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Original Research Article

Teleconsultation: Communication Methods of Dental Surgeons in Mali

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Abstract: ***Introduction*:** Teleconsultation is a remote consultation between a practitioner and a patient, allowing the patient to obtain a medical diagnosis remotely from a healthcare professional. The patient may also be assisted by a healthcare professional to provide the doctor with accurate and precise information for diagnosis. The objective of this study was to evaluate the communication methods used by dentists in Mali during teleconsultations. ***Methodology*:** This was a descriptive cross-sectional study conducted from September to November 2025. The study included dentists registered with the Order of Dentists and up-to-date with their 2025 membership dues. Data were collected through a questionnaire developed using Kobocollect and sent to participants via WhatsApp and/or email. ***Results*:** In this study, men were the most represented group at 75.28%, and the most prevalent age groups were under 30 and 31-40, both at 56.73%. Practitioners with less than 10 years of experience were the most represented, accounting for 57.69% of cases. The private sector accounted for the largest share at 73.08%. More than half (68.29%) of participants used telephone calls for teleconsultations, followed by social media applications (59.76%), email (13.41%), and letters and faxes (2.44%). ***Conclusion*:** The communication methods used by dentists are consistent with the evolution of new techniques and technologies.

Keywords: Assessment, Method, Communication, Teleconsultation, Dentists, Mali.

INTRODUCTION

Telemedicine has been applied in various medical fields, including dentistry, where it is known as teledentistry. This involves providing real-time or offline dental treatments, such as diagnosis, treatment planning, consultation, and follow-up, via electronic transmission from remote locations [1].

Tele-dentistry can be highly valuable for peer education, enabling dentists to share clinical experiences, organize discussions and collaborative treatment-planning sessions, and participate in continuing education activities through webinars and other online platforms [2].

Teleconsultation is a remote consultation between a healthcare professional and a patient, enabling the patient to receive a medical opinion or diagnosis without being physically present. During the consultation, the patient may be assisted by another healthcare professional who helps provide accurate and detailed clinical information to support the diagnostic process.

In Malaysia, the majority of practitioners (70%) believe that teledentistry is beneficial for patients (especially those living in remote areas) [2]. In 2022, Indonesian dentists expressed a positive perception of the use of teledentistry in practice and its benefits for patients [1].

In France, Giraudeau *et al*., in their 2022 study [3], showed that only 1.2% of respondents reported having practiced teledentistry during their studies. However, among the dentists who reported having practiced teledentistry, only 8.3% revealed that they had sufficient information on telemedicine regulations to practice it.

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In Mali, according to a study by Konaté D [4], most (over 60%) general dentists agreed that tele-expertise would be beneficial in almost all dental specialties.

In Malaysia, the majority of practitioners (70%) believe that teledentistry is beneficial for patients, particularly those living in remote areas [2]. Similarly, in 2022, Indonesian dentists expressed a positive perception of the use of teledentistry in clinical practice and recognized its benefits for patient care [1].

In France, Giraudeau *et al*., in a 2022 study [3], reported that only 1.2% of respondents had practiced teledentistry during their academic training. Moreover, among the dentists who indicated that they had used teledentistry, only 8.3% stated that they had sufficient knowledge of telemedicine regulations to practice it properly.

In Mali, according to a study conducted by Konaté D [4], more than 60% of general dentists agreed that tele-expertise could be beneficial across nearly all dental specialties.

Communication methods refer to a structured set of techniques—written, oral, or non-verbal—designed to effectively transmit information, influence an audience, or manage interactions, often within a professional or organizational context. Communication can take many forms, including speech, sign language, touch, body movements, gestures, sounds, images, objects, or electronic tools.

Mali faces significant challenges in access to dental specialists. Due to increasing insecurity in certain regions and the uneven distribution of dental practitioners across the country, access to specialized oral healthcare remains limited for a large part of the population. In this context, the objective of this study was to assess the perceptions of teleconsultation among dentists and dental assistants in Mali.

METHODOLOGY

Study Setting and Design

The study was conducted in several public and private oral health facilities where dentists practice in Mali. It was a descriptive cross-sectional study carried out over a three-month period, from September to November 2025.

Study Population and Inclusion Criteria

The study population consisted of dentists practicing in Mali who were registered with the National Order of Dentists and were up to date with their 2025 membership dues. Dentists who agreed to participate and completed the questionnaire were included in the study. The research followed a quantitative approach based on a hypothetico-deductive method.

Sampling

A non-probability sampling method using a convenience sampling technique was employed. The sampling strategy aimed to include, as exhaustively as possible, all dentists practicing in Mali who were registered with the Order and up to date with their 2025 professional dues.

Study Variables

The study examined variables related to socio-professional characteristics, including age, sex, years of professional experience, and sector of activity. Variables related to communication methods were also assessed, such as telephone calls, mobile applications, email, fax, and letters.

Data Collection Tools and Procedures

Data were collected using a structured questionnaire developed through the KoboCollect platform. The questionnaire was distributed to participants via WhatsApp or email.

Data Analysis

Statistical analyses were performed using SPSS version 26, while the manuscript was prepared using Microsoft Word 2016.

Ethical Considerations

Prior to participation, informed verbal consent was obtained from all respondents before the questionnaire was sent. The survey was conducted anonymously, and strict confidentiality of the collected data was maintained.

It should be noted that this study focused solely on the perceptions of dental professionals regarding teleconsultation and did not assess the overall need for a teledentistry system in Mali, which would require considering the perspectives of both patients and all stakeholders involved in oral healthcare.

RESULTS

In this study, 94.25% of dentists registered with the Order of Dentists and up-to-date with their 2025 dues met the inclusion criteria and were included in the analysis.

Socio-Professional Characteristics

Table I: Presents the distribution of participants according to their socio-professional characteristics

Variables		**Effectif**	**Fréquency %**
Participation			
Dental surgeons		82/87	94.25
Gender			
Gender	Male	52/87	65
	Female	30/87	35
Age ranges (year)			
[25-35]		**56**	**68.29**
[36-45]		19	23.17
[46-55]		2	2.44
56 +		5	6.10
Total		82	100
Number of years of practice			
1- 5		38	46.30
6-10		20	24.40
11-15		11	13.40
16-20		1	1.20
+ 30		12	14.60
Total		82	100
Sector of activity			
Public		23	27.00
Private		57	69.00
Semi-public		2	04.00

Among the participants, 65.00% were male. The most represented age groups were 25–35 years and 36–45 years, each accounting for 68.29% of respondents. Practitioners with 1–5 years of professional experience represented the largest proportion (46.30%). Regarding the sector of practice, the private sector predominated, representing 69.00% of participants (Table I).

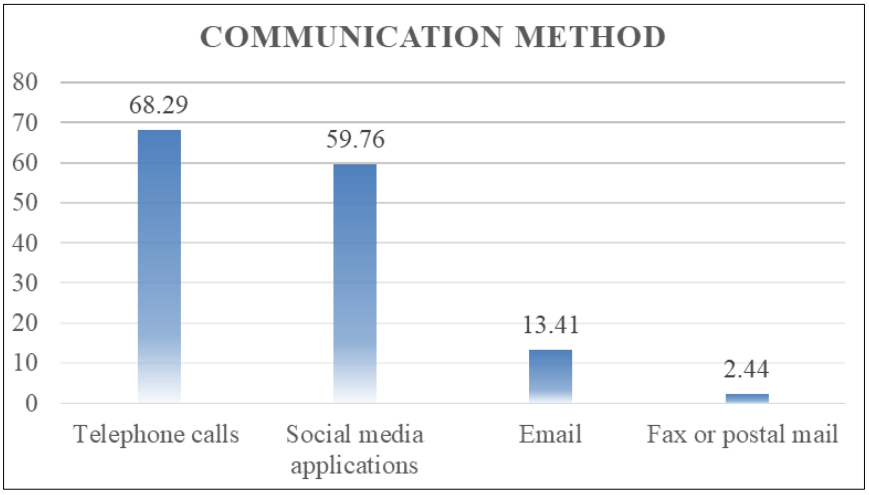

Figure 1: Distribution of Dental Surgeons according to communication methods.

Table II: Distribution of communication methods according to the year of graduation

Year of graduation	**Before 2000 N=5**	**2000-2010 N=4**	**2011-2020 N =35**	**After 2020 N=38**	**Statistical test values**
Communication methods	**n**	**n**	**n**	**n**	**n**
Telephone	2	4	27	22	Chi2=5,344084; p=0,148267
Social media applications	5	3	18	23	Chi2=4,483830; p=0,213737
Email addresses	1	1	6	3	Chi2=2,020062; p=0,568253
Letters and faxes	0	0	1	1	Chi2=0,264156; p=0,966623

The use of telephone communication methods, social networking applications, and email was more frequent among graduates after 2010 compared to those who graduated before 2010. However, this difference in communication method use was not statistically significant (p > 0.05).

Table III: Distribution of communication methods by age group

Age range	**[25-35]**	[36-45]	[46-55]	56 and over	**Statistical test values**
Communication methods	**n**	**n**	**n**	**n**	
Telephone	36	16	1	3	Chi2=2,731830; p=0,434845
Social media applications	32	10	2	5	Chi2=5,113347; p=0,163683
Email addresses	7	3	1	0	Chi2=3,108019; p=0,375269
Letters and faxes	1	1	0	0	Chi2=0,867696; p=0,833216

Communication methods appeared to be used more frequently in the 25-45 age group compared to participants over 45. However, this difference did not vary statistically between age groups (all p-values > 0.05).

Table IV: Distribution of communication methods according to the number of years of practice

years of practice	**1- 5**	**6-10**	**11-15**	**16-20**	**Plus de 30**	**Statistical test values**
Communication methods	**n**	**n**	**n**	**n**	**n**	
Telephone	21	15	10	1	9	Chi2=7,336177; p=0,119154
Social media applications	24	10	6	1	8	Chi2=1,291070; p=0,862889
Email addresses	3	4	1	0	3	Chi2=3,396881; p=0,493730
Letters and faxes	1	0	1	0	0	Chi2=2,787123; p=0,594058

The use of communication tools appeared to be higher among professionals with less than 6 years of experience. However, this difference in use did not vary statistically according to the number of years of practice (all p-values > 0.05).

Table V: Distribution of communication methods according to business sectors

business sectors	**Public**	**private**	**Semi public**	**Statistical test values**
Communication methods	**n**	**n**	**n**	
Telephone	39	16	1	Chi2=2,020202; p=0,364182
Social media applications	33	13	3	Chi2=1,977377; p=0,372064
Email addresses	8	3	0	Chi2=0,507845; p=0,775752
Letters and faxes	2	0	0	Chi2=0,932401; p=0,627382

Communication tools appeared to be used more in the public sector compared to other sectors. However, this difference was not statistically significant (all p-values > 0.05).

DISCUSSION

The objective of this study was to evaluate the communication methods of dentists in Mali. It involved 82 dentists registered with the Order of Dentists and up-to-date with their dues in 2025.

The participation rate reached 94.25% of the dentists contacted. This high response rate may be explained by the online mode of questionnaire distribution, complemented by telephone follow-up when additional information was required. The questionnaire was administered using a form developed with KoboToolbox, which likely facilitated participation by reducing constraints related to travel and practitioners' availability.

Socio-Professional Characteristics (Table1)

In this study, male practitioners represented the majority of participants (65.00%). This finding is consistent with the results reported by Konaté D [4], who found that males represented 65% of participants with a sex ratio of 1.83, and with the study conducted by Coulibaly [5], on periodontal activity among practicing dentists in Mali, which also reported a predominance of males (65%, sex ratio 1.85). This predominance may reflect gender disparities in access to higher education and professional training, which historically favored men in several developing contexts.

The most represented age groups were 25–35 years and 36–45 years, accounting for 68.29% of participants. Similar findings were reported by Konaté D [4], where the 25–35-year age group constituted the majority (68.29%). Likewise, Al Mohaya M *et al*., [6], in Saudi Arabia reported that 48% of dentists belonged to the 25–35-year age group. This distribution may reflect the growing interest of younger generations in dental education, supported by the expansion of Doctor of

Dental Surgery (DDS) training programs, which have increased training opportunities for younger cohorts.

Practitioners with 1–5 years of professional experience represented the largest proportion of respondents (46.30%). This finding aligns with that reported by Elontodé G [7], where the majority of practitioners had 1–9 years of professional experience (69.7%), and it is higher than the proportion reported by Özveren N *et al*., [2], in their study assessing knowledge and awareness of telemedicine among dentists and patients in Turkey, where 39.6% of dentists had been practicing for 1–5 years. This distribution highlights the growing presence of early-career practitioners in the dental workforce, which corresponds with the relatively young age structure observed among participants.

The private sector represented the predominant practice setting (69.00%). Comparable findings were reported by Diarra S [8], who observed that 70% of dentists practiced in the private sector. However, this proportion remains lower than that reported by Cheuk K *et al*., [9], in their study of dentists in Ontario, where 93.9% of respondents indicated private practice as their primary workplace. The predominance of private practice in Mali may be explained by the limited recruitment of dentists into the public sector (government services, local authorities, and the armed forces), which encourages many young practitioners to establish or join private practices.

According to Communication Methods

In this study, telephone calls were the most frequently used method for teleconsultations (68.29%), followed by social media applications (59.76%), email (13.41%), and letters or fax (2.44%) (Figure 1). These findings are comparable to those reported by Balsaraf SV and Chole RH [10], in India, who found that 85% of dentists were familiar with the concept of teledentistry, with the internet being the primary source of information. The use of telephone communication methods, social networking applications, and email was more frequent among graduates after 2010 compared to those who graduated before 2010. However, this difference in communication method use was not statistically significant ($p > 0.05$). The use of communication tools appeared to be higher among professionals with less than 6 years of experience. However, this difference in use did not vary statistically according to the number of years of practice (all p-values > 0.05). The use of communication tools appeared to be higher among professionals with less than 6 years of experience. However, this difference in use did not vary statistically according to the number of years of practice (all p-values > 0.05).

In contrast, findings from a French study conducted by Giraudeau N *et al*., [3] revealed a different trend: 57.1% of private practice dentists reported that they had never heard of teledentistry. Among those aware of the concept, the most commonly cited sources of information were articles in specialized journals (58%) and websites (41.6%), reflecting a more academic pathway of knowledge acquisition but without systematic integration of teledentistry into initial professional training. These differences may be explained by variations in technological integration, access to digital infrastructure, and exposure to continuing professional education across countries. They also underline the importance of strengthening the teaching of teledentistry in university curricula and postgraduate training in order to harmonize knowledge and encourage the broader adoption of digital technologies in dental practice.

Similarly, Soegyanto AI *et al*., [1], reported that most dentists preferred social media platforms as communication tools (96.01%), with WhatsApp (98.8%), Instagram (52.5%), and Facebook (28.2%) being the most commonly used applications. This trend reflects the rapid evolution of communication technologies in healthcare, where traditional communication methods such as fax and postal mail have gradually become obsolete compared with more immediate and accessible digital platforms.

In our study, the use of telephone communication tools, social networking applications, and email was more frequent among graduates after 2010 compared to those who graduated before 2010. However, this difference in communication tool use was not statistically significant ($p > 0.05$). Communication methods appeared to be used more frequently in the 25-45 age group compared to participants over 45. However, this difference did not vary statistically across age groups (all p values > 0.05). Similarly, communication tool use appeared to be higher among professionals with less than 6 years of experience. However, this difference in use did not vary statistically according to years of experience (all p values > 0.05). Communication tools appeared to be used more in the public sector compared to other sectors. However, this difference was not statistically significant (all values of $p>0.05$).

More broadly, teledentistry has emerged as an innovative communication and care delivery tool across multiple dental disciplines worldwide. In a study assessing the applicability and reliability of telemedicine in diagnostic dentistry among Saudi dentists, 148 practitioners participated in the survey. The results showed that 90% of dentists had computers in their practices, and 72% used electronic medical records incorporating radiographs and clinical images. In addition, 91% of participants owned smartphones, which were more frequently used (74.3%) than traditional cameras (54.1%) to capture and transmit clinical images through communication applications (74.3%) and email (62.2%). The authors concluded that teledentistry represents a promising tool capable of improving access

to diagnostic and dental care services, particularly for populations with limited access to dental specialists [11].

This study also presents certain limitations. First, specialists who may practice within general dental settings were not specifically included, which may limit the representativeness of the findings. Furthermore, the study did not assess the actual demand for a national teledentistry system in Mali, particularly from the perspective of patients and other oral health professionals. Future studies integrating both patient perceptions and multidisciplinary professional perspectives would provide a more comprehensive evaluation of the feasibility and relevance of implementing teledentistry systems in Mali.

CONCLUSION

This study assessed the communication methods used by dental surgeons in Mali for teleconsultations and highlighted the predominant use of telephone calls and social media applications as practical tools for remote communication. These findings suggest that digital communication technologies are already integrated into routine dental practice, although often in an informal manner.

Given the growing potential of teledentistry to improve access to care, further research is needed to evaluate the feasibility, acceptability, and implementation of structured telemedicine platforms, particularly teleconsultation systems, within the Malian dental healthcare system.

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