

“It’s the Time they Take to Give Feedback; it has Become a Problem” Exploring Barriers and Facilitators for Research Supervision in Postgraduate Medical Education in Tanzania. A Qualitative Study

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Background: Research supervision is a multifaceted task that combines academic knowledge with managing interpersonal relationships. Postgraduate trainees often receive inadequate supervision due to their supervisors’ demanding schedules and limited supervision competencies. Most supervisors, especially in low-resource settings, lack formal training in supervision and thus rely on personal experiences to fulfil this role. Poor supervision contributes to high dropout rates and subpar research output in many universities. We aimed to explore the barriers and facilitators for research supervision in postgraduate medical education in Tanzania.

Methods: We adopted an exploratory qualitative case study and conducted key informant interviews with three purposively selected faculty in leadership and four focus group discussions with 14 postgraduate trainees and 10 faculty members. Topic guides focusing on experiences, challenges, and needs were used for data collection. The data were audio recorded and transcribed verbatim. A framework matrix was used to summarize and analyze data using an excel workbook. An inductive qualitative data analysis approach was employed using thematic analysis as described by Braun and Clarke.

Results: Two main thematic areas emerged from analysis: Barriers and facilitators for research supervision in postgraduate medical education. Difficulty balancing workload, delays in feedback, limited access to some resources, funding constraints and limited research skills emerged as key barriers. Participants recognised the role of a well-equipped library in facilitating the supervision process and trainees appreciated flexibility from their supervisors.

Conclusion: Addressing the identified barriers is crucial to enhance the supervisor-trainee relationship and overall dissertation outcomes. Ensuring protected time for research and strengthening faculty research and supervision skills through targeted training is important to ensure high quality research output.

Keywords: postgraduate, research, supervision, qualitative, challenges

Introduction

Background

Research supervision is a complex and multidimensional teaching responsibility that requires academic expertise and the ability to manage personal and professional relationships effectively.¹ It demands significant time and energy from both the supervisor and the trainee. Literature on postgraduate trainee supervision suggests that there is no universal formula

for the supervisor-trainee relationship, as it varies based on individual characteristics, disciplinary differences and the specific learning tasks students must undertake. However, two key aspects should be considered when developing a best practices model for postgraduate supervision.²

The first aspect involves creativity, viewing supervision as a dynamic process open to negotiation and adaptation. The roles assumed by trainees and supervisors—whether as guides, project managers, or critical friends—shape the relationship and influence supervision strategies. The second aspect concerns ensuring that the trainees make consistent progress toward completion.

Research by Wright et al identified distinct supervisory roles, such as quality assurer, supportive guide, research trainer, mentor, and knowledge enthusiast.³ The supervisor is often the most trusted individual guiding the trainees, responsible for the quality of work and ensuring adherence to institutional research guidelines.^{4,5} A strong trainee-supervisor relationship is crucial for trainee success, whereas poor relationships can lead to frustration for both parties.

Spear observed that one of the most common complaints from postgraduate trainees is the infrequent or inconsistent contact with supervisors, who may be overwhelmed with administrative, clinical or teaching responsibilities, have too many trainees, or be frequently absent from the university.⁶ Supervisors are expected to have broad knowledge in the research field or experience in conducting relevant research. However, some supervisors lack the necessary experience or research methods knowledge.⁷ In the medical field, for example, supervisors often learn their role through experience, as formal training is typically not included in standard teacher training programs.⁸ Consequently, trainees may suffer in silence, fearing victimization by their supervisors. Some supervisors focus more on research outputs that benefit their own career advancement, which can hinder trainees' progress and demotivate them.

The lack of adequate supervision for postgraduate research has been identified as a barrier to producing high-quality dissertations. Enhancing faculty supervision skills is crucial for strengthening postgraduate research projects. With universities increasingly enrolling postgraduate students and becoming global enterprises offering diverse learning modes, approximately 50% of students fail to complete their studies, leading to significant financial and human resource waste.⁹ Poor supervision practices and inadequate facilities contribute to high attrition rates among postgraduate students.¹⁰ Investing in high-quality postgraduate research supervision is a key strategy for universities to improve their research output.

In Tanzania, a study done at the Open University of Tanzania revealed that the majority of postgraduate trainees are not provided sufficient support services necessary for research supervision and this affects their timely completion of studies.¹¹

Most of the data related to postgraduate trainees' research supervision comes from high income countries; few studies have been published from Africa and other Low middle income countries where educational systems and learning environments differ from those in high income countries. In Tanzania and many other Sub-Saharan African countries, specialist medical training is offered as a Master of Medicine Program which includes a dissertation component where the student has to do an original research study. This is different from countries in the global North where specialist medical training is offered as residency and fellowship programs which do not have a dissertation or research component.

Given these challenges and differences, capacity building to enhance faculty competencies is essential for promoting effective supervision. However, such programs must be tailored to the institution's needs and local context. The aim of this study was to explore the barriers and facilitators for research supervision in postgraduate medical education in Tanzania. The data obtained can inform a focused, needs-driven, and time-sensitive capacity-building program to improve faculty supervision skills and strengthen supervisory and mentorship practices. Ultimately, this will enhance the quality of research output among AKU postgraduate trainees and those undertaking postgraduate medical programs in similar contexts.

Methods

Study Design

An inductive exploratory qualitative case study design using focus group discussions (FGDs) and key informant interviews (KII) was employed to explore the barriers and facilitators for research supervision in postgraduate medical education in Tanzania among faculty and postgraduate trainees. This method was chosen to facilitate interactions between participants and obtain diverse views and perspectives on the subject.¹² Study participants were selected

using a purposive sampling technique, by Ames¹³ and data analysed using Thematic analysis, by Braun and Clarke.¹⁴ Framework matrices were employed to analyse, summarize and organize results using excel.

Study Context

This study was carried out at a higher education institution with a specific focus on research supervision at the postgraduate level. The study took place at Aga Khan Hospital, Dar es Salaam, Tanzania which is the teaching site for AKU postgraduate trainees. Currently, Aga Khan Hospital, Dar es Salaam has expanded from a 72-bed secondary hospital to a 175-bed tertiary hospital. The Aga Khan University (AKU) postgraduate medical education (PGME) programs, which lead to a Master of Medicine degree, have been offered at Aga Khan University Hospital in Nairobi (AKUH Nairobi) and Aga Khan University in Dar es Salaam (AKU Dar) since 2004, forming an integral part of the Aga Khan University Faculty of Health Sciences (AKU FHS) presence in East Africa. The AKU Dar es Salaam campus offers programs in Internal Medicine, Surgery, Family Medicine, Obstetrics-Gynaecology, and Paediatrics, with several cohorts of trainees having graduated. The faculty-trainee ratio ranges from 1:1 to 2:1; means that each trainee may be supervised by one to two faculty at most, and this ratio is consistent across all departments. To successfully complete the program, each trainee has to pass a written and practical exam and complete a dissertation which is an independent research project; the report of which has to be marked by both internal and external examiners, and a submission of a manuscript is part of the graduation requirement. The AKU research committee, comprising faculty from different departments, reviews trainees' dissertations to ensure scientific relevance before submission to the ethical review board. And the success rate in the Master of Medicine examinations has been exceptionally high.

Study Population

The study involved both faculty and postgraduate trainee to understand the perspectives and challenges faced by each group. This process included representation from all 5 academic departments, genders, ages, experience levels, and employment durations (Tables 1 and 2). Faculty members had experience in supervision ranging from 1 year to 20 years and similar range of employment duration. It also included academic leaders, such as heads of departments, program directors, and research administrators, to gather views from an administrative perspective. Faculty members with supervision experience and third- and fourth-year postgraduate trainees were included, while newly employed faculty and first- and second-year trainees were excluded since they may not have had adequate experience in the supervision journey.

Table 1 Faculty Demographic Data

Participant ID	Gender	Age	Department	Years of Experience
1	Female	37	Research	15 years
2	Female	57	Obstetrics & Gynecology	24 years
3	Male	60	Family Medicine	26 years
4	Female	33	Paediatric	3 years
5	Female	41	Pathology	5 years
6	Male	46	Surgery	14 years
7	Female	33	Family Medicine	3 years
8	Male	48	Internal Medicine	13 years
9	Male	34	Internal Medicine	3 Years
10	Male	47	Paediatric	12 years

Table 2 Postgraduate Trainees Demographic Data

Participant ID	Gender	Age	Department	Years of Study
1	Female	28	Family Medicine	Year 3
2	Female	33	Internal Medicine	Year 3
3	Male	29	Obstetrics & Gynecology	Year 3
4	Female	33	Family Medicine	Year 4
5	Male	30	Surgery	Year 4
6	Male	31	Family Medicine	Year 4
7	Female	33	Family Medicine	Year 3
8	Male	35	Internal Medicine	Year 4
9	Female	31	Surgery	Year 4
10	Male	30	Surgery	Year 4
11	Female	32	Paediatric	Year 3
12	Female	32	Obstetrics & Gynecology	Year 4
13	Male	32	Family Medicine	Year 3
14	Male	29	Paediatric	Year 4

Sample Size and Sampling Technique

A purposive sampling technique was used to select participants for this study, as described by Ames et al.¹³ This technique ensures that participants are chosen based on their knowledge of the study topic, its elements, and the study's purpose.¹³ We approached postgraduate trainees through their student leaders; the study and its purpose were explained to leaders who then shared the information with the trainees. Those willing to participate reached out to the study team. For departments where interest in participation was low, we individually reached out to the trainees from different years of study. For the faculty, we approached them individually targeting all departments and different levels of experience in supervision. This purposive sampling ensured representation across departments, programs, genders, and a mix of experienced and junior faculty and students. Four FGDs were conducted, two with faculty and two with postgraduate trainees, each comprising 4 to 8 participants. The trainee FGD's were heterogenous in that there was a mix of trainees from different departments and different years of study. Similarly, the faculty FGD's were also heterogenous with participants from different departments and different years of experience. This ensured different perspectives emerged and rich discussions were stimulated due to the heterogeneity. Three KIIs were also conducted with academic leaders ie heads of departments, program directors, and research administrators. The principle of data saturation was used to determine the number of FGDs and KIIs to be conducted. Saturation was observed after three FGDs and two KIIs; however, one additional FGD and KII were conducted to confirm the saturation point.

Data Collection

The data collection was performed between June-July 2023 for a duration of one month. Different topic guides were used for FGDs among faculty and postgraduate trainees, and KIIs among administrative staff to gather data. Faculty FGDs/KIIs explored their perceptions, experiences, and challenges in supervising postgraduate trainees, as well as specific areas where they sought further knowledge and skills. Postgraduate trainees FGDs focused on their experiences, needs, expectations, and challenges during dissertation supervision. All FGDs/KIIs were conducted in English, face-to-face, by an experienced co-investigator (CM) with support from two experienced qualitative researchers who were not familiar with the study participants. However, participants were allowed to respond in English or Swahili, whichever language

they felt comfortable expressing themselves. On average, the discussions lasted between 45 minutes and 1 hour. The discussions were audio-recorded, and field notes were taken. The recordings were transcribed verbatim, and all transcripts in Swahili were translated into English before analysis. The translation was conducted by MS, a native Swahili speaker with strong proficiency in English. To ensure credibility, one of the investigators cross-checked a sample of the translated transcripts. Each discussion was coded, with participant identity omitted from the transcripts and notes.

Data Analysis

An inductive qualitative data analysis approach was employed using Thematic analysis by Braun and Clarke.¹⁴ Data collection and analysis followed an iterative process, with an initial analysis of each dataset conducted before proceeding to the next round of data collection. The co- investigator (CM) developed an initial codebook, which was then shared with the research team for review. The principal investigator and co-investigators thoroughly read the transcripts to familiarize themselves with the content and refine the initial coding system by adding more codes where necessary. Upon familiarization and initial coding of the different data sets, we noticed that the data and the emerging codes were similar from the FGD's of the faculty and the trainees as well as from the KII's. We therefore proceeded to code and develop themes approaching the data as a whole. Framework matrices were employed to analyse, summarize and organize results from each category of participants using an excel workbook. Emerging themes were subsequently identified, reviewed and analyzed to determine similarities and differences. Frequent discussions among co-investigators helped facilitate the exploration of varying perspectives on the emerging themes.¹⁵ The final themes were defined, named, and written up to provide a comprehensive interpretation of the data. The iterative process ensured that the analysis was robust and reflective of the diverse insights gathered during the study. To ensure robustness of the findings, we employed researcher reflexivity by evaluating our own perspectives and experiences in supervision and discussing them internally to ensure they do not influence the study findings.

Ethical Considerations

Ethical clearance was obtained from the Institutional Review Board (IRB) of AKU. Written informed consent was obtained from all participants. Participants were not identified by name to maintain confidentiality. To ensure confidentiality and privacy, the discussions were held in isolated, quiet rooms at Aga Khan Hospital and AKU campus. Psychological counselling support was available if needed by participants who experienced mental trauma due to recalling their supervision experiences.

Results

This study explored the barriers and facilitators for research supervision in postgraduate medical education among supervisors and postgraduate trainees at AKU (Table 3). The details of the analysis, including the codes and the process of identifying sub-themes and themes, are provided in Table 4.

Table 3 Barriers and Facilitator for Postgraduate Research Supervision

Sub-themes	Themes
<ul style="list-style-type: none"> • Balancing competing responsibilities • Delays in feedback • Difficulty in supervisor and topic selection • Navigating Supervisor-Mentee relationships with limited research skills • Limited access to essential resources • Restricted research funding • Ambiguous guidelines and expectations 	Barriers for postgraduate research supervision at AKU
<ul style="list-style-type: none"> • Availability of resources and infrastructure at AKU Tanzania • Supervisor guidance and flexibility 	Facilitators for postgraduate research supervision at AKU

Table 4 Thematic Analysis Process (Code Tree)

Code	Sub-theme	Theme	
Well-equipped library	Available resources and infrastructure at AKU Tanzania	1. Facilitators for postgraduate research supervision at AKU	
Free access to online resources			
Access to reference manager and Microsoft 360			
PGME research seminar	Supervisor guidance and flexibility		
Research course			
Lots of learning and growth in terms of research from supervisors			
Learnt to belief on own capabilities from supervisors			
Open-door policy where supervisors could be reached at any time by their mentees			
Physical meetings were not possible for some supervisors, but technology helped (emails, Zoom meetings and WhatsApp)			
Supervisors provided connection with experts and gate keepers			
Positive experience with supervisors who provided feedback quickly and on-time			
Received limited supervision time due to clinical workload among supervisors		Balancing competing responsibilities	2. Barriers for postgraduate research supervision at AKU
Very busy supervisors, not sufficiently following up on students' progress			
Lack of protected time among Faculty to be able to engage in academic supervision			
Limited time management skills among residents to be able to balance academic and clinical workload/ responsibilities			
Delays in receiving feedback from supervisors	Delayed and poor quality of feedback		
Shallow, little and sometimes vague feedback from supervisors			
Difficulty finding the right supervisor with relevant research expertise, experience and matching research focus interest	Difficulty in supervisor and topic selection		
Feeling pressured to accept more Faculty than needed to be part of supervision team			
Difficult developing selecting a topic, research question and a concept note			
Limited publication experience among supervisors	Navigating Supervisor-Mentee relationships with limited research skills		
Limited in research methods and analysis skills among supervisors			
Limited knowledge in using data analysis software			
Lack of basic research skills among residents			
Insufficient support from supervisors causes feelings of confusion, discouragement, and disinterest in dissertation work			

(Continued)

Table 4 (Continued).

Code	Sub-theme	Theme
Lack of in-house expertise	Limited access to essential resources	
Restricted software access, only on-campus via library computers		
No institutional support for publication cost	Restricted research funding	
Insufficient institutional funding to support residents' desired research studies		
University guidelines available, but very broad	Ambiguous guidelines and expectations	
Unclear procedural expectations		
No specific evaluation criteria to guide Faculty and residents		

Notes: I. FGD/KII topic Guide (Faculty). 1. What do you consider to be the most important aspects of research supervision for residents? 2. What strategies have you found to be effective in supporting residents throughout their research projects? 3. How do you balance providing guidance and direction with giving residents the autonomy to lead their own research projects? 4. In your experience, what are some common challenges that residents face during the research process, and how do you help them overcome these challenges? 5. How do you evaluate residents' progress and success in their research projects, and what criteria do you use to determine this? 6. What resources are available to residents who need additional support with their research projects, and how do you ensure that residents are aware of these resources? 7. What resources are available to Faculty who supervise research projects? What challenges are encountered in the supervision process? How do you cope with the challenges? 8. How do you manage conflicts or disagreements that may arise between you and a resident during the research process? 9. What is your supervision style/method, and do you use the same style for all the students you supervise? 10. What can be done to create a conducive environment for academic supervision and mentorship? I. FGD/IDI topic Guide (Postgraduate trainees). 1. What has your experience with research supervision been during your residency? Probes: How did it contribute to your overall learning and growth? 2. How did you choose your research project, and what factors influenced your decision? 3. What has been the most challenging aspect of your research project, and how have you addressed this challenge? 4. In what ways has your research supervisor supported you throughout the research process? 5. How do you balance the demands of your clinical responsibilities with the time and effort required for your research project? 6. What resources have been most helpful to you during your research project, and what resources would you like to have access to that are currently unavailable? 7. How have you been able to incorporate feedback from your research supervisor into your research project, and how has this feedback impacted your work? 8. What advice would you give to future residents who are starting a research project? 9. What can be done to create a conducive environment for academic supervision and mentorship?

Barriers for Postgraduate Research Supervision at AKU

Both faculty and postgraduate trainees identified several barriers facing postgraduate research supervision at AKU (Table 3).

Balancing Competing Responsibilities

Balancing academic and clinical duties emerged as a significant barrier, with both faculty and postgraduate trainees noting that the heavy clinical workload often makes it difficult for faculty members to track trainees' progress consistently, with a few postgraduate trainees receiving no supervision or very minimal supervision. Other study participants reported writing their manuscript with very little input from their supervisors. Findings indicated that faculty members lack protected time dedicated specifically to academic supervision. Consequently, they often have to sacrifice their clinical responsibilities and personal time to make time for supervision, which has direct implications on their earnings and overall job satisfaction. This lack of protected time was also seen as a barrier to attracting more faculty to engage in dissertation supervision.

I have to think, should I take my time and look at the resident's research or should I use my time to see patients because if we do not see patients, we do not get paid. So, at the end of the day, the resident work I do at night when I'm with my own family at my own time, which is supposed to be for myself, yet we don't get that protected time compensated, which I think is very important. **(Faculty - FGD 2)**

I think besides the challenges faced by the residents they are also challenges faced by faculty, for instance the institution is really geared towards faculty doing clinical work yet not much attention is paid for protected time for research and so the faculty struggles and lacks a compensation scheme. **(Faculty - FGD 2)**

Balancing academic and clinical workloads was stated as a barrier not only for faculty members but also for postgraduate trainees, who reported difficulties managing their research work alongside the demands of the MMed clinical program.

Participants expressed that the high clinical demands made it challenging to allocate sufficient time to research, impacting the overall progress of the dissertation.

Time management becomes challenging for most of them and maybe we should try to guide them on how they're going to manage this research process within the clinical program. **(Faculty - FGD 1)**

Time is a big constraint. for a student to balance between the clinical and administrative aspects of the institution and their own study plus research, sometimes you wonder how they do it, but they push on still. **(Faculty - FGD 1)**

Time management is a problem, and I think that's why from the beginning, [there is a need] stressing on setting realistic timelines and sticking to them. And the process of balancing work, that work life balance, because they are not researchers. They are students, they are clinicians at the same time, at the same time they are family people and realising all those responsibilities follow them. **(Faculty - KII 2)**

I will emphasize on choosing the very simple topic, very easy to be done and it will not be complicated or hinderance on your time and ability because you are here not only to do the research but also complete your clinical rotation as well **(Resident - FGD 1)**

Delays in Feedback

The demands of balancing academic and clinical workloads impacted not only supervisors' ability to monitor trainees' progress consistently but also the timeliness and quality of the feedback provided. While some participants reported receiving timely, useful, and comprehensive feedback, others noted instances where feedback was limited, superficial, or sometimes vague. These variations in feedback, along with delays caused by supervisors' clinical commitments, led to further complications in the dissertation process and slowed overall progress.

It's the time they take to give feedback; it has become a problem. I think to most of the students you might have your research ready, let's say you have obtained your ethical approval for a fixed period and with the delay, it is difficult to ask for an extension. I remember my colleague had to wait for two months to receive feedback, but the deadlines stayed the same. **(Resident - FGD 1)**

So, at the end of the day you cannot do anything, and you feel like lost and discouraged, not interested at all with the research due to the lack of support because you highly feel like you're not moving forward and when you finally get the feedback, it's like you're starting all over again. **(Resident - FGD 1)**

Supervisors take very long to get back to students, so you cannot fully blame the candidates either, it's our problem too. So, when we finally do give them feedback, they're already busy with something else, so it just prolongs and prolongs the process **(Faculty - FGD 2)**

Difficulty in Supervisor and Topic Selection

Participants noted that selecting a supervisor with relevant expertise, experience, and matching research interests was challenging for some postgraduate students. Many trainees were unfamiliar with the specific areas of expertise and research interests of faculty members at the time they were required to make their choice. On the contrary, other postgraduate trainees reported feeling pressured to accept more faculty wanting to be part of their supervision team with no power to say no.

Finding the right supervisors is hard for some of them being new to the institution, they might not know who is available, who is not available as supervisors... choosing their supervisor is very crucial. They don't know who an expert is in what and sometimes they're biased with their decisions in choosing the right people **(Faculty- FGD 1)**

But I think there's also a challenge when it comes to the identification of supervisors, and we may also need assistance from faculty with that regard because you may have a certain topic and there's someone who has expertise in that topic and you think maybe their guidance will help you but maybe at that point in time that particular faculty is already supervising several other students. **(Resident-FGD 2)**

Additionally, participants reported that selecting a relevant research question and developing a concept note, the first and most critical step in dissertation work, was also difficult for many postgraduate trainees.

Certainly, identification of a topic in the initial stages is very difficult. From personal experience I had a few things in mind but only to come and find out that they have been done before but maybe they have not yet been published, so that was my challenge in the first place. **(Resident-FGD 2)**

Navigating Supervisor-Mentee Relationships with Limited Research Skills

Findings revealed limited research skills not only among postgraduate trainees but also among faculty members and supervisors. Postgraduate trainees expressed concern that, contrary to their expectations, some supervisors, while highly skilled clinically, lacked sufficient research and publication experience. This impacted supervisors' ability to guide trainees effectively, leaving some trainees feeling lost, discouraged, and even disinterested in their dissertation work. Key gaps among faculty members were noted in research methodology, particularly in analytical techniques and the use of data analysis software.

They'll tell me that you have problem one, two, three but then they themselves don't know how to solve problem one, two, and three. The reason being, I don't think we have a very research-oriented faculty at our disposal. A lot of us are supervised by those who are primarily focused on clinical practice, not those that have a lot of strength in research and research methodology to go about things. **(Resident-FGD 2)**

We are more clinicians than academicians. The biostatistics and epidemiology we had done years and years ago. So, I think as supervisors we also need to understand methodology which I think is lacking in most of our faculty. **(Faculty-KII 1)**

Postgraduate trainees themselves were also reported to lack basic research skills. Faculty members often assumed that trainees possessed foundational research skills from their undergraduate medical training; however, trainees were reported struggling with tasks such as comprehensive literature searches and research gap identification, research designs and approaches, data analysis and interpretation, and the use of data analysis software.

I went to a supervisor, he told me that you needed to, you need to have good literature. That was something difficult for me, because initially we did not know how to create and decide in reading the literature and choosing to know the gaps, finding the gaps in the literature **(Resident- FGD 2)**

You know you are supposed to do a specific task, but don't literally have the knowledge or skill to do so. For example, it took me the longest time to write a literature review for my proposal. I had all the literature in my mind, even today, if you ask me but I didn't know how to put it on paper and make it make sense because you might know so much on a topic but lack skill on how you effectively articulate it on paper. **(Resident-FGD 2)**

Limited Access to Essential Resources

Lack of in-house expertise, such as an epidemiologist or biostatistician, was one prominent issue. Participants explained that obtaining support in these areas required arranging online appointments with specialists out of the country, resulting in delays in the dissertation progress due to logistical challenges.

Again, going back to my supervisors, they were not well versed in data analysis and didn't know what happened at first and did not seem to have strengths about statistics and that kind of field, thus I wonder how I ended up tackling this? That we ended up having external biostatistics coming in and when they came in, it was a game changer. **(Resident-FGD 2)**

Although participants appreciated the availability of library resources, access to Software required for data analysis, for instance, was available only on library computers, necessitating that trainees work on campus. Many noted that this restriction created obstacles for those who could not always be on campus due to off campus- clinical responsibilities or personal commitments.

The university has various resources especially software that are very helpful but can only be accessed via the library computers, they won't allow you to have it on your personal devices which changes the whole dynamic because, now it forces you to have to come

with your data to the library otherwise you're left stranded for example; I spent almost seven months of this year on external rotations, so if I needed SPSS and I'm on external rotation, I still have to come to campus. **(Resident-FGD 1)**

Restricted Research Funding

Additionally, insufficient funding for research was frequently mentioned as a barrier. Many trainees struggled to obtain the financial resources needed to support their desired study topics and designs, limiting the scope and quality of research they could undertake. They also reported limited institutional support for the publication process. They shared that there was no financial assistance available for covering publication costs, which made it challenging for trainees to disseminate their research findings.

At times resource constraints because you might find someone has an idea, a good research idea but is limited by the budget that's given for research itself. So, they end up limiting their thoughts. **(Faculty-KII 2)**

Others talk about the funding; so, the university normally prepares funding for research. It is a set amount; sometimes the residents have more needs than the fixed amount, some might end up kind of downsizing on the scope of the study they want to do. Some might really want it and then they have to kind of chip in with their own financial resources. **(Faculty-KII 2)**

AKU is funding our project with [amount] this is the same money you're using to pay the research assistants in data collection, also waiting for analysis and being used during publication. Then when you see, this is very little money, so funding implication is really an issue. **(Resident-FGD 1)**

... I will have never chosen a complicated topic, there's issue of cost implication as well on your timeline, on the data collection. I will emphasize on choosing the very simple topic, very easy to be done ... **(Resident - FGD 1)**

Ambiguous Guidelines and Expectations

Lastly, participants noted that while the university provided guidelines for dissertation work, these were often too broad and lacked specific, actionable instructions. This lack of detailed guidance left both postgraduate trainees and supervisors unsure about expectations and best practices, especially in areas such as research design, methodology, and monitoring of trainees progress. As a result, trainees often had to rely heavily on supervisors to fill in these gaps, adding pressure on faculty members who already faced time constraints. This ambiguity in guidelines further strained the supervisor-student relationship, as both parties grappled with unclear procedural expectations.

I think like I said that sometimes there are no clear things. There are no clear guidelines. For us right now we don't have any clear guidelines. If they are there, then the faculty is not aware of it. So, what is my role as a supervisor? They need to be very transparent, and I think this is something that should come from the research office. **(Faculty-KII 2)**

I honestly do not have a formal way of assessing their progress. I just do it by experience and by the way we communicate throughout the process. **(Faculty-KII 2)**

Again, in addition to what I said earlier, we need proper guidelines or templates on what goes into a concept note, on what goes into a proposal. We have some, but there's a lot of gaps in those. To the point that when I was developing my proposal, I went and looked at guidelines from another university [named university]. That [named university] University has very well-structured guidelines as to how to write a proposal because you exactly know what goes in, what you need to write under the introductory part. **(Resident - FGD 2)**

Facilitators for Postgraduate Research Supervision at AKU

Both faculty and postgraduate trainees highlighted and appreciated several positive aspects of the program that facilitated postgraduate research supervision including availability of resources, supervisor guidance and flexibility ([Table 3](#)).

Availability of Resources and Infrastructure at AKU Tanzania

One key strength mentioned was the access to AKU's well-equipped, up-to-date library services, which provides access to online resources supporting the supervisory process

You inform the residents that you can get information through different sources like in our library; that you can get into research articles, if you want any paper to go through and there is a librarian there always and there we have online, thousands of thousands of journals and books that can help you with research methodology or the analysis that can be challenging. **(Faculty- FGD 2)**

Supervisor Guidance and Flexibility

Other aspects of the program that were highly appreciated include the AKU wide online and in-house Faculty development programs for research and supervision skills, and the research course and seminars that are regularly organized as part of the postgraduate program. Furthermore, supervisors facilitated valuable connections with experts and gatekeepers, which granted trainees access to essential resources and information that would have otherwise been difficult to obtain. These connections significantly enhanced the research process, providing opportunities and insights that were not readily available through standard channels.

I had to go to a lot of places to identify where I would get my participants. So, my supervisor was very instrumental in telling me where to go and who to contact. Basically, going through the right channels, that support was highly needed. And when we identified that we're having a problem in the methodology and maybe we may need assistance from a biostatistician, it was my supervisor who highlighted to me that, let us involve a biostatistician who will help us and will shed more light into this...

(Resident - FGD 2)

In addition to the availability of conducive infrastructure, supportive programs and supervisors, the postgraduate trainees highlighted other aspects that added value to their supervision experience and made the process smoother. One such aspect was extending informal supervision support beyond that provided by the formal supervisor. Another was the flexibility demonstrated by supervisors, with some adopting an open-door policy, allowing mentees to reach out at any time. For others, in-person meetings were not always feasible, but they maintained effective communication through emails, Zoom meetings, and WhatsApp. This flexibility was highly appreciated as it aligned well with the busy clinical schedules of both the postgraduate trainees and supervisors.

You may decide maybe the very first meeting, you meet with them in person, so face to face meeting. But then phone calls, WhatsApp messaging, it makes life easier. Most of us spend a lot of time on our WhatsApp, so it's easy for you to pick up when someone is in need and just being flexible, not being too strict with them because the good thing about being in post-graduate program is adult learning. **(Faculty-KII 2)**

Discussion

This study aimed to explore the barriers and facilitators for research supervision in postgraduate medical education in Tanzania. The study has analyzed the perspectives of postgraduate trainees, and faculty members. This study has revealed balancing competing responsibilities, delays in feedback, difficulty in supervisor and topic selection, navigating Supervisor-Mentee relationships with limited research skills, limited expertise for enabling access to essential resources, restricted research funding and ambiguous guidelines and expectations as the major barriers to postgraduate research supervision. Balancing academic and clinical workloads emerged as a significant barrier for both faculty and postgraduate trainees. Faculty members limited protected time for supervision aligns with global concerns, particularly in resource-constrained settings, where supervisors do not have enough time to guide trainees.¹⁶ The lack of financial incentives for supervision further exacerbates this issue, reducing faculty motivation and the availability of experienced mentors.

For postgraduate trainees, the dual demands of clinical responsibilities and academic tasks was stated as huge barrier. Striking this balance has been a challenge globally with trainees reporting that service delivery tasks compromise their education.¹⁷ The need for effective time management strategies and institutional support for balancing these roles is crucial to ensure that research requirements and other academic demands are achieved. Laupland et al reported that training programs with organised programs including protection of time for research were associated with increased productivity.¹⁸

Supervisory feedback, an essential component of effective research mentorship, was reported to vary in quality and timeliness, which hindered progress and demotivated students. The challenge of effective feedback has been explored in a literature review by Chugh who highlighted that concerns about feedback arise from content which may be vague and

generic and amount of feedback which can overwhelm the trainee.¹⁹ Strategies have been reported to improve the skill of giving feedback in research; one of these is the use of micro-feedback techniques.²⁰

Selecting a suitable supervisor and research topic as revealed in our study reflects gaps in communication and mentorship structures. This is a common problem in many postgraduate settings where trainees struggle with selecting a topic of their choice versus one preferred by the supervisor. A study from Pakistan found that students who selected a topic of their own interest performed better in writing their dissertation, but supervisory support was lower.²¹ This gap calls not only for strengthening the communication but also capacity building to both mentors and mentees, creating research clusters for faculty and thus being identifiable to students based on what they are doing.

Lack of expertise to enable access to essential resources, highlighted systemic gaps. The reliance on external experts, such as biostatisticians, introduced logistical delays, underscoring the need for capacity building within the institution. This perspective, however, contrasts the current 21st century education trajectory in the digital era where expertise can be harnessed from any corner of the globe through various online platforms and connections. Further exploration on how this support can be availed timely to trainees is warranted.

Limited funding and lack of detailed guidelines for research work were additional barriers. Trainees' struggles with inadequate financial resources echo findings from similar settings like Bangladesh, where constrained budgets often restrict the scope and quality of research.²² Limited funding is not a new phenomenon, it dates back to 1989 when Binns and Potter stimulated a debate on the effect of dwindling funding on effective supervision.²³ The shortage of funding not only affects the quality of research but opens another panorama on how to compensate for the time taken by supervisors, especially when challenged by a large number of students. Lack of guidelines is also reflected in an integrative review by Muraraneza et al, who pointed out that lack of clear guidelines, limited pool of appropriate research supervisors, and recruitment of many postgraduate students lead to mismatch, confusion and limited support during supervision.²⁴ Addressing these barriers requires institutional investment in research funding and the development of clear, comprehensive research guidelines. Furthermore, balancing the number of students recruitment to the available human and non-human resources is another important consideration for effective research supervision.

One of the study's notable findings is the availability of robust institutional resources, such as access to an up-to-date library system identified by students and supervisors as facilitating the supervisory process. These align with what has been reported by Wanyama et al, who did a narrative literature review to examine the influence of perceived organisational support in research supervision support. Among the organisational support structures that supervisors need is access to infrastructure such as space and e-resources.²⁵

Supervisors' flexibility and informal supervision mechanisms, such as open-door policies and virtual meetings, were also highly valued. The interpersonal characteristics of supervisors are important identifiers of what makes an ideal supervisor, as reported in a study in Australia, where affective qualities such as approachability, accessibility, interest, respect, and commitment consistently characterize ideal supervisors.²⁶ Moreover, supervisors' facilitation of connections with experts provided critical support, underscoring the importance of networking in academic mentorship.²⁷

The strengths of this study lie in the robust data collection using a qualitative approach to get an in-depth understanding of postgraduate trainees and faculty perspectives. Using group discussions and interviews with a range of stakeholders including administrative staff highlighted a wide range of barriers and facilitators in research supervision.

The study focuses on a single private institution of higher learning hence the findings may not be transferable to other medical institutions offering postgraduate medical education programs. However, some insights may be cautiously considered in similar settings, particularly those with comparable structures and challenges.

The findings from this study provide valuable insights into the dynamics of postgraduate research supervision practices at AKU Medical College in Tanzania, offering an in-depth understanding of the barriers and facilitators associated with the supervisor-student relationship. This discussion contextualizes these findings within broader literature on postgraduate supervision and offers recommendations for improvement.

Conclusion and Recommendations

This study underscores the complexity of research supervision in Postgraduate medical education programs, particularly in resource-constrained settings. While several strengths were highlighted, addressing the identified barriers is crucial to

enhance the supervisor-student relationship and overall dissertation outcomes. Establishing protected time for supervision where faculty are compensated to supervise graduate students, will ensure sustained engagement and quality mentorship. Equally important is to strengthen faculty research and supervision skills through targeted training in research methodology, data analysis, supervision and publication practices. A core component of the training should be on how to give effective and timely feedback on students work. Ensuring timely access to expert support which is not available on campus will improve students' confidence and abilities to meet their timelines.

Abbreviations

AKU, Aga Khan University; FHS, Faculty of Health Science; FGD, Focused group discussions; IRB, Institutional Review Board; KI, Key informants Interview; PGME, Postgraduate Medical Education.

Data Sharing Statement

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate

Written informed consent was obtained from each study participant. The participants informed consent included publication of anonymized responses/direct quotes. We received ethical approval from the Aga Khan University Ethics Research Committee (AKU_ERC) reference number: AKU/2023/016/fb/06/07.

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Disclosure

The authors report no conflicts of interest in this work.

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