

# EXPLORATION OF CHALLENGES FACED BY PHYSICAL THERAPY STUDENTS DURING THEIR RESEARCH PROJECT

*Original Research*

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## ABSTRACT

**Background:** Undergraduate students often encounter significant difficulties during their research journey, which may impact the quality and completion of their projects. These challenges are typically rooted in limited scientific training, restricted research exposure, and institutional barriers. Previous literature has mostly addressed postgraduate-level complications, with limited data available on the undergraduate experience, particularly in developing countries. Understanding the nature and extent of these obstacles is essential to improve academic research support systems and foster a more research-oriented mindset at the undergraduate level.

**Objective:** To explore the challenges faced by undergraduate physiotherapy students during their final-year research projects.

**Methods:** A qualitative research design was employed. A total of 11 final-year undergraduate physiotherapy students from medical colleges in Lahore, Punjab, Pakistan were selected through purposive non-probability sampling. In-depth, semi-structured one-on-one interviews were conducted after informed consent. All interviews were transcribed verbatim and analyzed using NVIVO software. Thematic content analysis was performed, and recurring patterns were grouped into themes and subthemes based on the coding process.

**Results:** Thematic analysis generated 5 core themes and 7 subthemes. Major themes included course content, supervisor interaction, research methodology, tools and scales, and data collection. Subthemes included insufficient theoretical content (reported by 8 out of 11 students), difficulty in learning SPSS (reported by 5 students), supervisor-imposed topics (4 students), unclear methodological understanding (7 students), challenges in interpreting tools and scales (6 students), data collection problems (8 students), and delays due to permissions from institutions (9 students). On average, permission-related delays ranged from 5 to 21 days.

**Conclusion:** Undergraduate physiotherapy students face multifactorial challenges during their research projects, particularly regarding inadequate training, lack of statistical skill development, methodological uncertainty, and institutional barriers. Strengthening research curricula and improving supervisory support can enhance the undergraduate research experience.

**Keywords:** Data Collection, Educational Measurement, Physiotherapy, Research Methodology, SPSS, Student Research, Undergraduate Education.

## INTRODUCTION

Conducting research and writing a thesis represent significant academic milestones for undergraduate and postgraduate students, not merely as a means of generating novel scientific discoveries but as a structured process through which students learn and internalize the scientific method. This experience fosters the development of critical thinking, analytical skills, and a systematic approach to knowledge acquisition (1). Academic thesis writing, in particular, enables students to articulate their ideas, display their research capabilities, and demonstrate independent thought under guided supervision (2,3). For many, it is their first hands-on encounter with the complexities of formal scientific inquiry, encompassing topic selection, hypothesis formulation, data management, and the interpretation of results (4,5). While this process has the potential to instill a robust scientific mindset, its successful execution is contingent on various factors that can influence both the quality and outcome of the research. Students often encounter multifaceted challenges during their thesis work. These may stem from personal limitations such as insufficient subject knowledge, poor time or stress management, communication barriers, and financial constraints. Institutional and supervisory factors also significantly affect the research process, including the availability of guidance, institutional support, and access to research funding (6,7). Critical aspects such as identifying a feasible research question, selecting appropriate methodology, maintaining motivation, adhering to timelines, and analyzing data rigorously are all vital yet demanding components of this scholarly undertaking (8). Global studies consistently reflect that, students across educational levels and disciplines report similar concerns. A lack of understanding of the research process is among the most frequently reported issues, often exacerbated by inadequate research training, limited access to mentorship, and minimal exposure to practical research experiences (9-11). Furthermore, the dual burden of coursework and thesis writing adds to students' academic stress, often leading to perceptions of research as an overwhelming obligation rather than an opportunity for intellectual growth (12). Communication gaps between supervisors and students, along with limited institutional emphasis on research skill development, further compound these difficulties (13).

Several investigations have attempted to explore the intricacies of these challenges. For instance, a study found that graduate students struggle with limited access to resources and emphasized the importance of practical coursework to improve research readiness (14). Similarly, another study highlighted deficits in research experience and supervisor interaction as key barriers (5), while a study underlined language barriers and lack of methodological understanding as common difficulties among undergraduate students (15). A study further identified issues such as framing research questions, data collection, and supervisor guidance as major obstacles (16). Moreover, evidence suggests that targeted interventions such as training programs and workshops significantly enhance students' research capabilities and self-efficacy (17). Despite these efforts, literature focusing specifically on undergraduate research challenges, particularly in the physiotherapy discipline within Pakistani institutions, remains sparse. Most existing studies target postgraduate populations or international contexts, failing to reflect the local academic environment. Moreover, within institutions such as Superior University, Lahore, no prior research has been found addressing the obstacles faced by physiotherapy undergraduates during their final-year research projects. Given this gap, the current study seeks to explore and understand the specific challenges encountered by undergraduate physiotherapy students during their research work. By employing a qualitative methodology and analyzing first-hand experiences through in-depth interviews, this study aims to identify thematic complications that hinder the research process. The objective is to contribute valuable insights that can guide educators and academic institutions in designing more effective support systems for undergraduate research, thereby improving both the student experience and the quality of academic output.

## METHODS

This qualitative research was conducted over a six-month period in medical colleges located in Lahore, Punjab, Pakistan. The study aimed to explore the challenges faced by undergraduate physiotherapy students during the course of their final-year research projects. A total of 11 participants were selected through non-probability purposive sampling, a commonly used technique in qualitative research that enables the selection of information-rich cases based on study objectives. Participants were included after providing informed written consent, and all were final-year undergraduate students of physical therapy from either gender. Students who had prior research experience, were undergoing treatment for clinical depression or anxiety, or were unwilling to participate were excluded to ensure the study's internal validity and minimize confounding influences. Each participant was briefed in detail about the purpose and procedures

of the study before data collection. Interviews were conducted on a one-to-one basis using a semi-structured, self-administered interview guide containing open-ended questions. These questions were developed based on a thematic framework previously validated in similar qualitative investigations (15), and their content validity was confirmed by a panel of 21 subject experts. Each question was rated on a four-point relevance scale, and the reliability of the tool was verified using SPSS, yielding a Cronbach's alpha of 0.809, which reflects good internal consistency. The interview sessions were conducted primarily in English; however, participants were permitted to express themselves in Urdu when necessary. These responses were later translated into English for consistency in analysis. All interviews were digitally recorded, transcribed verbatim, and stored as electronic wave files. Field notes were also taken during the interviews to capture non-verbal cues and contextual information, enriching the data and enhancing the interpretive depth.

Data analysis was conducted using content analysis methodology facilitated by NVivo software. Transcripts were read repeatedly to ensure familiarity and accuracy before coding. Codes were generated inductively in line with the research objectives and grouped into themes and subthemes to capture the essence of the participants' experiences (11). Thematic saturation was achieved when no new insights emerged, indicating that additional interviews were unlikely to contribute further relevant data. Direct quotations from participants were incorporated into the thematic analysis to enhance data credibility and ensure that the voices of participants were adequately represented. This practice not only reinforces the authenticity of findings but also allows for a deeper understanding of the underlying issues experienced by the participants. The six major themes that emerged from the data included difficulties with the theoretical aspects of research, supervisor-related challenges, methodological barriers, lack of understanding of tools and scales, data collection issues, and bureaucratic hurdles in acquiring necessary permissions. These themes were aligned with findings from previous literature, affirming the relevance and validity of the study framework. All ethical considerations were adhered to throughout the study. Ethical approval was obtained from the relevant Institutional Review Board (IRB). Participants were assured of confidentiality, and their identities were anonymized in all transcripts and reporting formats. Consent procedures strictly followed ethical standards, with participants having the right to withdraw at any stage without any academic penalty.

## RESULTS

Thematic analysis of interviews from 11 final-year undergraduate physiotherapy students revealed six major themes: *theoretical portion*, *supervisor-related issues*, *methodological understanding*, *data collection difficulties*, *permission challenges*, and *use of tools and scales*. Each theme was further divided into relevant subthemes based on response patterns and coding saturation. Under the **theoretical portion**, most students expressed dissatisfaction with the depth and practical relevance of the research-related coursework. While 3 students felt the theoretical content was somewhat sufficient, 8 participants believed it did not adequately prepare them for practical research. A major subtheme emerged around the lack of SPSS training. Students highlighted the inadequacy of hands-on sessions and insufficient exposure to software applications. One student noted, "*SPSS was not explained in the final semester; no other workshop was conducted for hands-on practice*", while another added, "*We were given only one lecture on SPSS, which wasn't enough; it was our own effort to learn it.*" Only three participants reported satisfaction, citing supervisor guidance and workshops as helpful. The **supervisor** theme reflected mixed responses. While 7 students appreciated the constructive feedback and collaborative topic selection process, 4 students faced resistance or pressure, particularly regarding study design preferences. A student shared, "*Our supervisor was forcing us to perform an RCT, but we insisted on a cross-cultural study*". Another participant stated, "*Our topic was our supervisor's interest, not ours, which made it difficult to stay motivated.*" With regard to **methodology**, 7 students reported difficulties understanding the research design and implementing it practically. Some highlighted the challenge of selecting an appropriate sample size and managing time. For instance, one participant mentioned, "*It took three to four hours to collect data from one patient, which made it overwhelming.*" Others attributed their confusion to minimal instructor input, relying instead on peer support or self-study.

**Data collection** was identified as a considerable obstacle by 8 respondents. Many pointed out that RCTs are particularly hard to conduct at the undergraduate level due to restrictions in patient access and lack of autonomy. One student shared, "*No institute allows students to intervene in patient care, so RCTs are impractical.*" Another noted difficulty aligning data collection with participant schedules. Only 2 students described their data collection as smooth, thanks to institutional support or online survey distribution. Challenges related to **getting permissions** were mentioned by 9 participants. The process often took 2 to 3 weeks, delaying research timelines significantly. Some students benefited from their supervisors' assistance, while others had to manage bureaucratic procedures independently. One respondent commented, "*It was a delay of at least three weeks; getting permission from hospitals was very time-consuming.*" In terms of **tools and scales**, 7 students reported problems either in finding appropriate tools or understanding how to interpret them. As one participant described, "*Finding the cutoff value for the Functional Gait Assessment scale was particularly challenging.*" Another shared,

*“I was not clear about the tool until my teachers provided the correct links.”* Only 4 students reported having minimal difficulty, often because they created their own questionnaire or received specific guidance.

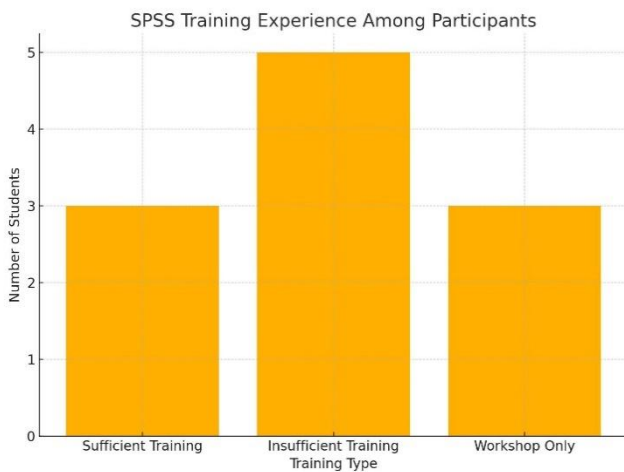


Figure 1 SPSS Training Experience Among Participants

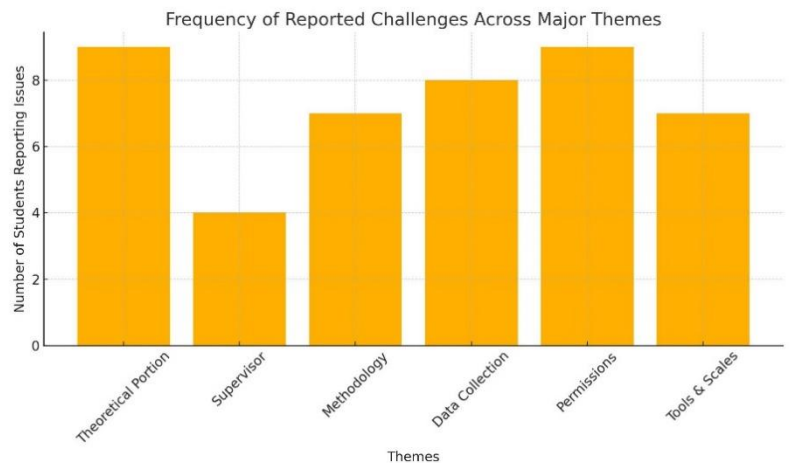


Figure 2 Frequency of Reported Challenges Across Major Themes

## DISCUSSION

The present study explored the challenges faced by undergraduate physiotherapy students during their final-year research projects, revealing significant barriers across multiple stages of the research process. The qualitative findings aligned with earlier studies conducted among postgraduate populations, reinforcing the observation that undergraduate students experience comparable, if not greater, difficulties due to their limited exposure to structured research environments. The key themes identified in this study—insufficient theoretical grounding, SPSS application issues, supervisor-related dynamics, understanding methodology, data collection challenges, and difficulties with tools and scales—highlight systemic gaps in research preparedness among undergraduates. A considerable number of students reported that their theoretical coursework provided only partial support for practical research work. Although some students acknowledged the relevance of their lectures, the majority emphasized that the content was not comprehensive enough to guide them through complex stages such as study design and statistical analysis. This inconsistency in perceptions reflects a broader issue observed in similar investigations, where inadequate integration of practical components in research education limited students' capacity to apply theoretical knowledge effectively (17-19). Notably, the lack of hands-on SPSS training emerged as a persistent gap, even among those who had attended workshops. This implies that one-time instructional interventions may be insufficient without continuous, applied learning opportunities.

Supervisory support played a critical but mixed role. While several students described their supervisors as encouraging and helpful in refining their topics, others felt pressured to adopt study designs like randomized controlled trials (RCTs), which were not feasible at the undergraduate level. This supervisory imposition often led to mismatched expectations, limiting student autonomy and contributing to delays in data collection and analysis. Previous literature also underscores the complexity of supervisory relationships, especially when the academic hierarchy restricts open communication or fails to align research tasks with students' competencies (20,21). Understanding research methodology was another major challenge. Many respondents struggled to identify suitable sample sizes, interpret tools correctly, and operationalize their research plans. These issues were further exacerbated during the data collection phase, particularly when institutional permissions caused significant delays. On average, students experienced a delay of 5 to 7 days, with some reporting setbacks of up to 3 weeks. This reflects findings from earlier studies which identified logistical and administrative barriers as common impediments to student research timelines (22,23). Moreover, some students conducting RCTs found it especially difficult to gain access to clinical populations, highlighting a mismatch between research ambitions and institutional permissions. Interpretation and application of tools and scales also posed difficulties for most participants. While a few students succeeded in independently sourcing or creating data collection instruments, many reported challenges in interpreting scoring systems and understanding cut-off values. In

alignment with previous studies, it became evident that tool comprehension requires more than theoretical instruction—it demands scaffolded guidance, repeated practice, and real-world application (24).

A major strength of this study lies in its qualitative design, which allowed for rich, first-hand insights into the lived experiences of undergraduate students. The thematic saturation achieved with a small, yet diverse sample enabled an in-depth understanding of the nuances and variability in student challenges. Furthermore, the incorporation of direct quotations adds authenticity and credibility to the findings. However, certain limitations must be acknowledged. The small sample size, though appropriate for qualitative inquiry, limits generalizability. The study was conducted in a restricted geographic region and within three institutions, which may not fully represent the experiences of students from other academic environments. Additionally, the absence of demographic breakdowns such as institutional comparisons, gender, or GPA-linked challenges limits the potential to identify subgroup-specific patterns. Future research should consider exploring each theme in greater depth using a mixed-methods approach to quantify the prevalence of these issues across larger student populations. Institutional-level audits of research curriculum design, supervisor-student interaction quality, and access to research resources could provide actionable insights. Structured training modules, continuous mentorship, and practical workshops on tools such as SPSS should be embedded longitudinally throughout undergraduate programs to foster research competence early in academic training. Overall, the findings underscore the pressing need for systemic reform in undergraduate research education. Enhancing theoretical content, improving research infrastructure, supporting student autonomy, and strengthening supervisor engagement can significantly elevate the quality and efficiency of undergraduate research, ultimately leading to more robust and credible scientific contributions from early-career scholars.

## CONCLUSION

This study concluded that undergraduate physiotherapy students encounter multiple interconnected challenges during the course of their final-year research projects, primarily revolving around theoretical course content, inadequate SPSS training, supervisor-related dynamics, difficulties in understanding research methodology, issues in locating and interpreting tools and scales, barriers in data collection, and delays caused by institutional permission processes. These themes and their corresponding subthemes highlight critical gaps in research preparedness and practical training at the undergraduate level. The findings underscore the need for improved curricular integration, enhanced supervisory support, structured workshops, and institutional facilitation to make the research process more accessible and less burdensome for students. By addressing these identified areas, educators and academic institutions can play a pivotal role in fostering stronger research capabilities among future healthcare professionals, ultimately leading to higher-quality undergraduate research outcomes.

## AUTHOR CONTRIBUTION

Author	Contribution
Noman Ahmad*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Gulnaz Zaheer	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Syed Hanzla Tanveer	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Mahparah	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Mishal Azhar	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published



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