Original Article

Evaluating Communication Practices between Dentists and Dental Technicians

Hammad Hassan[*1], Hassan Tariq[2], Aneela Qaisar[2], Muhammad Imran Ameer Malik[3], Aamir Rafique[3]

[1]University of Health Sciences, Lahore, Pakistan

[2]FMH Institute of Allied Health Sciences, Lahore, Pakistan

[3]de' Montmorency College of Dentistry, Lahore, Pakistan

[*]Corresponding Author

Hammad Hassan

hammadhassanh@gmail.com

Submission: 9th September, 2024
First revision: 3rd November, 2024
Second revision: 5th December, 2024
Accepted: 12th December, 2024

DOI: 10.51846/jucmd.v4i1.3474

Abstract

Objective: To evaluate the effectiveness of current communication practices and the understanding of technicians regarding written prescriptions.

Methodology: This Questionnaire based cross-sectional study was conducted in Lahore, from Aug 2023 to May 2024, to assess communication quality between dentists and dental technicians. The sample consisted of 50 dental technicians currently employed in ten different private and public dental laboratories in Lahore, Punjab. The selection of participants was carried out using non-probability convenient sampling. Undergraduate students pursuing dental technology were excluded from the study to maintain a focus on experienced professionals who actively participate in dental restoration processes. Data were collected using a modified standardized questionnaire, including items on demographics and communication quality. Data was collected, reviewed for completeness, and analyzed using SPSS v24.

Results: Most dental technicians (n=38, 68%) possess a BSc degree in dental technology with work experience ranging from 1 to 45 years. Communication preferences varied notably across workplace settings. About 46% (n=23) of the technician favored direct communication. There was a significant difference in communication modes between these settings (p=0.001), with a preference for personal visits, particularly among technicians from teaching institutes (n=23, 88.5%). The majority (n=42, 84%) reported positive receptivity from dentists, and 62% (n=31) indicated that communication was encouraged, particularly in teaching institutes. Issues regarding blank prescription cards were mixed, with 36% (n=18) never receiving them and 50% (n=25) consulting clinicians in such cases. Only 36% (n=18) of technicians felt they received sufficient information.

Conclusion: Most technicians prefer direct communication from dentists, particularly in teaching institutes, compared to those in commercial labs who favor phone calls. A major concern was the lack of sufficient information and blank patient prescriptions from dentists. Addressing these gaps through standardized protocols, modern digital tools, and enhanced training can improve patient outcomes.

Keywords: Communication, Dentist, Dental technicians, Prescription card.

Introduction

Dentistry is a challenging field that requires meticulous clinical and laboratory procedures. For successful outcomes in this discipline, it is crucial to maintain close communication between dental practitioners and technicians. Although dental technicians do not interact directly with patients, they play a vital role in fabricating prostheses based on the specifications provided by dental practitioners.[1] Effective communication between dentists and technicians is essential for creating high-quality and aesthetically pleasing prostheses. By employing advanced communication techniques, practitioners can ensure that the final restoration not only looks visually appealing but also performs optimally and replicates the missing structure precisely.[2] It is imperative for dentists to articulate their requirements clearly to the technicians. Effective communication, particularly through prep guides, significantly improves the quality of zirconia crowns and overall prosthetic treatments.[3] Despite the importance of collaboration in dental treatments, communication gaps can lead to errors in prosthesis fabrication, such as color mismatches, sizing issues, and anatomical inaccuracies.[4,5] These errors compromise patient care, increase treatment time, and incur additional costs. Traditional communication, like handwritten prescriptions and phone calls, often lacks clarity and detail, resulting in misunderstandings.[6, 7] Studies show that work authorization forms can improve communication, but they must include sufficient space and diagrams.[8,9] Modernizing communication methods and training is essential to reduce errors and enhance care quality.[7, 10]

Dental technicians often face ethical concerns when receiving poor quality impressions and records from dentists, which can hinder effective collaboration and lead to decreased treatment quality.[11] The introduction of digital communication tools and standardized forms has been seen as a way to improve clarity and reduce ambiguities, yet adoption varies widely and is often incomplete.[12] Effective communication ensures that prostheses meet both functional and aesthetic standards, crucial for patient satisfaction and clinical success. However, persistent gaps in communication can lead to errors in prosthesis fabrication, unnecessary costs, and increased treatment times, negatively affecting both patient outcomes and professional efficiency.[4] Given the shift towards digital technologies in dentistry, understanding the dynamics of current communication practices and identifying areas for improvement is essential for optimizing workflows and enhancing the overall quality of dental healthcare services.[13] The aim of this study is to assess

the effectiveness of communication practices between dentists and dental technicians and to understand how these practices impact the quality of dental prostheses and patient outcomes.

Methodology

This cross-sectional observational study was conducted over a period from August 2023 to May 2024, after the approval of the Institutional Review Board of de' Montmorency College of Dentistry (No. 1764/DCD), and the participating institute (IRB FMH÷92/07/24iRB 1192) and laboratories, focusing on assessing the quality of communication between dentists and dental technicians within the context of private and public dental laboratories in Lahore.

The sample consisted of 50 dental technicians currently employed in ten different dental laboratories across Lahore. The selection of participants was carried out using non-probability convenient sampling. Undergraduate students pursuing dental technology were excluded from the study to maintain a focus on experienced professionals who actively participate in dental restoration processes. Data collection was performed using a modified version of a standardized questionnaire originally developed by Juszczyk et al. adapted to better fit the local laboratory conditions.[14] This self-administrated questionnaire was designed to capture detailed information regarding the clarity and comprehensiveness of written instructions on work authorization forms and the overall quality of communication between dental practitioners and technicians. The questionnaire consisted of 14 close ended questions and two sections. The first sections involve demographics, while the second section has items targeting quality of communications and lucidity of the written instructions from the dentist to the technician. The questionnaire was validated and later pilot tested on 5 subjects and underwent several revisions before it was finalized. Prior to distributing the questionnaires, informed consent was obtained from all participants to ensure ethical standards were maintained. After participants completed the questionnaires, they were immediately collected and reviewed for completeness. Any forms found to be incompletely or incorrectly filled were promptly returned to the participants for correction on the spot, ensuring the integrity and completeness of the data before analysis.

The data collected during this study was systematically recorded and subsequently analyzed using the Statistical Package for the Social Sciences (SPSS) software, version 24, by IBM Corporation, USA. Initially, descriptive statistics were employed to determine the frequencies and percentages of the responses, providing a foundational understanding of the data distribution and primary trends within the dataset. Statistical analysis included the application of chi-square tests to explore the associations between the quality of written communications and the perceived effectiveness of interactions between dental technicians and dentists. A p value of less than or equal to 0.05 was taken as significant.

Results

A total of 50 technicians responded, the response rate was 100%. The demographical data, educational qualification, work experience and specialization areas of the respondents is tabulated in Table 1. Minimum age of technician started from 20 years and maximum age was 65 years. Mean age of technicians was 29.4±11.22. The technicians had different qualification levels and were distributed into four groups i.e. Graduate with BS in Dental Technology, B.Sc Dental Technology, F.Sc with diploma in Dental Technology, and Matriculation with diploma in Dental Technology.. The demographical information of the participants, work experience and areas of specialization are exhibited in Table 1

Table 1: Demographic and Professional Profile of Participants

Demographics	n	%
Gender		
Male	42	84
female	8	16
Qualification		
BS Dental Technology	3	6
B.Sc Dental Technology	38	68
F.Sc	0	0
Matriculation	9	18
Workplace Type		
Teaching Institute	26	52
Commercial Laboratories	24	48
Specialization		
Crown and Bridge	20	40
General Dental Technician	14	28
Prosthodontics	12	24
Orthodontics	4	8

The results revealed that communication preferences among dental technicians varied by workplace setting (Table 2). Technicians in teaching institutes favored direct communication with clinicians, while those in commercial laboratories often preferred indirect channels. Personal visits were the preferred communication method overall, though phone calls were more common in commercial settings (Table 2). Most technicians reported positive clinician attitudes, including receptiveness to input and encouragement of communication. However, issues arose with handling blank prescription cards, as well as dissatisfaction regarding the sufficiency of information provided by dentists (Table 2).

Table 2: Comparison of communication quality and modes between technicians in teaching institutes and commercial laboratories

Variables	n(%)	Teaching Institutes n(%)	Commercial Laboratories n(%)	X^2	p-value
Preferred Communication Method with Dentists					
Direct communication	23(46)	13(50)	10(41.7)	66.14	<0.001
Through lab manager	10(20)	1(3.8)	9(37.5)		
Through practice manager	8(16)	8(30.8)	0(0)		
Through collection manager	9(18)	4(15.4)	5(20.8)		
Current Communication Method with Dentists					

Variables	n(%)	Teaching Institutes n(%)	Commercial Laboratories n(%)	X^2	p-value
By phone	13(26)	1(3.8)	12(50)		
Using lab prescription card	9(18)	2(7.7)	7(29.2)	75.08	<0.001
Personal visits	28(56)	23(88.5)	5(20.8)		
Is Communication Welcomed by Dentists?					
Yes	42(84)	24(92.3)	18(75)	53.83	<0.001
No	8(16)	2(7.7)	6(25)		
Is Communication Encouraged by Dentists?					
Yes	31(62)	20(76.9)	11(45.8)	56.22	<0.001
No	19(38)	6(23.1)	13(54.2)		
Do Dentists Act on Technician Suggestions?					
Yes	45(90)	25(96.2)	20(83.3)	53.32	<0.001
No	5(10)	1(3.8)	4(16.7)		
Are Technicians Expected to Follow Instructions Strictly?					
Yes	5(10)	2(7.7)	3(12.5)	51.32	<0.001
No	45(90)	24(92.3)	21(87.5)		
Handling of Blank Patient Work Prescriptions					
Accept and proceed with the work	3(6)	2(7.7)	1(4.2)		
Consult clinicians for guidance	25(50)	11(42.3)	14(58.3)	52.87	<0.001
Reject the work offered	4(8)	3(11.5)	1(4.2)		
Sufficiency of Information Provided by Dentists					
Yes	18(36)	11(42.3)	7(29.2)	51.95	<0.001
No	32(64)	15(57.7)	17(70.8)		

Discussion

This study evaluated communication practices between dentists and dental technicians in Lahore, focusing on technicians' understanding of written prescriptions. Conducted from August 2023 to May 2024, the research surveyed 50 experienced dental technicians working in private and public dental laboratories. The findings revealed a preference for direct communication, especially among those in teaching institutes, while technicians in commercial labs favored phone calls. Most technicians reported positive communication from dentists, but concerns were raised about insufficient information and the handling of blank prescription cards. The study highlights the need for standardized communication protocols and better information-sharing practices to enhance the quality of dental care and patient outcomes.

The demographic composition of the participants in this study reflected a predominant male presence (Table 1). However, a significant disparity was observed in the average age of technicians, 29.4 years in the current study versus 45.6 years in previous studies, suggesting a younger workforce in Lahore's dental laboratories. A concerning finding was that 18% of technicians lacked formal education in dental technology, a reflection of the deficiency of regulatory oversight in Pakistan.[15,16] Moreover, the impact of educational background on communication was evident, with technicians from less educated backgrounds feeling their input was less valued. This emphasizes the critical role of education in enhancing communication skills within the dental field.[8]

Communication patterns varied significantly, with 46% of technicians preferring direct communication with clinicians (Table 2), a stark contrast to the 87% observed in the United Kingdom.[9] This discrepancy could stem from different organizational structures and the perceived effectiveness of communication skills and management in different cultural contexts.[17] The qualifications of technicians markedly influenced their interaction with clinicians, where higher qualified individuals reported more positive responses to their suggestions.[17,18] Regarding the handling of prescriptions, 64% of technicians reported receiving blank prescription cards, mirroring findings from earlier studies like Juszczyk et al.[14] This recurrent issue underscores a global challenge in dental practice, where inadequate written instructions compromise the quality of dental prostheses.[19] Historical and contemporary studies

consistently reveal that poorly completed work authorization forms and unclear instructions are prevalent issues that hinder effective communication between dentists and technicians.[5,19,20]

A study in Casablanca revealed that traditional communication methods like written prescriptions and phone calls still dominate, but often lead to misunderstandings due to incomplete or unclear instructions.[21] This underscores the need for improved communication training and the adoption of modern technologies, also including the standardization of work authorization forms and the integration of modern communication technologies.[21, 22] In the present study, most respondents preferred direct communication through personal visit and phone call, underscoring a need for the introduction of modern technology and fast and effective communication through digitizing the system by involving the web and phone applications. Moreover, it is imperative to integrate communication skills into the curriculum of dental education and to provide continuing education opportunities for practicing professionals. By fostering a deeper understanding of each other's roles and enhancing interaction skills, the dental industry can improve the quality of care delivered to patients and reduce the incidences of miscommunication that lead to clinical errors.[23, 24]

Limitations

The limited sample size owing to the small number of qualified technicians is one of the limitations of the study, therefore, the findings cannot be generalized to the broader population. Moreover, a larger and diverse sample is recommended for future studies. The present study not only highlights the existing gaps in communication between dentists and dental technicians, but also suggests that improving these interactions through education, regulatory measures, and technological advancements could significantly enhance the outcomes of dental treatments. To improve dentist-technician communication, adopt digital tools like exocad for precise case sharing and cloud systems for real-time updates. Provide training on material science for dentists and occlusal principles for technicians. Incorporate workshops and VR simulations to enhance collaboration, ensuring better workflow, accuracy, and patient outcomes.

Conclusion

The study highlights significant differences in communication preferences between technicians in teaching institutes and commercial laboratories, with the former favoring direct communication and the latter relying more on phone calls. Key concerns include insufficient information from dentists and unclear handling of blank prescription cards, emphasizing the need for clear guidelines and improved collaboration to enhance care quality.

Source of Funding: None

Conflict of Interest: Authors declare no conflict of interest.

Authors' Contribution: HT: conception and design, critical manuscript revision, statistical expertise, methodology, investigation, data curation, draft preparation; Dr. AQ: conception and design, data analysis and interpretation, article drafting, investigation, data curation, draft preparation; HH: conception and design, critical article revision, manuscript drafting, data curation; MIAM: literature search, critical manuscript revision, data interpretation, proofreading; AR: literature search, critical manuscript revision, manuscript drafting.

Data Collection Permissions: The data was collected from FMH (IRB FMH÷92/07/24iRB 1192), Demont (No. 1764/DCD), and private labs. No data was collected from UHS, but the corresponding author obtained permission from his Department at UHS to collect data on weekends (Ref. No. UHS/DM-24/67B).

References

1. Al Mortadi N, Al-Khatib A, Alzoubi KH, Khabour OF. Disinfection of dental impressions: knowledge and practice among dental technicians. Clinical, cosmetic and investigational dentistry. 2019:103-8. . http://dx.doi.org/10.2147/CCIDE.S205144

2. Bhola S, Hellyer P, Radford D. The importance of communication in the construction of partial dentures. British Dental Journal. 2018;224(11):853-6. http://dx.doi.org/10.1038/sj.bdj.2018.431

3. Moslehi SS, Gordon B, Bottomley K, Blake M. Quality of zirconia crowns, following prep-guide, and dentist-technician communication. Balkan Journal of Dental Medicine. 2023;27(1):56-61. http://dx.doi.org/10.5937/bjdm2301056M

4. Ismail EH, Al-Moghrabi D. Interrelationship between dental clinicians and laboratory technicians: a qualitative study. BioMed Central Oral Health. 2023;23(1):682. http://dx.doi.org/10.1186/s12903-023-03395-z

5. Kausher H, Suganna M, Ali AB, Aruna DS, Ahmed ST, Punj A, Gomawi AA. Dental Technicians' Perception of the Quality of Dentists' Communication on the Fabrication of Removable Partial Dentures: A Cross-Sectional Study in Saudi Arabia. Cureus. 2023;15(11):e48245. http://dx.doi.org/ 10.7423/XJENZA.2020.1.04

6. Hassan H, Rafique A, Andleeb S, Javaid M, Ahmad H, Khalid S. Post-insertion complaints associated with complete denture prosthesis in a tertiary care hospital. Rawal Medical Journal. 2023;48(1):200-203. https://www.rmj.org.pk/?mno=81263

7. Moussaoui H, Al Jalil Z, Echajia L, Gnaoui N, El Mesbahi N. Quality and Means of Communication between Dentists and Laboratory Technicians in Fixed Prosthesis: A Study within Prosthetic Dental Technicians in Casablanca, Morocco. Open Access Library Journal. 2024;11(3):1-13. 10.4236/oalib.1111359

8. Shetty K, Mona RM, Ashy FA, Aljahdali SN, Alhazmi LS. A Comparative Assessment of the Quality of Communication and Interactions between Dental Students and Dental Technicians for Fixed Prosthesis in Saudi Arabia. Journal of Pharmaceutical Research International. 2021;32(46):16-24. http://dx.doi.org/10.9734/jpri/2020/v32i4631098

9. Berry J, Nesbit M, Saberi S, Petridis H. Communication methods and production techniques in fixed prosthesis fabrication: A UK based survey. Part 1: Communication methods. British Dental Journal. 2014;217(6):E12-E. http://dx.doi.org/10.1038/sj.bdj.2014.643

10. Ponte CD. Improving communication in the health care setting. American Journal of Health-System Pharmacy. 2011;68(8):666-7. http://dx.doi.org/10.2146/ajhp100359

11. Afzal H, Ahmed N, Lal A, Al-Aali KA, Alrabiah M, Alhamdan MM, et al. Assessment of communication quality through work authorization between dentists and dental technicians in fixed and removable prosthodontics. Applied Sciences. 2022;12(12):6263. https://doi.org/10.3390/app12126263

12. Lin GSS, Ng YS, Ghani NRNA, Chua KH. Revolutionising dental technologies: a qualitative study on dental technicians' perceptions of Artificial intelligence integration. BioMed Central Oral Health. 2023;23(1):690. https://doi.org/10.1186/s12903-023-03389-x

13. Touchstone A, Nieting T, Ulmer N. Digital transition: the collaboration between dentists and laboratory technicians on CAD/CAM restorations. The journal of the American Dental Association. 2010;141:15S-9S. https://doi.org/10.14219/jada.archive.2010.0353

14. Juszczyk A, Clark R, Radford DR. UK dental laboratory technicians' views on the efficacy and teaching of clinical-laboratory communication. British Dental Journal. 2009;206(10):E21-E. https://doi.org/10.1038/sj.bdj.2009.434

15. Cheema ZT, Hassan H, Kayani SB, Aslam T, Aziz S, Cheema AT, et al. Comparative analysis of E-learning in private and public sector medical and dental institutes in Pakistan. Pakistan Journal of Medical and Health Sciences. 2022;16(10):731-34. https://doi.org/10.53350/pjmhs221610731

16. Shah M, Darby M, Bauman D. Improving oral health in Pakistan using dental hygienists. International Journal of Dental Hygiene. 2011;9(1):43-52. https://doi.org/10.1111/j.1601-5037.2009.00434.x

17. Curtis S, Gurveer J, Gallagher JE. Clinical dental technicians in the United Kingdom: a qualitative understanding of the experiences, of practices and challenges of communication for dental professionals. Gerodontology. 2019;36(4):405-16. https://doi.org/10.1111/ger.12413

18. Takeuchi Y, Koizumi H, Imai H, Furuchi M, Takatsu M, Shimoe S. Education and licensure of dental technicians. Journal of Oral Science. 2022;64(4):310-4. https://doi.org/10.2334/josnusd.22-0173

19. Lynch C, Allen P. Quality of communication between dental practitioners and dental technicians for fixed prosthodontics in Ireland. Journal of Oral Rehabilitation. 2005;32(12):901-5. https://doi.org/10.1111/j.1365-2842.2005.01544.x

20. Koodaryan R, Hafezeqoran A. The Quality of written prescriptions received at dental laboratories in Tabriz, Iran. Global Journal of Health Science. 2016;8(12):266. https://doi.org/10.5539/gjhs.v8n12p266

21. Cheikh Y, Badre B, El Assraoui K, Karram M, Khechane Y, KAOUN K. Study of Effective Dentists Communication with Laboratory Technicians in Removable Partial Prosthesis. 2021. https://doi.org/10.31695/IJASRE.2021.33959

22. Atiq ur Rehman KN, Hammad Hassan, Muhammad Aamir Rafique, Anoosha Waseem, Abdullah Ehsan. Denture Hygiene Awareness, Practices and Instructional Guidance Among Patients in Punjab, Pakistan: A Cross-Sectional Survey. Biomedica.40:37-42. https://doi.org/10.24911/BioMedica/5-1018

23. Hassan H, Mukhtar H, Aziz S, Mukhtar H, Tarin T, Shakoor A. Perception and Attitude of Dental Students and Graduates towards Business Management as a Subject in the Dental Curriculum. National Journal of Health Sciences. 2023;8(3):112-6. https://doi.org/10.21089/njhs.83.0112

24. Evans J, Henderson A, Johnson N. The future of education and training in dental technology: designing a dental curriculum that facilitates teamwork across the oral health professions. British Dental journal. 2010;208(5):227-30. https://doi.org/10.1038/sj.bdj.2010.208