	I see almost all of the research projects were conducted at the university affiliated hospital. I never see any project done in health center, private clinics, drug distribution agency and manufacturing. I think the quality of research is affected by a lack of networking between research advisors and medical experts working in these health facilities [outside the affiliated hospital].
ADV 5	I noticed that the majority of the research projects used a cross-sectional study design with primarily a quantitative data collection strategy and descriptive analyses. Lack of the combination of more than one research methods may compromise the quality of the research work

**Abbreviation:** ADV, Advisor.

research library and poor laboratory set up; lack of fund, absence of effective research leadership and university management negative attitude and weak support for undergraduate researches are listed as university-related factors (ADV1, ADV 4, ADV 6, ADV 9).

The other factors declared by the key informants for the poor quality of undergraduate pharmacy students' research projects were due to the undergraduate curriculum itself. This encompasses gaps in the curriculum, inadequate research courses, presence of course overload ie research projects are conducted concurrently with clerkship program and limited time. Moreover, they also stressed that there were pre-existing problems in which advisors and students faced to conduct researches in various practice areas of pharmacy (ADV1, ADV 5, ADV 7, ADV 12).

### Theme 3. Advisors' Perception Towards the Outcome of Low Quality Research Projects

Based on their perceptions, key informants were asked to identify the possible outcomes of low quality undergraduate pharmacy research projects (Table 4). The lack of knowledge transfer through research publication and presentation is one of the most frequently reported outcomes by key informants (ADV 6, ADV 15).

Other key informants described that low quality undergraduate research projects affect students' research capacity and future career choice (ADV 10, ADV 14).

Some of the respondents also took a broader view of the outcomes of low-quality undergraduate pharmacy students' research from the patient's point of view. They



**Table 3** Factors Affecting the Quality of Undergraduate Pharmacy Students Research Projects in Ambo University, Ethiopia, March 2020

Code 2	Contributing Factors
	<b>Student and advisors related factors</b>
ADV 1	The quality of undergraduate students' research project in our department is affected by both internal factors [eg shortage of experienced research advisors and lack of infrastructure] and external factors (eg curriculum challenge)
ADV 14	It's been very difficult to produce quality research projects. Lack of motivation, commitment and energy to write quality research paper by fellow graduate students is the major setback in our university
ADV 3	There is poor communication between the students and their advisors. I think the students are not confident enough and I believe they do not have adequate research knowledge to communicate with their advisors and other instructors in the department.
ADV 8	In my opinion the primary factors for poor quality of this research projects is the matter of plagiarism. In our setup most students come up with a copy of researches conducted from another university. They only change the name of the study area. Although the university does not have its own plagiarism checker, we [advisors] can distinguish it from online available checker.
ADV 15	It is obvious any research activities require resources. So they [Students] are expected to expense their money to write and print out their research paper. However, most of the students had no financial as well as material supports. This is also another factor why the quality of undergraduate pharmacy students' research projects in our university is compromised
ADV 2	The university is willing to recruit additional instructors when we ask them. However, the criteria posed on the recruitment of academic staffs for universities by ministry of science and higher education is a bottleneck. There is obviously a huge demand of research advisors in our university as a result of increasing number of undergraduate students and initiation of post graduate programs.
ADV 11	Currently due to shortage of experienced research advisors, the department assigned fresh instructors who had no sufficient research experience to supervise research projects. There is no significant difference between the graduate assistants and the undergraduate students at the final year.
ADV 7	Sometimes, the enthusiasm of research advisors to work with students is under question. This might be because of time limitation or lack of incentives.
	<b>University related factors</b>
ADV 6	For me, administrators of the university have no good attitude to undergraduate students' research as a whole. When we [advisors] propose something to improve the quality of students research projects, we will not get support from the management. I think this is one contributing factor for poor quality of undergraduate pharmacy students research projects'
ADV 9	Lack of facilities and infrastructures in the university made the undergraduate pharmacy students research projects activity difficult as per the standard. Moreover, the management does not have a clear view about these projects. The students do not have free chemicals and reagents to do experimental researches in the university. In general, the setup of the university is not conducive for the students
ADV 4	Even if the students are planning a good research project, they do not have had any additional fund for the project.
	<b>Curriculum related factors</b>
ADV 12	The undergraduate pharmacy curriculum does not consider research courses adequately. One research method course alone could not help students to write a complete undergraduate research paper
ADV 5	Students are highly focused to research activities only when they reach graduating class. There is no prior exposure of conducting research and lack of experience in literature search task is also a limitation of the curriculum that contribute for producing poor quality research paper
ADV 7	The curriculum is clinically oriented unlike before. It also enabled students to focus on clinical researches than other practice areas of pharmacy... ..

**Table 4** Advisors Perception Towards the Outcomes of Poor Quality Undergraduate Pharmacy Students' Research Projects in Ambo University, Ethiopia, March 2020

Code 3	Outcomes
ADV 6	We (advisors) are not promoting undergraduate research projects well to other researchers. I was trying to see what my colleagues published in different journals but it' not enough. Moreover the papers lack quality. Honestly speaking, I see majority of the research paper is published in non-reputable journals....
ADV 15	In my opinion these projects are not helping at this time. I see most undergraduate pharmacy students' research projects were put a weak recommendation and the findings are not disseminating to the responsible body for implementation... ...
ADV 14	Undergraduate pharmacy students' research projects have a great role to facilitate and assist in the transfer and adaptation of pharmaceutical knowledge. But I believe that many students are not benefiting for their professional developments from these research projects.
ADV 10	I thought it [poor quality of undergraduate pharmacy students' research projects] will bring lots of effects especially in developing a research study, ethical application, manuscript and delivering an oral presentation...
ADV 8	They [local policy makers and hospital administrators] may hesitate to accept undergraduate pharmacy students' research projects recommendation as most administrators believe undergraduate students' research objective is only to have the required knowledge and skill.
ADV 5	The majority of undergraduate students' research projects used a cross-sectional study design with primarily descriptive analyses, which may not generate a reliable result to affect policy that requires more advances longitudinal study designs.

claimed that health institutions, especially the university hospital, failed to use the findings and recommendations of research projects performed in their setting to provide the best possible patient care (ADV 8, ADV 15).

According to one respondent, the majority of undergraduate research projects provide insufficient baseline evidence for policymakers to implement the research projects' outcomes (ADV 5).

## Discussion

This study examines research advisors' personal experiences with the quality of undergraduate pharmacy students' research projects at Ambo University, with the aim of identifying contributing factors that can be used to enhance research project quality. In addition, key informants were asked to explain how they view the results of low-quality undergraduate pharmacy research projects from various angles.

One of our main findings was that advisors agree that undertaking undergraduate pharmacy research projects is extremely necessary and has already provided students with some additional skills; they also believe that it will eventually have a positive effect on students' research ability and professional growth. Several studies have shown that participating in undergraduate research projects helps students improve self-directed learning skills and problem-solving skills, which will help them in their

future careers as pharmacists.<sup>2,4</sup> Furthermore, undergraduate pharmacy students' involvement in research projects is critical in developing pharmacists who are ideally equipped to provide unbiased health and medicine-related knowledge to the general public and other health-care professionals.<sup>17</sup>

The majority of key informants in their department believe that the quality of undergraduate pharmacy students' research projects is deteriorating from time to time. Some have also said that it is changing in comparison to the past due to technological advancements in recent years. Various studies have shown that technology has a variety of effects, especially in terms of gaining easy access to various types of literature and using various statistical software during data analysis.<sup>6,20</sup>

The current study found that students' research knowledge gap, plagiarism, lack of communication to discuss with advisors, poor commitment and motivation, and financial problems as major contributing factors for the poor quality of undergraduate pharmacy students' research projects. Different studies highlighted the inability in choosing a research title, inadequate knowledge of study design, lack of research confidence, lack of interest, and Internet inexperience as main contributing factors for the low quality of undergraduate medical students' research projects.<sup>5,9</sup> Further, another study conducted in Ethiopia revealed that most students were not in a position to do

original research works.<sup>8</sup> The key informants also pointed out that besides knowledge and skills, most of the undergraduate students had no the necessary ethics to carry on a scientific research project. These used to lead the students to exercise academic dishonesty.

Students may develop a positive perception of research and be guided to become aware of health issues in their community by using the methodology to help solve problems.<sup>6,21</sup> In this study, the key informants invariably agreed on the shortage of research advisors in particular and undergraduate pharmacy instructors in general in the university. Also, they mentioned fellow research advisors' less motivation and dedication in the university could hamper the quality of undergraduate pharmacy students' research projects. Shortage of experienced research advisors and advisors less commitment to support students were commonly reported in previous studies.<sup>6,8,12</sup> Poor research advisor guidance may cause students to become confused and dissatisfied during their studies.<sup>6,13,21</sup> It is highly recommended that research advisors be encouraged to engage in all phases of research projects as active supervisors.

University management-related factors such as insufficient research infrastructures and facilities, lack of research funds, and poor management attitude to undergraduate research projects were also the contributing factors mentioned by the advisors. This result is in line with the findings of other Ethiopian academic institutions.<sup>8,18</sup> Also, similar to our study, restricted access to data sources (ie internet), materials, and facilities<sup>6,15,22</sup> lack of research funding support<sup>12,22</sup> and little support from top university research leaders<sup>11,13</sup> was also cited as the key influencing factors for the low quality of undergraduate students' research projects in previous studies. These findings imply that the University should pay attention to research infrastructure and support to encourage quality undergraduate research. They should also allow research advisors to pursue funding from sources other than the government by encouraging them to apply for grants and awards.

The undergraduate pharmacy curriculum itself was mentioned as one contributing factor for the poor quality of research projects. The majority of the key informants stated that the curriculum did not include adequate research courses and the available course did not give sufficient time and a chance for students to practice research. This finding concurs with studies conducted in the country, in which it was described as an important factor dragging down the quality of undergraduate research projects when the research course in

undergraduate students' curriculum did not address the entire research elements required to undertake basic and/or applied research.<sup>8,18</sup> Other studies have come up with the same results.<sup>3,10</sup> In five years of undergraduate pharmacy courses, students were given only one research course: Research Methods. The course was 3 ECTS hours. The content was not broad enough to address the different areas of research components. It was more theoretical where it did not invite students to develop even a mini research proposal. The research course was confined only to research topics, though not worth mentioning, in Pharmaceutical sciences. Quantitative survey research was given due emphasis. Students in the Department had less idea about qualitative and experimental research design. Moreover, the research course did not equally entertain the nature of researches in all disciplines incorporated in the curriculum such as Pharmacology, Pharmaceutics, Pharmaceutical chemistry, and pharmacology.<sup>17,23</sup>

The absence of knowledge transfer through research publication and presentation was among the potential outcomes of poor undergraduate research projects mentioned by key informants. In many higher learning institutions, there was no undergraduate research competition and institutionalized dissemination mechanisms to fortify students' sense of undertaking quality undergraduate research.<sup>8,24</sup> With this regard, a study conducted by Barbosa et al emphasized that university students should have opportunities to present their research work to wider audiences. This would encourage students to be competent and promote quality undergraduate research projects.<sup>24</sup> Disseminating research results benefits students to improve their research capacity as well as exposure to their scientific community.<sup>25</sup> Therefore, the university should find a research dissemination mechanism since it creates a sense of competition among students to come up with quality research works.

Higher academic institutions need to support undergraduate students to get equipped with the necessary research knowledge and skills.<sup>26</sup> And all key informants agreed that having a sufficient number of research advisors, conducting continuous follow-ups, enhancing student-advisor contact, having appropriate research guideline, making the university setup appropriate for conducting research projects, incentivizing undergraduate research projects, and revising the curriculum were among the suggestions made to improve the quality of undergraduate pharmacy students' research projects.



In general, the current study discovered a number of contributing factors for the low quality of undergraduate pharmacy students' research projects, including students, advisors, university, and undergraduate curriculum-related factors. This implies that promoting quality undergraduate research projects was not only about students' involvement in quality research, but also about advisors' and other stakeholders' contributions.

## Limitation of the Study

Since this research was done at a single academic institution, caution should be exercised when extrapolating findings to other Ethiopian higher education institutions. Furthermore, the study's conclusions were solely focused on the viewpoint of the research advisor. Other stakeholders' perspectives, such as students', university administrators', and partners', were not included.

## Conclusion

This study has revealed undergraduate research quality is a persistent problem of the department of pharmacy at Ambo University and several contributing factors have been identified. Increasing the number of research advisors, providing the necessary research infrastructures such as laboratory materials, computers, internet, reference materials, and other facilities, and creating a mechanism of collaboration among students, advisors, and university research leaders should be done to improve the quality.

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