Research Article

Barriers to Continuing Professional Development among Medical Students in Pakistan: A Cross-Sectional Study of Socio-Demographic Influences and Perceived Challenges

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Abstract

Background: Continuing Professional Development (CPD) is essential for lifelong learning of medical professionals, enabling them to maintain competence, refine skills, and stay updated with advancements in medicine. However, medical students in Pakistan face significant challenges in engaging with CPD activities due to resource constraints, systemic gaps, and socio-cultural barriers. With Pakistan's doctor-to-patient ratio standing at approximately 1:1,200—far below the WHO-recommended standard of 1:1,000—the need for effective CPD programs is critical to address the growing demands on healthcare delivery.

Objectives: This study aimed to identify and analyze the personal, institutional, and socio-cultural barriers affecting CPD participation among medical students at a public sector medical university in Lahore, Pakistan.

Methods: A cross-sectional study was conducted using an online survey distributed to MBBS students across all five years of study. A total of 102 students participated, providing data on demographics and perceived barriers to CPD engagement. Descriptive statistics and chi-square tests were employed to analyze the data.

Results: The findings revealed that 90.2% of students reported a moderate to strong impact of various barriers on their professional development. Key challenges included time management issues (95.1%), lack of motivation (89.2%), and financial constraints (53.9%). Additionally, gender-specific challenges were reported by 55.9% of participants, with a significant association between gender and socio-cultural barriers ($p < 0.001$). Institutional support was perceived as inadequate, with only 42.2% of students finding CPD opportunities accessible.

Conclusion: The study highlights the urgent need for targeted interventions to improve CPD accessibility and effectiveness among medical students in Pakistan. Addressing these barriers through flexible, affordable, and inclusive CPD programs is essential to promote the professional growth of future healthcare providers and improve healthcare outcomes in the region.

Keywords: Continuing Professional Development, CPD, barriers, Pakistan, medical students

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Introduction

Continuing Professional Development (CPD) is an indispensable component of medical education and practice, serving as the foundation for lifelong learning in healthcare. In the rapidly evolving medical landscape of today, CPD enables healthcare professionals to maintain competence, refine skills, and stay abreast of recent advancements in medicine[1]. For medical students, early engagement in CPD is particularly crucial, as it establishes a culture of continuous learning that shapes their entire professional trajectory. This becomes especially significant in countries like Pakistan, where the healthcare system faces substantial challenges, including resource constraints, demographic pressures, and disparities in healthcare access[2].

Global health organizations, including the World Health Organization (WHO) and the World Federation for Medical Education (WFME), consistently emphasize the fundamental role of lifelong learning in improving healthcare outcomes[3]. Despite this global recognition, the medical education system in Pakistan currently lacks a structured CPD framework. The Pakistan Medical and Dental Council (PM&DC), the regulatory body for

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medical education, grants permanent practice rights after initial certification, creating a systemic gap in continuous learning requirements[4]. This stands in stark contrast to systems in developed nations, where mandatory CPD requirements are intrinsically linked to maintaining medical licensure and ensuring sustained quality of patient care[5].

Research has identified several barriers to CPD participation in developing countries, encompassing financial constraints, time limitations, inadequate institutional support, and socio-cultural factors[6]. However, existing studies predominantly focus on practicing professionals, leaving a critical gap in understanding the unique challenges faced by medical students in resource-limited settings like Pakistan[7]. This gap requires urgent attention, as medical students of today represent the healthcare workforce of tomorrow, and their engagement with CPD directly influences the future quality of healthcare delivery.

The healthcare system in Pakistan operates under significant pressure due to its expanding population, limited resources, and uneven distribution of healthcare facilities[8]. Recent data from the WHO indicates that the doctor-to-patient ratio in Pakistan stands at approximately 1:1,200, far below the recommended standard of 1:1,000[9]. Within this context, effective CPD programs assume increasing importance in equipping medical students with the skills and knowledge to address complex healthcare challenges effectively.

The implementation of CPD programs in Pakistan faces substantial systemic obstacles. The country's nascent educational infrastructure, combined with limited institutional oversight, creates significant barriers to accessing CPD opportunities[10]. Rural and underserved areas, in particular, suffer from restricted access to modern learning platforms, mentorship programs, and exposure to international medical practices[11]. Furthermore, financial constraints disproportionately affect students from middle- and lower-income backgrounds, further widening disparities in professional development opportunities. According to a 2023 report, over 60% of Pakistani medical students face financial difficulties that hinder their participation in extracurricular educational activities[12].

Technology plays an increasingly pivotal role in addressing these barriers. E-learning platforms, virtual simulations, and mobile applications offer potential solutions for providing accessible and affordable learning opportunities, particularly in remote areas where traditional resources are scarce. A study conducted in 2022 found that 78% of medical students in Pakistan expressed interest in online CPD programs if they were made available and affordable[13]. However, the effective implementation of these technological solutions requires careful consideration of local contexts and constraints, such as internet connectivity and digital literacy. This study aims to address the critical research gap by examining the barriers to CPD among medical students in Pakistan and analyzing their impact on professional development. Understanding these barriers is crucial for developing targeted interventions that can improve the accessibility and effectiveness of CPD programs, ultimately contributing to the enhancement of healthcare delivery in Pakistan.

Methods

This cross-sectional study was conducted at a public sector medical university in Lahore, Pakistan from February through September, 2024. The study population comprised MBBS students from all five years of study. Inclusion criteria specified students with English language proficiency and internet connectivity. Students from allied health sciences (BDS, AHS, DPT) and graduates were excluded. The sample size (n=99) was determined using the WHO sample size calculator, with a 95% confidence interval and 5% margin of error, accounting for the expected response rate of 92%[13]. The final sample included 102 participants to account for potential non-response. A convenience sampling technique was employed due to logistical constraints. A modified standard questionnaire was used, adapted from Bwanga and validated through pilot testing[6]. It was divided into four sections: Personal barriers, Institutional barriers, Socio-cultural barriers, and the overall impact of these on CPD opportunities, with responses recorded on a 5-point Likert scale. Data collection was performed using online Google Forms distributed via social media platforms. Ethical approval was obtained from the relevant Institutional Review Board (IRB). Informed consent was obtained electronically before participants completed the questionnaire. Participants were assured of confidentiality and anonymity. Data were analyzed using IBM SPSS version 27.0. Descriptive statistics, including means, medians, and standard deviations, were calculated for demographic variables. Pearson's chi-squared tests and t-tests were used to assess associations between variables.

Results

The study achieved a participation rate of 103% (102/99) of the calculated sample size. The sample comprised

Table 1. *Demographic characteristics of study participants (N=102)*

Characteristic	Category	n (%)
Gender	Female	69 (67.6)
	Male	33 (32.4)
Year of Study	First Year	8 (8.0)
	Second Year	6 (6.0)
	Third Year	20 (20.0)
	Fourth Year	63 (62.0)
	Final Year	5 (5.0)

predominantly female participants (67.6%, n=69) compared to male participants (32.4%, n=33). The distribution of participants varied across academic years, with fourth-year students representing the majority (62.0%, n=63), followed by third-year students (20.0%, n=20) (Table 1).

The analysis of personal barriers revealed time management as the most prevalent challenge, with 95.1% of participants reporting difficulties in balancing studies and CPD activities. Of these, 25.5% reported always experiencing time management challenges, 39.2% often, and 30.4% sometimes. Lack of motivation emerged as the second most significant barrier, affecting 89.2% of participants (17.6% always, 47.1% often, and 24.5% sometimes). Personal commitments, including family and social life, impacted 69.6% of students moderately (50.0%) to greatly (19.9%). Financial constraints affected 53.9% of participants, with 13.7% always experiencing financial limitations and 40.2% often facing such challenges (Table 2). Statistical analysis using Pearson chi-square tests revealed significant associations between age and certain personal barriers, specifically lack of motivation ($p=0.012$) and financial constraints ($p<0.001$).

Table 2: *Barriers to Continuing Professional Development among Medical Students*

Categories	Perceived Barriers	*Response Percentage (%)	95% Confidence Interval (CI)
Personal Barriers	Time management in balancing studies and CPD	95.1	90.8% – 97.8%
	Lack of motivation	89.2	83.4% – 93.4%
	Personal commitments (family, social life)	69.6	60.6% – 77.5%
	Financial constraints	53.9	44.3% – 63.3%
Institutional Barriers	Institution encourages participation	49	39.4% – 58.6%
	CPD opportunities are accessible	42.2	32.9% – 51.8%
	Sufficient resources	50.0	40.3% – 59.7%
	Institutional support	49.0	39.4% – 58.6%
Sociocultural Barriers	Cultural norms and social expectations	49.0	39.4% – 58.6%
	Gender-specific challenges	55.9	46.1% – 65.3%
	Societal pressure impacts	62.7	53.1% – 71.5%
Overall Impact	Moderate to strong impact on professional development	90.2	83.9% – 94.6%
	Barriers affect studies moderately to greatly	60.8	51.1% – 69.8%
	Overcoming barriers will enhance professional skills	75.5	66.6% – 82.9%

The assessment of institutional factors revealed moderate levels of support and accessibility. Approximately half (49.0%) of the participants acknowledged institutional encouragement for CPD participation, with 8.8% strongly agreeing and 40.2% agreeing. Regarding accessibility, 42.2% of students found CPD opportunities accessible (6.9% very accessible, 35.3% accessible). Half of the participants (50.0%) agreed that sufficient resources were available for CPD, including libraries, online access, and laboratories (10.8% strongly agreed, 39.2% agreed). Similarly, 49.0% of students recognized the contribution of institutional support mechanisms, such as seminars and workshops, to their CPD. A significant association was identified between the year of study and perceived institutional encouragement of CPD participation ($p=0.046$). The study identified substantial socio-cultural

influences on CPD participation. Cultural norms and social expectations affected 49.0% of participants (3.9% strongly agree, 45.1% agree). Gender-specific challenges impacted 55.9% of participants (10.8% strongly agree, 45.1% agree), while 62.7% reported experiencing societal pressure affecting their CPD participation (7.8% greatly, 54.9% moderately). Statistical analysis revealed significant associations between gender and socio-cultural barriers ($p<0.001$) and gender-specific challenges ($p=0.027$). Age also demonstrated a significant association with gender-specific challenges ($p<0.001$).

The cumulative impact of these barriers on professional development was substantial, with 90.2% of participants reporting moderate to strong effects. The majority (60.8%) rated the impact as moderate (48.0%) to severe (12.7%). Notably, three-quarters of participants (75.5%) believed that overcoming these barriers would lead to enhanced professional skills.

Discussion

This study provides comprehensive insights into the barriers affecting CPD participation among medical students in Lahore, Pakistan. The findings reveal a complex interplay of personal, institutional, and socio-cultural factors that significantly impact the professional development trajectories of these students.

The predominance of time management challenges (95.1%) and motivational issues (89.2%) among personal barriers aligns with findings from similar studies in developing countries. A recent study by Aldakhil et al. in Saudia Arabia identified time constraints as the primary barrier to CPD engagement, attributing this to the demanding nature of medical education curricula.[14] The high prevalence of motivational deficits in the current study parallels findings from a research study by Ishida et al, which emphasized the role of inadequate mentorship and limited awareness of CPD benefits in reducing student engagement.[15] Financial constraints, affecting 53.9% of participants, represent another significant barrier to CPD participation. This finding corresponds with a research study in the United Arab Emirates, which demonstrated how economic limitations disproportionately affect students from lower-income backgrounds, restricting their access to professional development opportunities.[16] The intersection of financial and motivational barriers suggests the need for integrated interventions that address both economic and psychological barriers to participation.

The study reveals significant disparities in institutional support and resource accessibility, with only 49% of participants reporting adequate institutional support and 42.2% finding CPD opportunities accessible. These findings mirror a study by San et al., which identified similar infrastructure limitations and mentorship inadequacies.[17] The geographical disparities in resource distribution between metropolitan and rural areas highlight systemic challenges in implementing effective CPD programs within resource-constrained settings. A scoping review by Al-Omary et al. emphasizes the crucial role of institutional policies in promoting the culture of lifelong learning. Their findings suggest that structured mentorship programs and mandatory CPD requirements could enhance engagement, particularly relevant in the context of Pakistan where institutional oversight remains limited.[18]

The significant prevalence of gender-specific challenges (55.9%) and cultural constraints (49%) reflects broader societal patterns documented in recent reports on Pakistan's widening gender gap. These findings align with a study by Oon-arom et al., which identified similar barriers facing female medical students, including resistance to travel and the prioritization of domestic responsibilities over professional development.[19] The strong statistical associations between gender and socio-cultural barriers ($p < 0.001$) highlight the need for targeted interventions. A research study by Shorey et al. provides valuable comparative insights, highlighting how conservative cultural practices can restrict educational opportunities for female medical students, paralleling the experiences observed in our study.[20]

Interpreting these findings requires consideration of several limitations. The single-institution focus may limit generalizability across different regions of Pakistan. The online survey distribution might have excluded students with limited internet access, potentially introducing selection bias. Self-reported data may be subject to response bias, particularly regarding sensitive topics like financial constraints. The cross-sectional design prevents causal inference, limiting the ability to assess the long-term impact of these barriers. Future research should address these limitations through multi-center studies across diverse geographical regions and mixed-methods approaches to validate self-reported data.

Based on the findings of this study, the key recommendations include; the implementation of e-learning platforms, mobile applications, and virtual learning environmentsto enhance accessibility for medical students, particularly those in remote or underserved areas. Financial support mechanisms, including targeted scholarship programs, subsidized CPD opportunities, and need-based grant systems should be established. Addressing gender-specific challenges is critical, such as the provision of safe transportation options, the development of flexible scheduling systems, and the establishment of dedicated mentorship programs tailored to the needs of female students. Strengthening institutional support systems is imperative, which involves integrating CPD activities into formal curricula, providing structured mentorship programs, and ensuring adequate resource allocation for professional development initiatives.

Conclusion

This study provides compelling evidence of significant barriers to CPD participation among medical students in Pakistan. Addressing these challenges requires a holistic

approach that encompasses personal motivation, financial support, institutional infrastructure, and socio-cultural considerations. Tailored interventions that consider these dimensions are essential to enhance CPD engagement and, consequently, the professional development of medical students in similar contexts.

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Authors Contribution:
RMK, JA, SA: Contributed to the conceptualization and design of the study.
JA, SA,SA, SM, SH and MUKL: Responsible for data collection and analysis.
RMK, JA, SA, SA,SM, SH and MUKL: Contributed to drafting the manuscript and critically revising it for important intellectual content.
All authors have made substantial contributions to the manuscript, have reviewed and approved the final version.

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