Proceedings S.Z.M.C. Vol: 40(1): pp. 39-47, 2026. *PSZMC-1013-40-1-2026*

ORIGINAL ARTICLE

Emigration Intentions and Associated Factors Among Dentists and Dental Students in Islamabad, Pakistan: A Cross-Sectional Study

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Received: July 17, 2025, **Accepted:** Mar 28, 2026, **Published:** Mar 31, 2026.
DOI: https://doi.org/10.47489/szmc.v40i1.803
Data Availability: The corresponding author can provide access upon request.
Funding: No funding received
Competing Interests: No competing interest to declare.

Author Contributions:
MA, HHM, MT, HH, MM, KMS:

- Each author made substantial contributions to the conception and design of the study or acquisition, analysis, and interpretation of data.
- All authors were involved in drafting the manuscript or critically revising it for important intellectual content.
- All authors approved the final version of the manuscript to be published and agree to be accountable for all aspects of the work

ABSTRACT

Background: Brain drain refers to the migration of highly skilled professionals from their home country to more developed nations. In Pakistan, an increasing number of dental healthcare workers are considering emigration, leading to a shortage of professionals in the field.
Objective: The objective of this study is to assess the key factors driving the emigration intentions of dental healthcare workers in Pakistan.
Method: A cross-sectional study was conducted in dental colleges in Islamabad over a two-month period using convenience sampling. Data were collected from 361 dentists and dental students through a self-developed structured questionnaire distributed both physically and electronically. The tool comprised four domains: demographic characteristics, emigration intentions, push and pull factors, and retention strategies. Content validity was assessed through expert review, and reliability testing demonstrated a Cronbach's alpha of 0.70. Data were analysed using SPSS version 26. Descriptive statistics were computed, and associations between categorical variables were assessed using the Chi-square test, with $p \leq 0.05$ considered statistically significant.
Results: A total of n=246 (68.1%) participants expressed intentions to move abroad, primarily due to economic factors (n=208, 56.8%), better living standards (n=203, 56.2%), and financial independence (n=188, 52.1%). Workplace challenges, including low salaries (n=203, 56.2%), limited career progression (n=184, 50.9%), and job insecurity (n=114, 31.6%), were significant push factors. Among those intending to stay in Pakistan (n=115, 31.9%), family commitments (n=70, 19.4%), a desire to serve the country (n=51, 14.1%), and difficulties adjusting abroad (n=48, 13.3%) were the primary reasons. Participants emphasized increased salaries (n=294, 81.4%), improved work environments (n=246, 68.1%), and enhanced postgraduate training opportunities (n=176, 48.8%) as crucial measures to mitigate brain drain.
Conclusion: The findings indicate that economic instability and limited career growth opportunities are the primary factors driving dental professionals to consider emigration. These issues must be addressed through financial reforms, better professional infrastructure, and clear career pathways to retain skilled professionals. Sustainable policies must be implemented to strengthen the healthcare system and ensure long-term national development.
Keywords: Career choice, Emigration, Employment, Work Environment.

INTRODUCTION: Brain drain refers to the migration of skilled professionals from their home countries to other nations in search of better living conditions, higher income, and improved professional opportunities. This phenomenon has become an increasing concern for healthcare systems, particularly in low- and middle-income countries, where the loss of trained professionals affects both the availability and quality of healthcare services. In Pakistan, a growing number of medical students and graduates have expressed intentions to pursue careers abroad, highlighting concerns regarding workforce retention [1]. Similar trends have also been observed among dentists in Punjab, where dissatisfaction with professional prospects contributes to brain drain within the dental workforce [2]. Comparable migration patterns have been reported in other settings, such as Nigeria, indicating that this issue reflects a broader global challenge [3].

The migration of healthcare professionals has important implications for national healthcare systems. Evidence from Pakistan suggests that medical students are aware of the adverse socio-medical impact of brain drain on the country [4]. International studies have shown that postgraduate uncertainty and limited professional opportunities significantly influence emigration intentions among healthcare workers [5]. A rapid review from West Africa also emphasized that structural and systemic challenges consistently drive physician migration [6]. In addition to workforce shortages, migration can negatively affect healthcare delivery and patient safety by increasing the burden on the remaining workforce [7].

Within Pakistan, dissatisfaction with career structure and limited future opportunities has been identified as a major factor influencing migration decisions among junior doctors [8]. Similar findings have been reported among young medical graduates in Lahore, reflecting an ongoing risk of brain drain [9]. In dentistry, migration has also been linked to limited opportunities for professional development among oral health professionals [10]. Evidence from Karachi further supports this trend, indicating that multiple factors influence migration intentions among dental practitioners in Pakistan [11].

Long-term evidence shows that the outflow of healthcare professionals from Pakistan has persisted over several decades, contributing to workforce challenges [12]. Political instability and economic uncertainty further accelerate the migration of highly skilled professionals [13]. International literature indicates that healthcare workers are attracted to high-income countries due to better financial incentives, working conditions, and career pathways [14]. These findings suggest that migration is driven by a combination of push and pull factors.

Medical brain drain remains a critical challenge for Pakistan's healthcare sector, where the loss of trained professionals further weakens an already strained system. Despite increasing attention to this issue, limited research has specifically examined emigration among dental professionals in Pakistan. Therefore, this study aimed to assess emigration intentions among dentists and dental students in Islamabad and to identify the factors influencing these intentions.

METHODOLOGY: A quantitative cross-sectional study was conducted over a two-month period (April–May 2025) in two dental colleges in Islamabad, Pakistan: Islamabad Medical and Dental College (IMDC) and Riphah International University. The study included dental students and practicing dentists affiliated with these institutions. Participants were recruited using convenience sampling. A total of 361 dentists and dental students participated in the study, exceeding the minimum calculated sample size of 342 participants. Data were collected using a self-developed structured questionnaire distributed both in printed form and electronically through an online survey. The questionnaire consisted of four domains. The first section collected demographic information, including age, gender, and professional designation, as well as participants' intentions regarding migration. The second section included questions related to motivations for emigration. The third section explored reasons for remaining in Pakistan, while the fourth section assessed participants' recommendations for reducing brain drain in the healthcare sector.

Content validity of the questionnaire was assessed through expert review by faculty members in dental education and public health. The questionnaire was pilot tested on 30 participants to assess clarity and internal consistency. Reliability analysis demonstrated acceptable internal consistency, with a Cronbach's alpha value of 0.70. The inclusion criteria consisted of dental students and dentists currently enrolled or practicing in the selected institutions in Islamabad. Participants who declined to participate or submitted incomplete questionnaires were excluded from the analysis.

Ethical approval for the study was obtained from the Institutional Review Board of the respective institution (Approval No: 264; Date: 04-04-2025). Participation was voluntary, and informed consent was obtained from all participants prior to data collection.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 26. Descriptive statistics, including frequencies and percentages, were calculated for all variables. Associations between categorical variables were assessed using the Chi-square test, and a p-value ≤0.05 was considered statistically significant.

RESULTS: The study population (n = 361) comprised predominantly female participants (n = 285, 78.9%), while male respondents accounted for n = 76 (21.1%). Regarding professional designation, dental students formed the majority (n = 204, 56.5%), while dentists accounted for n = 157 (43.5%) of respondents. Notably, n

= 246 (68.1%) of participants reported plans to go abroad, compared with n = 115 (31.9%) who intended to remain in Pakistan.

The study identified several workplace challenges affecting dental professionals in Pakistan. Low salary emerged as the most frequently reported issue, followed by limited career progression and job insecurity. Other concerns included toxic work environments, poor hospital hygiene, high stress levels, and workplace favouritism. Additional factors such as unprofessional behaviour, safety concerns, and long working hours were also reported, while media hostility was the least cited issue. Detailed distribution of these factors is presented in Table 1

Table 1: Workplace challenges reported by participants in Pakistan (n=246)

Regarding the work environment in Pakistan	Frequency	Percentage (%)
Lack of progressive opportunities	184	74.80
Toxic work environment	102	41.46
Poor hygiene in the hospital	99	40.24
High-stress levels	95	38.62
Low Salary	203	82.52
Unprofessional attitude	56	22.76
Safety	48	19.51
Job security	114	46.34
Favoritism	75	31.49
Media hostility	8	3.25
Long-hour shifts	29	11.79

Challenges in training environments were also significant. Economic constraints were the most cited factor (63.82%, n=157), followed by a lack of structured training (57.72%, n=142) and the least frequently reported factor was limited autonomy in training (n = 53, 21.54%) as shown in Figure 1.

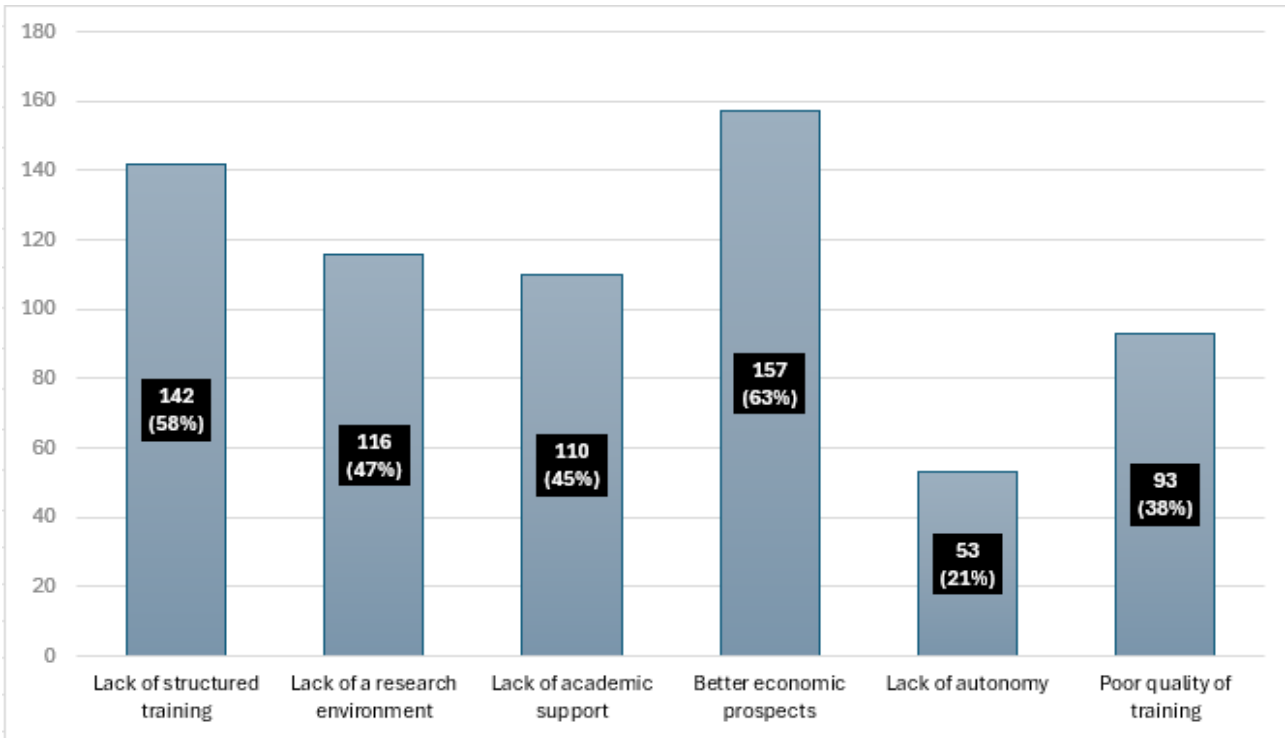

Figure 1: Training-related factors influencing migration intentions (n=246)

Personal motivations for emigration were primarily economic. Career prospects (84.55%, n=208) and a better standard of living (82.52%, n=203) were dominant factors, alongside financial independence (76.42%, n=188) as shown in Figure 2.

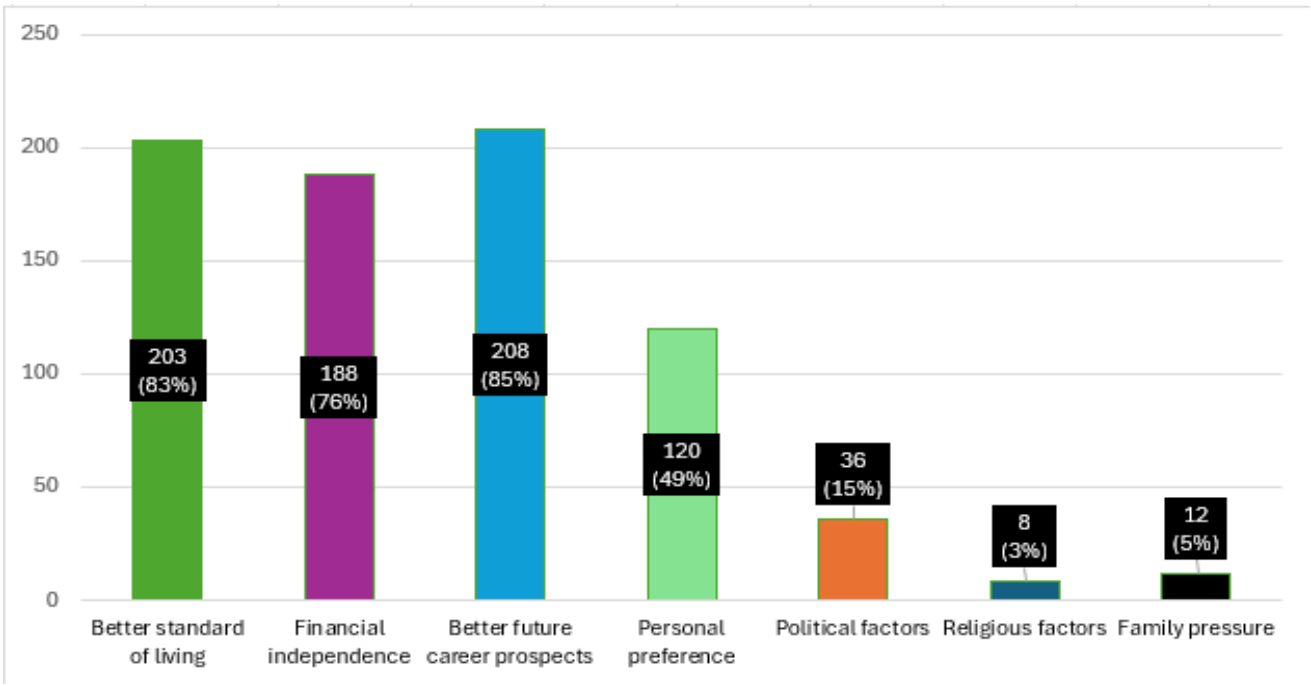

Figure 2: Personal factors leading to emigration (n=246)

Despite emigration trends, 60.98% (n=150) expressed intentions to return to Pakistan, suggesting that many participants maintained long-term ties to their home country. Among those choosing to stay in Pakistan (n=115),

family commitments (60.87%, n=70) were the primary reason, followed by a desire to serve the nation (44.35%, n=51) and difficulties adjusting to life abroad (41.74%, n=48). The distribution of other factors is presented in Table 2.

Table 2: Reasons to stay in Pakistan (n=115)

Why do you want to stay in Pakistan?	Frequency	Percentage (%)
Desire to serve the nation	51	44.35
Hectic lifestyle abroad	31	26.96
Professional satisfaction	30	26.09
Adequate alternative finances	22	19.13
Satisfied with the job and training here	23	20.00
Lack of financial resources	12	10.43
Difficult foreign examination	27	23.48
Family commitments	70	60.87
Uncomfortable practicing in 2nd language	16	13.91
Visa problem	12	10.43
Difficulty in living alone	48	41.74
Fear of the unknown	35	30.43
Quality of training	8	6.96
Religious factors	28	24.35
Political factors	14	12.17

To mitigate the brain drain, professionals (n=361) emphasized financial and systemic reforms. Increased salaries (81.4%, n=294), better work environments (68.1%, n=246), and improved facilities (64.0%, n=231) were the top priorities. Other recommendations are summarized in Table 3.

Table 3: Recommendations to prevent brain drain (n=361)

Recommendations to prevent brain drain	Frequency	Percentage (%)
Increase pay	294	81.4
Decrease duty hours	152	42.1
Implement a better service structure	145	40.2
Develop a better working environment	246	68.1
Improved facilities	231	64.0
Build more medical colleges	54	15.0
Build more quality teaching hospitals	132	36.6
Increase opportunities for PG training	176	48.8

Change in teaching style	99	27.4
Introduce modern methods	194	53.7

Chi-square analysis was performed to assess associations between selected demographic variables and migration-related outcomes (Table 4). No significant association was found between gender and intention to migrate abroad ($\chi^2 = 0.003$, df = 1, p = 0.953). However, a statistically significant association was observed between professional designation and migration intention, with dental students more likely to express plans to migrate compared with practicing dentists ($\chi^2 = 11.661$, df = 1, p = 0.001) (Table 4). Similarly, no significant association was found between gender and intention to return to Pakistan after migration ($\chi^2 = 0.303$, df = 2, p = 0.859). In contrast, professional designation showed a significant association with return intentions ($\chi^2 = 14.246$, df = 2, p = 0.001). A significant association was also observed between professional designation and perceptions of better economic prospects after training abroad ($\chi^2 = 12.035$, df = 2, p = 0.002).

Table 4: Association of demographic variables with migration related outcomes (Chi-square analysis)

Variable	Outcome	χ^2	df	p-value
Gender	Intention to migrate	0.003	1	0.953
	Intention to return	0.303	2	0.859
Designation	Intention to migrate	11.661	1	0.001
	Intention to return	14.246	2	0.001
	Perception of economic benefit	12.035	2	0.002

DISCUSSION: The present study highlights a considerable intention among dental professionals and students in Pakistan to migrate abroad. Similar trends have been reported among medical students and graduates in Pakistan, where financial instability and limited career advancement opportunities were identified as key determinants of migration [1]. Comparable concerns have also been reported among dentists in Punjab who expressed dissatisfaction with salary structures and professional growth opportunities [2]. Similar patterns have also been observed in other low- and middle-income countries, including Nigeria, where inadequate pay and limited career progression strongly influence physicians' migration decisions [3]. These findings indicate that healthcare workforce migration is driven by systemic challenges common across developing healthcare systems. However, the magnitude and interaction of these factors may vary depending on local economic conditions and healthcare infrastructure.

Workplace challenges emerged as important contributors to migration intentions in the present study. Participants frequently reported concerns related to inadequate salaries, limited career progression, job insecurity, and unfavorable working conditions. Previous studies in Pakistan have similarly identified financial dissatisfaction and limited career development opportunities as major drivers of brain drain among healthcare professionals [4]. Evidence from Nigeria also highlights job insecurity and lack of professional incentives as key push factors influencing physician emigration [5], while broader reviews from West Africa emphasize economic hardship and weak employment structures [6]. In addition, healthcare workforce migration has been shown to adversely affect patient safety and system performance by increasing the burden on the remaining workforce [7]. In Pakistan, dissatisfaction with training quality and limited career prospects has also been identified as a significant contributor to migration intentions among junior doctors [8], while concerns regarding career uncertainty have been reported among young medical graduates in Lahore [9]. These findings collectively suggest that workplace dissatisfaction operates alongside systemic constraints to drive migration decisions.

Training-related factors also appear to influence migration decisions. Participants reported concerns regarding limited access to structured training programs and insufficient academic support. Similar findings have been observed among Iranian dentists who migrated to Canada, where dissatisfaction with training opportunities in their home country contributed to migration decisions [10]. Studies conducted in Pakistan have likewise reported dissatisfaction with postgraduate training opportunities among dental professionals [11]. Long-term analyses further indicate that Pakistan has experienced a sustained loss of healthcare professionals due to

limited investment in professional training and career development programs [12]. However, differences in training structures and accreditation systems across countries may influence the extent to which these factors contribute to migration. Strengthening training infrastructure and expanding postgraduate opportunities may therefore help reduce migration intentions among healthcare professionals.

Economic considerations were also prominent motivations for migration in the present study. Participants frequently identified improved career prospects, financial stability, and better standards of living as key factors influencing their migration intentions. Previous research has similarly reported that economic instability and limited professional security contribute significantly to the migration of healthcare professionals from Pakistan [13]. Comparable evidence from Turkey highlights financial incentives and career security as major determinants of physician migration [14], while studies from Iran emphasize the role of economic stability in retaining healthcare professionals [15]. These findings indicate that migration decisions are shaped by a complex interaction of financial, professional, and social factors, although their relative importance may differ across settings. Despite strong migration intentions, many respondents expressed a willingness to return to Pakistan in the future. Similar patterns have been reported among internationally trained nurses, who often view migration as a temporary strategy for gaining professional experience before returning to their home countries [16]. Studies conducted among medical students in Pakistan have also suggested that some graduates intend to contribute to the national healthcare system after receiving training abroad [17]. Among those choosing to remain in Pakistan, family commitments and a sense of social responsibility were important factors. Comparable findings have been reported among nursing students in Ghana, where strong family and cultural ties influenced decisions to remain in the home country [18]. However, persistent financial and professional challenges may ultimately override these intentions, as suggested by studies reporting shifts toward migration over time [19,20].

Participants in this study also emphasized the need for policy interventions to address healthcare workforce migration. Suggested measures included improving salary structures, strengthening working conditions, and expanding professional development opportunities. Previous studies have similarly recommended financial incentives, improved job security, and structured career pathways as strategies to reduce physician migration in developing countries [21]. Evidence from Pakistan further highlights the need for comprehensive policy reforms aimed at strengthening professional infrastructure and career development opportunities for healthcare workers [22]. However, the implementation of these strategies requires sustained financial investment and coordinated policy efforts, which may be challenging in resource-limited settings. Global evidence further indicates that healthcare workforce migration is a widespread phenomenon across developing regions [23]. Studies from Nigeria have demonstrated that inadequate pay and limited career progression remain key drivers of physician migration [24]. These findings reinforce that brain drain is influenced by systemic challenges shared across multiple low- and middle-income countries, although contextual differences must be considered when interpreting these comparisons.

This study has several limitations that should be considered when interpreting the findings. The use of convenience sampling and inclusion of only two dental colleges in Islamabad may limit the generalizability of the results to other regions of Pakistan. In addition, the reliance on self-reported responses may introduce response bias. The cross-sectional design also limits the ability to establish causal relationships between the identified factors and migration intentions. Furthermore, the relatively small pilot sample used to assess questionnaire reliability may affect the robustness of instrument validation. Differences in healthcare systems and socio-economic conditions across countries may also limit the direct comparability of international findings. Despite these limitations, the study provides valuable insights into the factors influencing migration intentions among dental professionals in Pakistan. Future research involving larger and more diverse samples across multiple institutions would help provide a more comprehensive understanding of healthcare workforce migration and support the development of effective, context-specific policy strategies.

CONCLUSION: This study identifies economic instability, limited career growth, and poor working conditions as key factors driving the emigration of dental healthcare professionals from Pakistan, with a majority expressing intentions to migrate. However, willingness to return highlights the potential for retention through targeted reforms. To curb brain drain and strengthen the healthcare sector, Pakistan must implement sustainable policies that enhance financial incentives, improve academic and professional opportunities, and

foster a supportive work environment. These measures are crucial for revitalising healthcare institutions, advancing medical education, and ensuring long-term national development.

Acknowledgements:
The authors extend their appreciation to the invaluable support of Miss Kanwal, our biostatistician, for her expert guidance in data analysis and statistical interpretation. Also, acknowledge the use of AI-based tools for language editing and clarity enhancement. The final content, interpretation, and conclusions remain the sole responsibility of the authors

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