Remittances Review
April 2024,
Volume: 9, No: 2, pp.5932-5960
ISSN: 2059-6588(Print) | ISSN 2059-6596(Online)

Received: 15 March 2024, Accepted: 25 April 2024
DOI: https://doi.org/10.33282/rr.vx9i2.307

Navigating the Doctoral Journey in Pakistan: The Impact of Research Struggles on Mental Health and Research Engagement Among PhD Scholars

[1]Hajra Aman, [2]Sadaf Ahsan, [3]Hadia Ghaffar, [4]Aaliya Zaka,

[5]Syeda Huma Iftikhar

1. PhD Scholar, Department of Psychology Foundation University Islamabad, Pakistan hajra_sarfraz@hotmail.com
2. Associate Professor, Head of Psychology Department Foundation University Islamabad, Pakistan drsadaf.ahsan@fui.edu.pk
3. PhD Scholar, Department of Psychology Foundation University Islamabad, Pakistan hadiyaghaffar@yahoo.com
4. Psychologist Govt. Special Education Department Lahore, Pakistan aaliyazaka@yahoo.com
5. Counsellor/Psychologist PMDT-site PEMH Rawalpindi, Pakistan Humaiftikhar33@gmail.com

Abstract

In recent years, university research in Pakistan has undergone notable developments and holds the potential for further transformation, however, numerous challenges persist. Drawing on data from 14 focus group discussions with PhD scholars across Pakistan, this study identified various barriers that hinder the advancement of university research, limiting the country's ability to promote the internationalization of higher education and to establish itself as a knowledge-based society. The findings underscore key challenges that coerce the positive progression of higher education research and impede meaningful improvements in the university research field. Additionally, the study examines the impact of research-related challenges on the mental well-being and research engagement of PhD students within the Pakistani higher education context. The reflexive thematic analysis of the qualitative data identified five critical factors influencing PhD students' mental health, research engagement, and capacity for innovative research: (a) the PhD process, (b) challenges encountered during research, (c) supervision quality, (d) post-degree career prospects, and (e) the overall quality of research in Pakistan. These findings underscore the necessity for enhanced supervisory practices, supportive institutional policies, targeted incentives for innovative research, and

accessible mental health resources. Addressing these factors is essential to fostering an inclusive and nurturing academic environment for doctoral scholars. Additionally, the study emphasizes the need for national and institutional initiatives aimed at strengthening research engagement among Pakistani academics and empowering them to contribute meaningfully to the global research landscape.

Key words: *Research, Challenges, PhD Scholars, Higher Education, Mental Health.*

Introduction

Research is the fundamental pillar of a nation's development, and sustainable progression is only attainable with a well-established research framework within higher education institutions (Iqbal & Asghar, 2020). In Pakistan, the absence of a conducive research environment in universities remains a critical challenge. Since its inception, the Higher Education Commission (HEC) has made significant efforts to foster an internationally competitive research culture. However, postgraduate researchers continue to encounter numerous barriers, particularly in higher education institutions across various provinces. Identifying and addressing these challenges is imperative to strengthening the research system and advancing the quality of higher education in the country.

The impact of challenges related to the research discourse of the PhD candidate can be detrimental to the entire research process, affecting both the student's mental health and the quality of research produced (Gallea et al., 2021; Gin et al., 2021; Evans et al., 2018; Levecque et al., 2017). Persistent research-related difficulties, such as unclear expectations, lack of supervisory support, lack of institutional funding, lack of resources, and methodological complexities, can lead to heightened stress, anxiety, and burnout among doctoral scholars. As a result, their research engagement declines, prolonging degree completion and ultimately lowering the quality of research output. This issue is particularly significant given the well-documented rigor, time-intensive nature, and demanding experience of doctoral studies, which contribute to high attrition rates with substantial financial and human costs (Catalano & Radin, 2021; Marais et al., 2018). Consequently, less than 2% of the world's population attains a doctoral degree (US Bureau), with this proportion dropping below 1% in developing nations. Furthermore, studies examining the mental health of PhD students across different countries consistently indicate that doctoral candidates are particularly vulnerable to mental health challenges, albeit to varying degrees (Levecque et al., 2017).

Levecque et al. (2017) highlighted three key reasons why the mental health of PhD students should be a matter of serious concern, given its implications for individual scholars, research institutions, and national progress. First, PhD students play a crucial role in driving scientific innovation and contributing to academic knowledge, with their dissertations serving as prerequisites for academic careers (Roach & Sauermann, 2010) and scholarly output (Hagen, 2010; Miller, 2013). However, research-related challenges can pose several barriers in the way of innovative ideas and impactful outcomes, instead these obstacles can lead to

stress, anxiety, and burnout, reducing research engagement and compromising both the quality and quantity of research output. This decline not only affects individual scholars but also hinders scientific progress and national development.

Second, mental health struggles among doctoral students impose a substantial financial burden on research institutions and teams due to increased dropout rates and prolonged completion times (Lee et al., 2021; Sverdlik et al., 2018). Third, unresolved mental health issues can disrupt the inflow of talent into research careers and discourage individuals from continuing in academia. Institutional policies that fail to address these challenges may push students to abandon their PhD studies or exit the research field entirely, leading to a significant loss of intellectual capital and financial investment (Gin et al., 2021; Stubb et al., 2012; Rindermann & Thompson, 2011). Given the critical role of research in societal and national development, addressing the mental health concerns of PhD students is imperative to sustaining innovation, economic growth, and the advancement of knowledge.

Gin et al. (2021) investigated the bidirectional relationship between research challenges and doctoral students' depression. The most commonly reported factor exacerbating depression was encountering failures, obstacles, or setbacks in research. Specifically, students struggled with failed experiments, unsuccessful research projects, and the rejection of manuscripts and grants, which significantly impacted their mental health. Additionally, the unstructured nature of graduate research further contributed to their emotional distress.

Depression, in turn, negatively affected research in several ways (Gin et al., 2021). It reduced motivation among doctoral researchers, leading to decreased productivity and delays in tasks such as data collection and analysis, ultimately postponed paper submissions and graduation. Furthermore, depression was shown to hamper focus, making research more mentally exhausting and frustrating. It also lowered self-confidence, causing students to become overly self-critical, particularly when facing experimental failures or manuscript rejections. The lack of confidence impaired the decision-making process and discouraged risk-taking, further hindering academic progress amongst the postgrads, reflecting an imminent need to address these concerns.

Despite the growing emphasis on doctoral education worldwide, research on the challenges faced by PhD scholars remains largely centered on Western contexts, with limited empirical evidence from developing countries like Pakistan. The unique socio-cultural, economic, and institutional constraints in the country necessitate an in-depth exploration of the doctoral experience to identify the specific challenges scholars encounter and their impact on research engagement and mental well-being. Given the lack of innovative research, prolonged degree completion, disengagement with research process, and the increasing concerns surrounding the psychological distress of PhD students, this study aimed to investigate this critical research gap by examining the lived experiences of doctoral scholars in Pakistan. Through qualitative inquiry, this study provided a nuanced understanding of the

challenges that hinder doctoral research and identified key areas requiring institutional and policy-level interventions to improve research culture and student well-being in Pakistan.

Primary Research Question

1. How do PhD scholars in Pakistan experience and navigate the challenges associated with doctoral research?

Secondary Research Questions

1. What are the key academic, psychological, and institutional barriers that impact the research progress of PhD scholars in Pakistan?
2. How do research-related challenges influence the mental well-being and motivation of doctoral students?
3. In what ways do structural and systemic limitations within universities hinder the research productivity of PhD scholars?
4. How does the unstructured nature of doctoral programs in Pakistan contribute to delays and increased stress among PhD students?
5. What challenges do PhD scholars face in the supervision process, including mentorship quality, feedback, and academic guidance?
6. How do PhD scholars perceive their career prospects after graduation, and what barriers exist in securing academic or research positions in Pakistan?
7. How do the existing challenges in doctoral education impact the overall quality of research produced in Pakistan?

Method

Qualitative research is well-suited for uncovering the underlying assumptions and interpretive frameworks that shape research problems, allowing for an in-depth exploration of the meanings individuals and groups assign to social or human issues (Creswell, 2013). Given the objective of understanding PhD students' perspectives and experiences throughout their doctoral journey, this study adopted a constructivist paradigm with phenomenology as its theoretical perspective. This approach informed both the research design and the specific methods utilized to achieve the study’s objectives.

Participants

A purposive sampling strategy was employed to select participants from major cities across the country. The study involved 14 focus group discussions with a total of 71 PhD students (33 males, 38 females), with an average age of 37 years. Participants were drawn from various regions, including the Federal Capital, Punjab, Sindh, Khyber Pakhtunkhwa, Balochistan, Gilgit-Baltistan, and Azad Jammu & Kashmir. Detailed demographic information is provided in Table 1.

Remittances Review
April 2024,
Volume: 9, No: 2, pp.5932-5960
ISSN: 2059-6588(Print) | ISSN 2059-6596(Online)

Table 1

Demographic Characteristics of sample (N=71)

FG#	No of Participants	Province/ State	Gender		Average Age	Marital Status	
			Male	Female		Married	Single
1	4	ICT	1	3	35 years	2	2
2	5	Baluchistan	5	0	43 years	4	1
3	4	Punjab	2	2	36 years	2	2
4	4	ICT	3	1	41 years	2	2
5	8	Punjab	3	5	34 years	5	3
6	5	Punjab	3	2	36 years	3	2
7	4	Punjab	1	3	34 years	2	2
8	6	Punjab	0	6	37 years	6	0
9	5	Punjab	1	4	33 years	2	3
10	5	KPK	4	1	39 years	2	3
11	5	Sindh	4	1	44 years	4	1
12	7	Punjab	1	6	38 years	4	3
13	5	AJ&K	2	3	33 years	2	3
14	4	GB	3	1	34 years	2	2

Note: *AJ&K= Azad Jammu & Kashmir, GB = Gilgit Baltistan*

Data Collection

Focus groups were conducted to collect data from participants, using a focus group guide. Focus group discussions were intended to elicit responses that could produce a detailed account of research-related issues impacting mental health and research engagement of PhD students in Pakistan.

Procedure

Prior approval was obtained from relevant authorities before initiating the study. Participants were thoroughly briefed on the study's objectives and nature, and informed consent was secured from each participant, ensuring the confidentiality of their responses. The focus group discussions were conducted in a quiet and comfortable setting to facilitate open dialogue. Sessions began with a general conversation to establish rapport, followed by structured questions with active use of probes and prompts to encourage detailed responses. With participants' consent, all discussions were audio-recorded and later transcribed for analysis.

Analysis

The focus group data were analyzed using Reflexive Thematic Analysis (RTA) by Braun and Clarke (2020), following an inductive, bottom-up approach (Braun & Clarke, 2013). The six-step process included data familiarization, coding, theme generation, review, refinement, and integration with existing literature. This analysis identified an overarching theme *research specific determinant that affect mental health and research engagement of PhD scholars*, along with many main and sub-themes. The qualitative findings are summarized in Table 2.

Table 2

Research Specific Determinants that Affect Mental Health and Research Engagement of PhD Scholars

Initial Codes	Sub-themes	Main Themes
Reduced faculty expertise Unsatisfactory lectures Course work should be related to research only There should be no course work	Stage One	The PhD Process
Problems in conducting research Problems in publications Universities do not support in publication fee	Stage Two	
Most difficult task Language barriers Plagiarism difficulties Problem with scientific research	Stage Three	
Long duration demotivates It is a very long journey Long PhD process causes continuous stress	Duration	
Lack of advanced labs Lab resources Lack of instruments and chemicals cause stress Limited access of internet	Lack of Resources	Problems Faced during Research
Funding issues Instruments permission problems Very expensive materials	Lack of Funds	

Supervisors are also under pressure due to lack of funds		
Finding short cuts in writing/research Students lack basic research skills	Lack of Skills/ Competency	
Problems in data collection Inappropriate behavior of respondents People lack the understanding of the importance of research	Non-Supportive Environment	
When required results are not achieved Frequent change in topic Mostly leave at research phase to exhaustive work	Attrition	
Data is tempered when desired results are not obtained Some call it data adjustment	Data Tampering	
Good communication and understanding supervisor facilitate work Supervisor's inappropriate behavior Demotivating and non-cooperative Disgracing and criticizing Holding grudges Causing delay in PhD	Relationship with Supervisor	Supervision
Students compromise their interest over the supervisor's interest Difference of opinion causes distress for student Lack of supervisor's interest in student's research work	Difference of Interest	
They must be treated as junior colleague PhDs must be given due respect	Respect for PhD Student	
Supervisor not involved in	Foreign Evaluation	

foreign evaluation process delays PhD It took 2 years to find foreign evaluator		
Uncertain about job or senior position	Career Uncertainty	Prospects after Degree
No research centers Researcher jobs not available	Scarcity of Research centers	
Unemployment even after PhD degree	Unemployment	
No difference or recognition either a simple research or an excellent one	No Appreciation of Work	
Quality is compromised due to lack of funding Poor quality Just to complete degree Data tempering lowers quality Some individual efforts are good but overall very bleak Improving with time	Quality of Research	Quality of Research in Pakistan
Research done is not applied after completing degree Only theoretical knowledge is imparted Nothing is delivered to community	Application of Research Findings	
Bridge the gaps between the universities and stakeholders/industries for research progress Stakeholders refuse to collaborate	Lack of Stakeholder Linkages	
Government and stakeholders do not make changes in their policies according to new research findings No research orientation Benefits of research not utilized Promotes the solution of social	Research Culture	

Abroad hard work pays off	
Financial support is provided	Comparison with
Research is to solve problems	International Studies
Abroad PhD is a full-time job	

Research Specific Determinants

The research related factors that affect the mental health and research engagement of PhD students are grouped under this heading. These factors are related to PhD process, problems during research work and quality of research produced in Pakistan. Although some themes and sub-themes have already been identified by literature but some new findings are a value addition to available literature.

The PhD Process

Earning a PhD or a professional doctorate is not an easy task, it requires to overcome number of challenges because on an average 1.1 percent of adults (25-64years old) in the world hold a professional doctorate degree (OECD, 2019), with highest being in Slovenia 5% and with only 2% in the US, UK, Germany and Australia and less than 1% in developing countries (OECD, 2021). The PhD process is long and cumbersome, usually requiring four to six years of tedious job depending on the academic discipline, the University and the country of study. The basic reason behind this difficult task is to generate original research with significant implications. The struggle of originality poses pressure because there will be hardly any of the work done before by the scholar. There are many stages in this process that impact the scholars in a negative way affecting their health and well-being. The participants of the focus group explained the PhD process in three stages and the impact it creates.

Stage One. Participants shared that there are three stages of PhD and success in one lead to the other, if any stage is failed then student is detained from further study. Stage one comprises course work, colloquia, comprehensive exam, and synopsis defense. A group of participants from engineering university shared that they felt lectures delivered in PhD course work are not satisfactory, the quality of lectures and content does not match the PhD level. One student told:

> In our ****** university masters students and PhD students are seated together (for coursework) and get the same lecture. It might be possible that two years back you could have studied the same course [well! If you had your last degree from here] such lectures might be sufficient for MS students but not for us (PhD students). This happened with our PhD coursework too last year and the agony was where to complain? The instructor himself was the dean of our department. (6.P1M)

A student of social science department from a private university shared, “we have been taught research subject with a completely different departmental students, having different

approach to research than our subject and even the instructor was not aware of our approach to research methods…. What quality of research background, do you think, we have?" (8.P6F).

Students shared that many subjects that they have been taught during the course work were a formality and did not relate to the upcoming sturdiest task of research. They could have been quite ahead by now if much of the time was not given to coursework conventionalism (6.P4M, 6.P5M, 11.P2M, …). Students from Pakistan's top-ranking engineering university shared the stringent criteria of comprehensive exam and synopsis defense that students are very strictly marked in these and only two attempts are allowed, failing these mean quitting PhD (6.P1M, 6.P3M, 9.P1F, …). A student from public university narrated the story of one of her classmate stating, "my class fellow ****** was having his synopsis defense, he just got little confused and made a small mistake, for this the dean scold him too much and insulted him to the extent that as he came out of the hall he had a minor heart attack and had been hospitalized for a week" (9.P5F). Statements from the scholars indicate that defending synopsis and passing a qualifying (comprehensive) exam is a big milestone to be achieved in the PhD process.

Stage Two. This stage relates to the basic part of conducting the research and during this phase most of the problems are encountered. According to scholars this stage creates tremendous stress due to excessive work demand, sheer concentration, comprehension issues, critical and analytical cognitive processing, too much input but too little output and extended hours of study, causing an imbalance in other matters of life (4.P1M, 10.P1M, 14.P4F, …). Findings from prior literature also echo congruent reports that the extent of clinical symptomatology heightens as doctoral students become PhD candidates (Hazell et al., 2020; Varley, 2021).

Participants from natural sciences shared that when the research phase starts, then mostly students realize that many of their research objectives are ruthless and do not correspond with ground realities of conducting research within limited lab funds, defective equipment, and unavailability of high cost research materials and lack of cooperation from department to overcome the problems. At this point of work either they rely on personal resources or compromise on research targets, this creates financial and psychological constraints rendering the confidence and intellectual integrity of the student low (6.P3M, 6.P5F, 10.P1M, …).

Stage Three. This stage has its own challenges as stated by scholars that writing papers and theses is another most difficult task. Students struggle with writing because research is a long process and to communicate this process logically and precisely requires intellectual writing skills that could build up stress of writing a perfect piece of knowledge. This is a quest in which few students succeed but many, may struggle with their writing. This scuffle with writing is generally termed as "writer's block" that can clog the mind, and if prolonged can cause terrible worry about protracted periods of unproductiveness (George, 2022).

Rachael Cayley, an academic writing teacher at University of Toronto explains writer's block as she says, "Most graduate writers who are struggling with their writing are actually struggling with their thinking. It isn't a psychological block, but rather the intellectual confusions endemic to the process of communicating sophisticated research" (2018, para. 1). The problems of writing faced by our research students are manifold, however the participants of study regarded language as a great 'barrier' for their intellectual confusions in writing, because English is our second language and students suffer in comprehending the literature and expressing their ideas, thoughts and in properly wording their results (5.P7F, 10.P2F, 13.P2M, …). Similarly publishing research papers also creates challenge for students to produce a sophisticated literature. A participant shared, "HEC requires one publication but our university requires three research papers to be published for the degree and does not support in fee, making it too difficult for us" (6.P1M).

This phase of doctoral dissertation is also tagged with multiple barricades and delays towards the attainment of the degree, during and after submission as well. The administrative work for sending the thesis to two independent foreign evaluators and to get reports from them is time consuming and quite worrying. Waheed et al., (2021) conducted qualitative research with doctoral students of University of Punjab, (Pakistan) reflecting upon the worries of doctoral students after submission of their dissertation that candidates become anxious, impatient and disappointed due to the prolonged delay in completion of doctoral degree even after submission. Similar glitches were reported by current study participants from public universities, as a student shared, "my senior submitted his thesis 14 months ago and is still waiting for reports" (13.P5M). Another student reported, "I submitted my thesis 6 months ago, after repeated inquires with administration, last month I got to know that my thesis was still not sent to the evaluators. Who is responsible for this delay? administration doesn't answer… and who is the sufferer… I" (7.P7M).

Duration. The degree completion timeline given by HEC (2021 Policy) is between three to eight years, with 2 years extension on special grounds. Data on exact average of degree completion in Pakistan is not available but the general trend of degree completers indicates an average of 4.5 to 6 years. Very few students make it around three years whereas mostly struggle with longer time duration. The longer time taken for completion builds up multiple pressures and creates a mounting distress. Students having scholarships, stipends from employers or bearing the cost by themselves builds up financial pressures, students who want to seek job, get married settle down a family or to pay attention outside PhD stay under time pressure in turn accelerating their stress (4.P2M, 11.P1M, 14.P2M).

Problems Faced During Research

Conducting research is its self a rigorous activity requiring time and ample resources, scarcity of any of these results in numerous hurdles and stumbling blocks to progress causing a nuance in mental health and well-being of scholars (Hill & Thabet, 2021). Numerous problems were identified by Pakistani PhD scholars that are summarized in the following sub-themes.

Lack of Resources. Lack of resources is not just a problem faced by many universities in Pakistan, in fact, many developing countries encounter similar impediments in conducting advance and high-quality researches due to scarcity of funds and assists. A group of experts (Akuru, 2019; Desmennu & Owoaje, 2018) conducted a research to investigate challenges and perceived opportunities for doctoral students' effective supervision across African universities and reported that respondents (experts/supervisors) expressed their concerns over lack of resources and access to infrastructure as one, amongst others, cause of ineffective supervision. In Pakistan, lack of funding at the institutional level creates the scarcity of resources and facilities that should be easily available for postgrads (Gull et al., 2024).

Similar concerns were noted in the current study, as participants from Natural Science groups felt most disadvantageous because of the dearth of resources impacting upon efficacy and quality of their research work. Participants reported that numerous basic facilities are missing at their departments, amongst the most serious concerns were lack of advanced laboratories, heavy research equipment, sophisticated chemicals and specific machines. Participants from less developed areas like Balochistan, KPK, Gilgit Baltistan and Azad Kashmir shared more profound issues related to lack of facilities at their universities. Most of these participants narrated the unavailability of basic necessities as proper internet facility, simple laboratory machines, basic chemical like reagents and apparatus like test tubes, microelement machines, malfunctioning or out of order equipment, unavailability of university owned land for performing field experiments, long hours of discontinued electric supply and (at times) water supply, no generators and even gloves are usually missing in chemistry laboratories (13.P3M, 14.P1F, 14.P5M, …).

Students from a large public university acclaimed the lack of resources to financial mismanagement and deficit of commitment at departmental and institutional level. A student pointed out, "there is not as much scarcity of funds as it is created by our higher officials just because of their lack of interest in innovations and technological progression…. Their interest lies in fully equipping their offices" (7.P1M). Perversion of funds is a predicament of developing countries, where reserves for one specific field could be invested into another or perhaps travesty of resources is caused by the fraudulent elements present in rudder of government affairs. Previous research conducted in Pakistan has yielded similar findings (Shams et al., 2020). The country has faced comparable challenges, particularly in the allocation and utilization of educational funds. Financial resources designated for education are often either mismanaged or reduced by successive governments in response to political or economic crises (Hoodbhoy, 2010; Akhtar, 2018).

Lack of Funding. Carrying out a PhD is its self a very tedious job and being a self-funded PhD student is even tougher. Students have to strike a punitive balance between taking on enough paid work while keeping enough time for research and money for maintaining other necessities. Lack of funds at the university level or departmental level also increases the challenges of the PhD student. Lack of funding can trigger other difficulties in

educational process such as deferred attendance, dropout in extreme cases, poor academic performance, increased economic hardship, emotional distress, inability to purchase research equipment and materials, conduct enough field visits and to produce comprehensive work (4.P2M, 7.P1M, 13.P5M, …). A student narrated:

> Lack of funding is the biggest stress for a science student. Our laboratory does not have even the basic chemicals to perform simple experiments. How much can I spend from my pocket to come up with something extra ordinary in research? All that I earn from my job is spent on my research. (9.P1F)

Supervisors are also under pressure due to lack of funds because if a supervisor has a project even then he can support 2 to 3 students at most but rest of the students suffer. Most of our universities lack funds for import of advanced machinery, equipment and publications (6.P5M, 11.P2M, 13.P3F, …). To get the required results students are compelled to purchase or import costly chemicals or equipment from their own country or from other countries, but they are mostly not supported by their departments. A student told, "To carry on with work we have to buy or import chemicals, but there is no financial or even logistic support from our university. We are to manage everything on our own" (5.P5F).

Lack of Skills/Competency. Many participants admitted that lack of research skills and knowledge on their part as students also impacted their work causing an ultimate unpleasant effect on their mental health. Lack of in depth and background knowledge of research causes demotivation and distraction, some are good at course work but struggle really hard in research because of not having statistical or analytical skills, some students lack IT skills, these issues delay work to a greater extent causing a few students to eventually leave academia (2.P1M, 8.P6F, 12.P3M, …). Laundon (2017) contends that PhDs should be taught the skills of integrating research impact and engagement into their work so that it could be helpful for students to navigate easily through their research process. A study investigating research supervisors' perception of barriers and enablers for medical postgrad students towards the completion of their project stated that doctoral students must have 75% of generic skills and 71% of research-based skills to accomplish their research projects (Hart et al., 2022). However, results from indigenous researches show that mostly students lack practical research skills that renders their work efficiency and slows degree progression (Akhtar, 2018; Afzal et al., 2019; Waheed et al., 2021, Bacha et al., 2021; Irshad, 2021).

Non-Supportive Environment. Students who find the academic environment lacking support, cooperation and assistance tend to get demotivated. A scholar informed, "Two of my colleagues left due to the depressive and non-cooperative environment of our engineering department" (6.P3M). Another student told, "One of our senior left because he was brutally humiliated by a faculty member during his synopsis defense" (6.P1M). Another student also expressed her views as, "I have seen a few students leaving academia for good just because of the rotten system our ****** university" (11.P4F).

Some students may also leave due to non-supportive environment at home (6.P2F). The discourteous and unaccommodating situations at institution or home inculcates tremendous stress, hamper ability to rigorously proceed with research work, effects emotional as well as physical well-being, surge demotivation ultimately compelling a student to leave academia. As a student narrated, "few students leave because they can't bear the stressful environment" (7.P2F). The verbatim of PhD scholars shows that PhD is a constant struggle and requires support and guidance throughout the process, lacking this support can have adverse consequences.

Isolation. One of the most common problem doctoral students come across while earning a PhD degree is isolation (Xavier, 2020), mainly experienced at the commencement or during the research phase. It stems from the process and the way postgrads have to work on their research projects. Science students have few or sometimes no other student on a stand-alone project while social science students after coursework completion seldom visit their department. Prolong disassociation with classmates and department creates academic isolation and generates feelings of loneliness, decreased motivation to work and aggravated negative and disruptive feelings (Xavier, 2020).

Research has shown that forty percent of academics quote the biggest issue that effect their mental well-being as isolation in the US, 46% of researchers in the UK claim to be in isolation during their research work, 64% of PhDs assert to be suffering from negative influence of isolation during doctoral studies (Belkhir et al., 2019). During the current research many students proclaimed of being cut off from their surrounding community. Many natural science students shared that, despite of visiting their lab for 4 to 8 hours daily, they feel secluded because of their individual projects (7.P2F, 10.P1M, 12.P4M, …), whereas social science students informed about their long physical absence from the university creating a sense of remoteness and detachment from academic community (8.P5F, 8.P6F, 11.P3F, …). A social science student from a private university reported:

> It's been two years since I have seen my classmates because I myself seldom visit the university… like after two or three months to see my supervisor… usually on my request as I have never been called by my supervisor. Our department hardly ever creates opportunities for us to get together for some trainings or seminars nor there are such rules, as to bound every PhD student to attend the seminars that takes place. So… it's just like as at times I forget that I am a student too. (8.P8F)

Attrition. Attrition rate is the number of individuals who enter a program of study but leave the study before completion (Ali et al., 2007). The attrition of doctoral students can be a significant problem for higher education, resulting in the waste of university, human and financial resources due to unrecoverable time invested on students who never graduate (Kong, Chakraverty, Jeffe, Andriole, & Wathington, 2013; Willis. 2013; Willis & Carmichael, 2011; Caruth, 2015).

PhD students' attrition could be the result of unpleasant experiences faced during the doctoral study process rather than merely an obstacle at the stage in which the attrition transpires. These unpleasant experiences could further produce unpleasant consequences in the lives of these students and pose several questions on the performance of higher education providers (Caruth, 2015). Attrition rates for PhD programs in the United States across the fields of engineering, life sciences, social sciences, mathematics and physical sciences, and humanities range from 36 – 51% (Young et al., 2019) and in many other developed countries from 30 to 60% depending on the area of specialization (Marais et al., 2018).

Pakistan has a struggling economy and very less to invest in education and health (Khan, 2021) but in spite of this fact, the attrition rate of doctoral students leaving academia without completing their degree is comparatively quite low. Many students in the current research shared their observations stating that only few Pakistan's top ranking universities have very stringent criteria for PhDs due to which students might fail and dropout otherwise the private universities and the supervisors of public universities try at their best level to carry on with students who get enrolled in PhD (9.P5F, 11.P3M, 14.P2M, …). More over the maximum completion time allowed by Pakistan's Higher Education Commission is 8 years and may grant an extension of 2 years under exceptional circumstances as declared by HEC revised policy for PhD 2021.

One major reason shared by PhD students for leaving the academia without completing the degree is the lack of competency and skills required for the attainment of degree (9.P4F, 10.P1M, 11.P2M, …). PhD requires rigorous efforts, hard work, communication skills and IT skills persistence and full determination for bearing the tough experiences during the studies (Okesina, 2018; Zhang et al., 2019; Daneil et al., 2020; Irshad, 2021), any student devoid of these qualities, faces more challenges and may prefer to quit than to continue with sheer stress and strain. Some students lose interest in studies when things get tough owing to their misconceptions that PhD study is similar to previous studies (2.P3M, 2.P4M, 10.P1M, …).

Another reason explained by PhD scholars was the inability of students to maintain a balance between their different priorities. One student shared, "My class fellow left her studies due to her newly appointment for a job. She could not manage to carry on with studies along with her job so she left" (8.P1F). Students engaged in other responsibilities tend to pay less time to their studies as a student informed about her classmates, "Two of my fellows were dropped from the course due to short attendance" (9.P1F). As PhD is a long journey and requires high cost in terms of fee and research work expenses, allocating constant funds for study might be difficult for some students therefore they leave the academia. Students also shared that when HEC withdrew indigenous scholarships or funds given to university to provide stipend to PhD students, many had to leave studies (6.P1M).

Data Tampering. Data tampering or data fraud is the deliberate act of modifying data either by changing, omitting or making up of values. This is known as research misconduct, meaning "fabrication, falsification, or plagiarism in proposing, performing, or reviewing

research, or in reporting research results, [but] does not include honest error or differences of opinion" (George & Buyse, 2015, page. 162). Worldwide there is growing concern over the transparency and trustworthiness of research as it forms the basis of sound public policy, however prevalence of data manipulation, research misconduct and questionable research practices are evidenced through literature (Gopalakrishna et al., 2022).

Xie et al. (2021) conducted systematic review and meta-analysis reporting that almost 3% of researchers have been involved in some form of research misconduct as falsification, fabrication or plagiarism and 12.5 % in one or more questionable research practices (QRPs), with more than 15% researchers witnessing and almost 40% being aware of such conduct as happening around them. An exclusive study by Gopalakrishna et al. (2022) in Netherlands with around 7000 respondents showed a prevalence of 4.3, 4.2 and 0.6 to 17.5 percent of fabrication, falsification and QRPs respectively, with more than half of the respondents being involved frequently in at least one QRP. The incidence of QRPs were reported to be higher among PhD candidates, young researchers and male researchers, indicating a need for concentrated efforts to preserve the integrity of responsible research practices (RRPs).

Participants of the current study regarded research phase as the most difficult one, which requires more hard work, skills and knowledge and induces more stress and anxiety. They also shared many instances of witnessing and indulging in one or more QRPs and/or research misconduct but stressed upon the causes of such conduct rather than the consequences. Participants narrated that once the topic and proposal is finalized after strenuous exercises then practical work starts and stressful task of getting the intended results (5.P2M, 5.P8F, 10.P3M, …). Inability to obtain desired results causes immense stress and pressure, experimentation is repeated several times leading to delay in degree completion and financial strain. This fact is linked with the scarcity of funding and dearth of resources in developing countries (Iqbal, 2018). A participant shared, "many issues are linked with our results, if we could have advanced labs with sufficient material and equipment then producing precise results could not have been that difficult. I went for IRSIP and completed my work there, everyone cannot" (5.P4F). Another student shared:

> Well, I would say science students are at more risk of tampering with data than the social science students because of the nature of their work. Social science students can relate differences in their findings to culture or such phenomena but we have no such cushion. We have to deal with numbers in the form of result and if results are negative than we cannot have a publication…. you know! … What I mean? …. No publication, no degree…. So, you see, there are many problems. (9.P2F)

Some students discussed about the lack of knowledge and expertise on the part of student and supervisor as a reason for misconduct in research. Unavailability of sophisticated machines, well equipped laboratories and advanced technology is a big shortcoming for developing countries and barrier to high quality research. Inability to publish negative results in academic journals is also one of the main reasons leading to research misconduct and QRPs (9.P3F, 10.1M, 14.2M, …).

Supervision

Supervision aims at allowing the student develop into an independent researcher. Good supervision is essential for a successful degree completion (Irshad, 2021). The crucial role of successful supervision is not something that can be taken for granted. It relies on both supervisor and student to fully engage in the research work as well as the study process and to regularly and deliberately reflect upon their relationship, roles, responsibilities and the ongoing progression (Wichmann-Hansen et al., 2012). Many scholars shared their problems with supervisor and supervision process which are presented in the following sub-themes.

Supervisor. The role of a PhD supervisor is to support a PhD scholar throughout his research endeavor with his/her own experience and expertise. A good supervisor will show interest in supervisee's project and will be able and available to provide regular feedback on supervisee's work. Numerous researches have documented the effects of relationship between supervisors and supervisees, establishing the fact that positive relation is useful in multiple ways. An affirmative relation of supervisor with supervisee helps build confidence, gain autonomy, progress productively and minimizes the chances of several stressors (Fan, 2018; Afzal et al., 2019; Van & Kroon, 2020; Irshad, 2021). Wichmann-Hansen et al., (2012) has postulated the fact that a supervisor should realize that, "in accepting a PhD student, responsibility is taken for an important phase in the career of a person, and not only for progress in research" (page 61). However, this is not always the case, many students in the focus group shared their adverse experiences with their supervisors leading to intense emotional disturbance and delay in work progression. A female student narrated her experience as:

> My supervisor's behavior is very distressing, she does not cooperative rather has a disgracing and deriding attitude, when I approach her for advice she says, "if you can't take decisions on your own than why are you doing PhD…students like you shouldn't be here", such words are so disappointing that I think of taking some serious steps. (1.P3F)

Another student shared, "My supervisor is new in this university, he doesn't have a say nor he has confidence to defend his student in the face of undue criticism. This has caused me number to problems and has delayed my work" (10.P1M). Many students in the focus group showed their concerns over the lack of effective communication between themselves and their supervisors and lack of much needed time and guidance from their supervisors (3.P2F, 11.P2M, 13.P3F). Some students from public universities shared that their supervisors are not involved in any administrative or foreign evaluation process. Supervisors generally tend to have rude and ridiculing attitude upon frequent questioning and don't allow students in their office except with an appointment (9.P4F, 10.P1M, 11.P2M, …). A student from public university shared, "My supervisor is just for signing documents, no other help is expected from him, he never reads whatever I submit. I have to ask others to point out my research flaws" (9.P2F).

The extracts from current study validate findings that are reported in previous studies that negative and a non-cooperative relation, lack of commitment and timely feedback, strident and punitive attitude can be detrimental for supervisee's emotional and psychological well-being and can cause ample delay in degree completion (Van et al., 2017; Bireda, 2015; Fetene & Tamrat, 2021). Besides the negative experiences of many students some scholars felt themselves as lucky enough to have supportive and empathizing advisors who have stood by their advisee in the advent of any academic or personal calamity (3.P3F, 8.P5F, 14.P1M, …).

Supervisors' high expectations can also pose difficulties for students. Supervisors want their students to be able to think and work independently whereas the PhD scholars during discussion acknowledged that research work is different from coursework requires guidance and support throughout the research process from the supervisor. Problem arises where supervisor presumes that the student knows everything and can work on his/her own, neglects the aspects of guidance but holds high expectations from student. Supervisors' demand for 'do more' diminishes research enthusiasm and compromises quality (3.P2F, 8.P2F, 12.P2M, …).

Research is a dynamic and ever evolving process and research advisors have to be vigilant in new developments and emergent fields in their areas of expertise, conversely some students in focus group discussion communicated their personal experience that they were very much interested in pursuing new and innovative areas of research but they could not do so because their supervisors did not possess the advanced knowledge and insisted on only their particular field. Few students expressed themselves as, "I had to change my topic due to my (allotted) supervisor's limitation in the particular area of research" (3.P1F), "I tried my best to discuss an emerging area of social concern but since my supervisor was not skilled in that field she kept discussing her area of expertise and did not let me explore new areas" (12.P3F), "Our department has 20 faculty members but almost all of the PhD supervisors are so senior members without dated knowledge where new ideas do not emerge" (4.P2M).

Difference of Interest. Students also shared that they experienced difficulties due to difference in their interest of research area and that of their supervisor. Students informed that the only way to resolve such disagreements was to 'let go personal interest', that is the student has to compromise his passion over the interest of his/her supervisor's pursuit. A student reported, "I was left alone by my supervisor until I pursued my interest but, in this situation, I couldn't progress much, then after 3 months of solitary struggle I altered my research work" (3.P2F). Gunnarsson et al., (2013) has advocated that disagreement do occur when supervisor and student plan something but reasons should be communicated clearly and timely to avoid any inconvenience. Dong et al., (2021) have shown that relationship between students and their supervisors can be increased through use of social media.

Respect for PhD Students. This theme emerged as a new matter of concern raised by PhD scholars as they felt that they are not been given the due respect and are not treated well enough as senior most academic. They cannot meet their supervisors unless taken an

appointment or else have to wait for hours outside their offices for a ten-minute talk (3.P3F, 4.P6M, 10.P2M, …). A student narrated his experience as:

> When I went abroad my foreign supervisor asked me to call him by his first name instead of calling him 'sir'. Initially I was quite hesitant but gradually I felt that this helped me in approaching him and communicating with him freely and frequently, but as you know that here (in Pakistan) we can't think of calling our advisors directly by their names. I just want to object that why aren't we treated as junior colleagues at least, this could help in boosting our confidence and maintaining a close relationship with our supervisor. (4.P1M)

This extract shows that unlike foreign andragogic environment, in Pakistan there is some gap between the learner and the teacher, which PhD students find themselves uncomfortable with. Andragogy is the 'art and science of helping adults to learn' with mutual respect and on equal grounds (Colman, 2022). Extensive research data by Moskvicheva et al., (2015) have also advocated the need for focused work to improve the accuracy of mutual understanding between students and supervisors. This can be improved through mutual respect and building stronger relations academic and otherwise with postgrad students.

Foreign Evaluation. This aspect of research completion is not reflected in literature because most of the available literature represents data from developed countries where foreign evaluation of a PhD dissertation is not required. According to Pakistan's Higher Education Commission the dissertation of a PhD in Pakistan must be evaluated by at least two distinguished national professors or international experts from academically advanced countries, in addition to the PhD committee members of their institute (HEC, 2021). Many students from public universities expressed their concerns over the process of foreign evaluation with fear and apprehension over the process as it causes delay in completion of degree, talking one to two years after submission after submission (4.P2M, 11.P1M, 14.P2M, …). A student from Karachi University shared his observation as, "it took two years just to find suitable foreign evaluators for my class mate's dissertation who did his PhD in Sindhi language" (11.P1M). Similar findings have been presented by Waheed et al., (2021) that many students especially from public sector universities suffer the traumatic experience of ample delay (1-2 years) even after the submission of their dissertation in wait of foreign evaluation.

Prospects after Degree Completion

Research has shown that after getting a PhD degree, prospects of getting highly skilled job, inside and outside academia, increase by manifolds. A graduate outcome survey in the UK reported that 90% of PhD graduates got employment within 15 months of degree completion (HESA, 2022). Another study by Higher Education Policy Institute showed that 53% of graduates got employment in non-research, whereas 46% of graduates were positioned in research industry (Hancock, 2020). Most of the participants in the current study

presented similar intent as to secure highly payable position inside academia or elsewhere, but presented many related concerns, summarized in the following sub-themes.

Career Uncertainty. In Nature survey (2019), 79% of about 7000 postgrad students reported career uncertainty as their top most worry in relation to future career prospects. Likewise, many students in the present study felt uncertain about obtaining career and position of choice after degree completion. Students acknowledged the fact that pursuing PhD degree is very burdensome but even after such stressful and difficult task future does not seem welcoming because of the saturation of degree holders and scarcity of jobs, economic situation and political influence over the monopoly of employment in the country. Students shared, "there is hardly any other avenue for PhDs except teaching" (3.P2F, 4.P2M, 5.P6F). A student from private university shared:

> It's my 5th years doing PhD and still I believe it will take two more years for me to complete and get the degree. After coursework I started looking for job and ended up in working as a teacher in school or tuition center. I am very much apprehensive about getting a suitable position after spending seven years of study, in some reputable institution whether related to academia or not… I can only pray. (2.P5M)

The excerpt from participants represent their concerns over future uncertainties. Many researches from literature have investigated problems of mental health among doctoral students and have highlighted career uncertainty as predictor that effects the mental well-being of students during their graduation (Kovach Clark et al., 2009; Byrom et al., 2020; Winter et al., 2021).

Scarcity of Research Centers. The luxury of research institutes and centers is only affordable by rich developed countries but the situation of developing countries is completely unlike because of many impeding problems and dearth of financial resources (Mutula, 2011). Similar concerns were presented by many science students over the scarcity of options to secure a good position at reputable work place after they complete their studies. A student share, "there are hardly few research centers to name, how many of us would get appointed there" (11.P3M).

Unemployment. The unemployment rate in Pakistan is expected to reach 6.20% by end of this year according to a national report (Trading Economics, 2022), whereas according to a report by HEC, more than 4000 PhDs are unemployment in Pakistan despite of vacant posts in the government and private universities (Fatima, 2022). Many participants shared their worries over this high rate of unemployment among PhDs stating that even a doctorate degree could no longer guarantee a job in Pakistan (1.P1F, 2.P2M, 4.P2M, …).

No Appreciation of Work. Appreciation of work increases productivity and profitability, enhances progress and augments motivation, as confirmed by research (White, 2021), but participants of our research proclaimed with disappointment that they never

receive encouraging remarks from the faculty, department and supervisor as well no matter what efforts they make. Many students shared that there is no difference and no recognition or appreciation of work if we conduct a simple research or an excellent piece of work, it will be rated on same level (3.P2F, 5.P6F, 6.P3M, …). A student shared, "I have invested so much time and money into my research work but I haven't heard an encouraging comment from my supervisor, I really think why I took up such a difficult task" (10.P2M).

Quality of Research in Pakistan

Innovation and research are important components of any country's economic, political and social ecosystem, to help analyze and devise strategies, solve problems and answer questions of national relevance and aid policy makers to reach logical conclusions in the direction of changing local and global dynamics. Only a vibrant and innovative research culture can guarantee the development of a nation as a whole to up left every sector and tackle every obstacle rightfully. Conversely, the quality of research in Pakistan seems quite debatable, since the inception of Higher Education Commission of Pakistan (2002), progress made by Pakistan in terms of research in the first decade of 21th century is highly commendable (Rahman, 2013), however with growing number of graduates at a much faster rate in the second decade has raised many questions over the quality of research (Ahmed, 2017; Gilani, 2021). Participants of the focus group shared their personal experiences and observations regarding the quality of research in their universities, given in the following sub-themes.

Compromised Quality of Research. According to the participants of this study, the quality of research in Pakistan is jeopardized due to numerous factors but lack of funding is the main cause of inability to produce outstanding research results (6.P3M, 7.P4F, 11.P1M, …). A student share:

> Our research is largely hindered because we are restricted to work on topics/areas that do not involve much funds or to the extent that we could manage on our own financial resources. Students are never compensated [by department/institution] for whatever they spend on their research, in a cohort of … let's say 10 students… 1or 2 might get engaged in a funded project rest have to pull their own strings. In such a scenario, how much one [student] could put in from personal pocket to drive solution of some national relevance problem or some breakthrough in research? (6.P1M)

Students shared that individual efforts by some students and dedicated supervisors are good but overall at a larger view the resultant output is ascetic (7.P2F, 9.P1M, 10.P2M). A student explained, "The current good or… you can say… high quality research is 2-3% and rest is quantity not quality" (6.P3M). Another student shared, "At this stage of study mostly students are in job and therefore their worry is completion not perfection, end product is raised salary not an innovative breakthrough" (9.P2F).

Previous research findings from developing countries and Pakistan also reveal similar concerns of students that major reasons of lagging behind in the field of innovation and research is the scarcity of funds that renders the abilities and talents of students in these counties (Mutula, 2011; Hasan et al., 2018; Ahmed, 2017; Iqbal, 2018; Gilani, 2021).

Application of Research Findings. Research findings can have far reaching effects in establishing precise policies and planning projects for sound economic prosperity but very unfortunate that lack of political will (Ahmed, 2017) in our country ceases that chances of implication of any workable quality research outcomes. Moreover, the problem with applying the outcomes is because of the poor quality or non-applicability of work in real file settings, a student shared, "most of the work is a juggling of some already researched variables and theoretical knowledge which lacks practicality" (10.P1M). Many students proclaimed that research is very tedious task and to avoid research problems students opt for simple work and at times supervisors also suggest to keep work simple to avoid hardships, irrespective of its implications in society (4.P1M, 9.P5F, 11.P4F, …). Another student reported, "My work is for gross-root level but my article is published in highly paid journal that no one will buy to read or benefit from" (11.P1M).

Lack of Linkages with Stakeholders. Every doctoral dissertation is prepared with implications but on ground reality hardly ever any of the outcomes are disseminated to the society or community per se because government and stakeholders do not make changes or are reluctant to do so in their policies according to new research findings. This attitude of leading bodies demotivates and discourage any sheer effort on the part of researchers. This is also a main reason of lack of dissemination of significant conclusions drawn by investigators (Hasan et al., 2018; Iqbal, 2018). The stakeholders of doctoral research could be the universities, industries and private, public sector institutes and community but unluckily there is huge void between these patrons. Despite of HEC's effort in establishing ORIC departments in many universities to bridge this gap, the void still exists. A student explained, "Stakeholders are usually reluctant to intervene directly with universities because of their small-scale findings the problem is that we lack a link of investors in-between these patrons to scale up the work so it could be delivered to society" (10.P2M).

Research Culture. A key component of sustaining and enhancing good practice in research is a healthy research culture. Research that is high quality and of high ethical standards requires the right environment in which to flourish (Concordat to Support Research Integrity UK, 2019). A good research culture, therefore, develops through a good combination of healthy research environment, high ethical standards, credible research practices, clear policies and procedures of support, training and development of expertise, robust management system and open channels of communication. Unfortunately developing countries struggle in establishing good research culture due to numerous factual in competencies, lacking finances, infrastructure and above all a strong political will.

Researches related to Pakistan's research quality and culture report that research is still a low priority area in Pakistan (Haider & Mahmood, 2007; Mahmood & Farzana, 2010; Hasan et al., 2013; Ahmed, 2017; Iqbal, 2018; Gilani, 2021), whereas national documents and HEC reports present very ambitious figures for allocation of funding for research and innovation (HEC, 2021). Research culture ensures the propagation of inquisitive minds and exploratory behaviors to find solutions to problems at hand but, to build such attitude amongst students, requires strong will and sheer efforts on the part of patrons involved in the advancement of research and science in the country. Most of the participants shared that there is no research culture in Pakistan, research is conducted to attain degree, not engineered to provide practical solutions of social, environmental or economic problems (4.P1M, 8.P6F, 11.P3M, …). A student share, "There is so much leg pulling and defiance at every level… you name it… student level, department level, senior junior faculty and institutional level, so how could research grow here? Here is a culture of personal preference" (8.P3F).

The extracts from participants reveal problems related to system development in the universities that can hinder research culture development or can promote research culture in Pakistan if set as priority by our higher education institutions. A research by Iqbal et al. (2018) tried to find the factors that influence research culture in Pakistani universities and have reported that environmental, institutional and personal factors contribute to the development of research culture, however their findings indicated that environmental and institutional factors were not very supportive in progressing research as compared to personal factors.

Comparison with International Studies. In focus group discussions related to problems faced by PhD students, mostly students made comparisons with international studies claiming that hard work pays abroad not in our educational system (1.P3F, 2.P5M, 5.P3M, …). Financial support is provided to students for research other than the university dues abroad, whereas in Pakistan students mostly have to bear research expenses on our own, some students get stipends or scholarships but that goes to other livelihood expenses and tuition dues, research still suffers because number of research projects offered to departments are scares, hardly few students can benefit (3.P3F, 10.P2M, 11.P2M, …). A student shared:

> Research conducted in Pakistan is absolutely opposite to the way it is conducted abroad, here the prime objective is to get degree whereas in other countries research is conducted to solve societal and national issues. Internationally projects are planned first and then they seek potential students…postgrad researchers who could meet the requirements and produce promising results. Here students are inducted first then, in an effort to solve the jigsaw puzzle, supervisors are assigned to students, who in turn have their own research interest areas other than that of supervisees'. (2.P5M)

Students also pointed out other differences in studies stating that:

> Abroad PhD is a full-time job, dedicating 40-50 hours is a must but here financial constrains compel students to earn as well therefore PhD here is mostly part time or just over the weekends, completion time extends to 6 or more years whereas abroad the completion time is within 3-4 years. Students there meet with their advisors daily or at least weekly, present work and seek guidance no more than every 2 months…like having colloquies but here many students especially social science students don't see their supervisors for months. To improve the existing situation institutions must adopt supporting role. (4.P1M, 5.P7F, 13.P2M, …)

Conclusion

Research on PhD education in developing countries like Pakistan is essential, as existing literature predominantly originates from Western contexts, where institutional support, funding opportunities, and research infrastructure are far more advanced. The challenges faced by doctoral scholars in Pakistan differ considerably due to limited resources, inadequate research funding, lack of structured mentorship, and socio-cultural expectations that often place additional burdens on researchers. With this deeper understanding of the region-specific challenges, existing policies and interventions can help to adequately support doctoral scholars, ultimately affecting research productivity and national academic progress.

Integrating these research findings into the existing body of knowledge can help build a more sustainable and dynamic research culture in Pakistan. This comprehensive investigation into the struggles of PhD students in the country can inform policymakers, universities, and funding bodies about the structural and research engagement barriers hindering ground-breaking doctoral research. Addressing these challenges through targeted reforms, such as improved supervisory training, increased financial assistance, and enhanced mental health resources can significantly strengthen doctoral education. High-quality research is not only essential for individual scholars but also plays a pivotal role in scientific advancement, economic growth, and the global standing of Pakistan's academic institutions. Therefore, expanding research on PhD education in developing nations is a crucial step toward fostering an equitable and thriving research ecosystem.

References

Ahmed, U., Umrani, W. A., Pahi, M. H., & Shah, S. M. M. (2017). Engaging Ph. D. students: Investigating the role of supervisor support and psychological capital in a mediated model. *Iranian Journal of Management Studies*, *10*(2), 283-306.

Akuru, U. B. (2019). Research funding issues in African universities: penalties and pathways. *Journal of Sustainable Development Studies*, *12*(2).

Ali, A., & Kohun, F. (2007). Dealing with Social Isolation to Minimize Doctoral Attrition: A Four Stage Framework. *International Journal of Doctoral Studies*, *2*.

Belkhir, M., Brouard, M., Brunk, K. H., Dalmoro, M., Ferreira, M. C., Figueiredo, B., ... & Smith, A. N. (2019). Isolation in globalizing academic fields: A collaborative autoethnography of early career researchers. *Academy of Management Learning & Education*, *18*(2), 261-285.

Bireda, A. D. (2015). Challenges to the doctoral journey: a case of female doctoral students from Ethiopia. *Open Praxis*, *7*(4), 287-297.

Braun, V., & Clarke, V. (2013). Successful qualitative research: A practical guide for beginners.

Braun, V., & Clarke, V. (2021). Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. *Counselling and psychotherapy research*, *21*(1), 37-47.

Byrom, N. C., Dinu, L., Kirkman, A., & Hughes, G. (2022). Predicting stress and mental wellbeing among doctoral researchers. *Journal of Mental Health*, *31*(6), 783-791.

Caruth, G. D. (2017). Socialization: A Requisite for Writing the Doctoral Dissertation. *Athens Journal of Education*, *4*(1), 7-19.

Catalano, A. J., & Radin, S. T. (2021). Parents pursuing a doctorate of education: A mixed methods examination of how parents manage the roles of student and parent. *International Journal of Doctoral Studies*, *16*, 253.

Clarke, V., & Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The psychologist*, *26*(2), 120-123.

Creswell, J. W. (2013). Steps in conducting a scholarly mixed methods study.

Daniel, K. L., McConnell, M., Schuchardt, A., & Peffer, M. E. (2022). Challenges facing interdisciplinary researchers: Findings from a professional development workshop. *Plos one*, *17*(4), e0267234.

Desmennu, A. T., & Owoaje, E. T. (2018). Challenges of Research Conduct among Postgraduate Research Students in an African University. *Educational Research and Reviews*, *13*(9), 336-342.

Dong, F., Hwang, Y., & Hodgson, N. A. (2023). "I have a wish": Anti-Asian racism and facing challenges amid the COVID-19 pandemic among Asian international graduate students. *Journal of Transcultural Nursing*, *34*(2), 115-122.

Evans, T. M., Bira, L., Gastelum, J. B., Weiss, L. T., & Vanderford, N. L. (2018). Evidence for a mental health crisis in graduate education. *Nature biotechnology*, *36*(3), 282-284.

Fan, L., Mahmood, M., & Uddin, M. A. (2019). Supportive Chinese supervisor, innovative international students: A social exchange theory perspective. *Asia Pacific Education Review*, *20*, 101-115.

Fatima, T., Li, B., Malik, S. A., & Zhang, D. (2022). Mapping the relationship between virtual supervision, online program quality, and international student satisfaction in COVID-19 pandemic World: does e-learning quality mediates the relationship. *Interactive Learning Environments*, *32*(7), 3414-3430.

Fetene, G. T., & Tamrat, W. (2021). The PhD journey at Addis Ababa University: Study delays, causes and coping mechanisms. *International Journal of Doctoral Studies*, *16*, 319.

Gallea, J. I., Medrano, L. A., & Morera, L. P. (2021). Work-related mental health issues in graduate student population. *Frontiers in neuroscience*, *15*, 593562.

George, G., & Schillebeeckx, S. J. (2022). Digital transformation, sustainability, and purpose in the multinational enterprise. *Journal of World Business*, *57*(3), 101326.

George, S. L., & Buyse, M. (2015). Data fraud in clinical trials. *Clinical investigation*, *5*(2), 161.

Gilani, S. A. W. D. N. A (2021). Phenomenological Study on Understanding Doctoral Students' Spatial Experiences in the Universities.

Gin, L. E., Wiesenthal, N. J., Ferreira, I., & Cooper, K. M. (2021). PhDepression: Examining how graduate research and teaching affect depression in life sciences PhD students. *CBE—Life Sciences Education*, *20*(3), ar41.

Gopalakrishna, G., Ter Riet, G., Vink, G., Stoop, I., Wicherts, J. M., & Bouter, L. M. (2022). Prevalence of questionable research practices, research misconduct and their potential explanatory factors: A survey among academic researchers in The Netherlands. *PloS one*, *17*(2), e0263023.

Gull, F., Hassan, M., & Sohail, H. (2024). Ph. D Completion in a Low-Income Country like Pakistan: An Exploration into the Difficulties and Challenges faced by Ph. D Scholars. *Pakistan Social Sciences Review*, *8*(2), 243-252.

Gunnarsson, R., Jonasson, G., & Billhult, A. (2013). The experience of disagreement between students and supervisors in PhD education: a qualitative study. *BMC medical education*, *13*, 1-8.

Haider, J. S., & Mahmood, K. (2007). MPhil and PhD library and information science research in Pakistan: An evaluation. *Library Review*, *56*(5), 407-417.

Hancock, S. (2021). What is known about doctoral employment? Reflections from a UK study and directions for future research. *Journal of Higher Education Policy and Management*, *43*(5), 520-536.

Hasan, Z. (2018). Academic sociology: The alarming rise in predatory publishing and its consequences for Islamic economics and finance. *ISRA International Journal of Islamic Finance*, *10*(1), 6-18.

Hazell, C. M., Chapman, L., Valeix, S. F., Roberts, P., Niven, J. E., & Berry, C. (2020). Understanding the mental health of doctoral researchers: a mixed methods systematic review with meta-analysis and meta-synthesis. *Systematic reviews*, *9*, 1-30.

Hill, C., & Thabet, R. (2021). Publication challenges facing doctoral students: perspective and analysis from the UAE. *Quality in Higher Education*, *27*(3), 324-337.

Hoodbhoy, P. (2010). Pakistan's higher education system—What went wrong and how to fix it. *The Pakistan Development Review*, *48*(4), 581-594.

Iqbal, J., & Asghar, A. (2020). Effect of university administrative and academic processes on student engagement: An empirical evidence from Pakistan. *UMT Education Review*, *3*(2), 85-109.

Iqbal, M. (2018). Dualism system of higher education in Indonesia. In *International Conference on Educational Sciences and Teacher Profession (ICETeP 2018)* Atlantis Press. (pp. 136-140).

Khan, B. K., Mustafa, G., & Nawaz, A. (2021). Flourishing the higher education in Pakistan: An exploratory analysis of the role of Higher Education Commission (HEC). *Journal of Applied Economics and Business Studies*, *5*(3), 1-18.

Khan, S. A. R., Yu, Z., Golpira, H., Sharif, A., & Mardani, A. (2021). A state-of-the-art review and meta-analysis on sustainable supply chain management: Future research directions. *Journal of Cleaner Production*, *278*, 123357.

Kovach Clark, H., Murdock, N. L., & Koetting, K. (2009). Predicting burnout and career choice satisfaction in counseling psychology graduate students. *The Counseling Psychologist*, *37*(4), 580-606.

Lee, J., Jeong, H. J., & Kim, S. (2021). Stress, anxiety, and depression among undergraduate students during the COVID-19 pandemic and their use of mental health services. *Innovative higher education*, *46*, 519-538.

Levecque, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J., & Gisle, L. (2017). Work organization and mental health problems in PhD students. *Research policy*, *46*(4), 868-879.

Liu, C., Wang, L., Qi, R., Wang, W., Jia, S., Shang, D., ... & Zhao, Y. (2019). Prevalence and associated factors of depression and anxiety among doctoral students: the mediating effect of mentoring relationships on the association between research self-efficacy and depression/anxiety. *Psychology research and behavior management*, 195-208.

Mahmood, K., & Shafique, F. (2010). Changing research scenario in Pakistan and demand for research qualified LIS professionals. *Library Review*, *59*(4), 291-303.

Marais, G. A., Gaillard, J. M., Vieira, C., Plotton, I., Sanlaville, D., Gueyffier, F., & Lemaitre, J. F. (2018). Sex gap in aging and longevity: can sex chromosomes play a role?. *Biology of sex differences*, *9*, 1-14.

Marais, G. A., Shankland, R., Haag, P., Fiault, R., & Juniper, B. (2018). A survey and a positive psychology intervention on French PhD student well-being. *International Journal of Doctoral Studies*, *13*, 109-138.

Miller, J. E. (2013). *The Chicago guide to writing about multivariate analysis*. University of Chicago Press.

Moskvicheva, N., Bordovskaia, N., & Darinskaya, L. (2015). Role of students and supervisors' interaction in research projects: expectations and evaluations. *Procedia-Social and Behavioral Sciences*, *171*, 576-583.

Mutula, S. M. (2011). Challenges of postgraduate research: case of developing countries. *South African Journal of Libraries and Information Science*, *77*(2), 184-190.

OECD, S. (2021). Country Profile. *OECD SME and Entrepreneurship Outlook 2021*.

OECD. (2019). An OECD Learning Framework 2030. *The Future of Education and Labor*, 23-35.

Okesina, F. A. (2018). Causes of Poor Study Habits among Students as expressed by Teachers in Ilorin East Local Government, Kwara State. *NIU Journal of Social Sciences*, *4*(1), 115-122.

Rahman, M. Z., & Bhattacharya, U. (2013). Citation Analysis of Doctoral Theses in Physics Submitted to North Bengal University in West Bengal: An In-Depth Study. *Indian Journal of Library and Information Science*, *7*(3), 285.

Rindermann, H., & Thompson, J. (2011). Cognitive capitalism: The effect of cognitive ability on wealth, as mediated through scientific achievement and economic freedom. *Psychological Science*, *22*(6), 754-763.

Roach, M., & Sauermann, H. (2010). A taste for science? PhD scientists' academic orientation and self-selection into research careers in industry. *Research policy*, *39*(3), 422-434.

Stubb, J., Pyhältö, K., & Lonka, K. (2012). The experienced meaning of working with a PhD thesis. *Scandinavian Journal of Educational Research*, *56*(4), 439-456.

Sverdlik, A., Hall, N. C., McAlpine, L., & Hubbard, K. (2018). The PhD experience: A review of the factors influencing doctoral students' completion, achievement, and well-being. *International Journal of Doctoral Studies*, *13*, 361-388.

Tai, R. H., Wathington, H. D., Andriole, D. A., Jeffe, D. B., Chakraverty, D., & Kong, X. (2013). How Do Interaction Experiences Influence Doctoral Students' Academic Pursuits in Biomedical Research?

Van de Laar, M., Achrekar, S., & Rehm, M. (2017). 'Community of Learning'for African PhD students: Changing the scene of doctoral education? *Transformation in Higher Education*, *2*(1), 1-9.

Varley, A. M. (2021). *Coaching in the collective: How group coaching affects the progress and well-being of PhD students*. Case Western Reserve University.

Von Hagen, J. (2010). Sticking to fiscal plans: the role of institutions. *Public Choice*, *144*, 487-503.

Waheed, A., Baig, N., Ullah, N., & Falath, W. (2021). Removal of hazardous dyes, toxic metal ions and organic pollutants from wastewater by using porous hyper-cross-linked polymeric materials: A review of recent advances. *Journal of Environmental Management*, *287*, 112360.

Waheed, S. A. (2021). A Qualitative Understanding of Doctoral Students' Experience of Embodiment. *Journal of Arts & Social Sciences*, *8*(1), 57-64.

Wichmann-Hansen, G., & Herrmann, K. J. (2017). Does external funding push doctoral supervisors to be more directive? A large-scale Danish study. *Higher Education*, *74*, 357-376.

Willis, B., & Carmichael, K. D. (2011). The lived experience of late-stage doctoral student attrition in counselor education. *Qualitative Report*, *16*(1), 192-207.

Willis, L. B., Schall, K. C., & Piazza, L. (2018). A survey of communication sciences and disorders undergraduate students' research experience and interest in a master's thesis and PhD degree. *Perspectives of the ASHA Special Interest Groups*, *3*(10), 11-26.

Winter, T., Riordan, B. C., Hunter, J. A., Tustin, K., Gollop, M., Taylor, N., ... & Scarf, D. (2021). A longitudinal study of mental wellbeing in students in Aotearoa New Zealand who transitioned into PhD study. *Frontiers in psychology*, *12*, 659163.

Xavier, M. R., Santos, M. M. S., Queiroz, M. G., de Lima Silva, M. S., Goes, A. J. S., & De Morais Jr, M. A. (2020). Lawsone, a 2-hydroxy-1, 4-naphthoquinone from Lawsonia inermis (henna), produces mitochondrial dysfunctions and triggers mitophagy in Saccharomyces cerevisiae. *Molecular biology reports*, *47*, 1173-1185.

Young, S. N., VanWye, W. R., Schafer, M. A., Robertson, T. A., & Poore, A. V. (2019). Factors affecting PhD student success. *International journal of exercise science*, *12*(1), 34.