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CLINICAL RESEARCH:

Influence of Communication Channels on Patient Choices in Dental Services: A Market Study Influencia de los canales de comunicación en las elecciones de los pacientes en los servicios dentales: Un estudio de mercado

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ABSTRACT: The dental business is complex and multifactorial, requiring strategic market positioning and the adoption of innovative health technologies. This study analyzes the dental services market, focusing on the range of services sought and the communication channels patients use to select a clinic. A survey of 124 patients revealed that 45% trust information from their general dentist, while 24% rely on the Internet. A significant portion (63%) sought highly complex treatments. Findings suggest a need for a marketing strategy enhancing social media presence, digitalizing processes, and upskilling the medical team to meet high-demand complex treatments.

KEYWORDS: Marketing of health services; Digital technology; Health communication; Market research; Dental practice management; Doctor-patient relations; Patient web portals.

RESUMEN: El negocio dental es complejo y multifactorial, y requiere un posicionamiento estratégico en el mercado y la adopción de tecnologías sanitarias innovadoras. Este estudio analiza el mercado de servicios dentales, centrándose en la gama de servicios buscados y los canales de comunicación que utilizan los pacientes para seleccionar una clínica. Una encuesta de 124 pacientes reveló que el 45% confía en la información de su dentista general, mientras que el 24% confía en Internet. Una proporción significativa (63%) buscó tratamientos de alta complejidad. Los hallazgos sugieren la necesidad de una estrategia de marketing que mejore la presencia en las redes sociales, digitalice los procesos y mejore las habilidades del equipo médico para cumplir con tratamientos complejos de alta demanda.

PALABRAS CLAVE: Marketing de servicios de salud; Tecnología digital; Comunicación en salud; Investigación de mercados; Gestión de la práctica dental; Relación médico-paciente; Portales web para pacientes.



INTRODUCTION

Modern dental practices are increasingly dynamic, focusing not only on developing the potential of their dentists but also on operating as businesses that require strategic planning, marketing, and digital development. The dental sector is complex and multifaceted, necessitating effective positioning within the healthcare services market. Successful development of a dental clinic must fulfill two primary objectives: addressing the growing health needs of the population and leveraging the rapid advancements in innovative health technologies. Patients are seeking more integrated offerings that holistically cover their health needs.

The evolution of the dental business demands an emphasis on new products and services, such as preventive programs and advanced treatments. Digital marketing is becoming an integral part of the medical field, enhancing the ability to create positive patient experiences and. consequently, achieving higher profitability and better customer service compared to competitors (1,2). The positioning of the business environment means shaping the image of the dental practice and its medical products so that they occupy a significant part in the minds of potential users of the target market. That opinion was formulated by various analysts (3-5). There is a trend towards a new type of dental practices, developing their activities based on the progress of technical and scientific research, coupled with digital transformation in healthcare (6, 7).

The software used in dental practices enables effective scheduling of patients and staff, improves financial efficiency, and ensures documentation is based on medical evidence, guiding the digital

transformation of the dental clinic (8, 9). It includes a checklist of digital marketing activities structured around a common planning framework (10).

Potential patients might be transformed into actual patients, and these actual patients might be transformed into loyal patients. Such a strategy may allow business to be continuously repeated, thus contributing to the business' overall economic growth (11). While catering to a relatively small market of affluent clients with luxury desires, dental practices must also ensure that basic treatments become increasingly attractive, desirable, and accessible to a broader target group (12,13). An effective marketing approach requires a thorough study of patient needs, identification of hidden and unspoken needs, and development of new health services that patients have not explicitly asked for, but dream of (14). Therefore, in order to design the changes in the management of the clinic, it is necessary to clarify in detail: the target market, identify the most demanded services and explore the opportunities for professional training of the team in this direction. This will enable the clinic to offer the most effective diagnostic and treatment activities based on medical standards and high technologies.

Changing and implementing a business strategy requires clearly defining the ideal client (patient), formulating our message to them, and activating precise marketing channels to reach the target group. The healthcare marketing is important tool for the growth of healthcare business (15). According to Grover (16), the health organization (clinic) must decide which user groups and which range of needs it can serve given its resources. Healthcare marketing is specific because it combines methods from classical and social marketing (14).

This study aims to analyze the dental services market by examining the range of services sought and the communication channels through which patients select a treatment clinic.

MATERIAL AND METHODS

PARTICIPANTS

This cross-sectional survey study was conducted among 124 patients - 80 female and 44 male, with mean age 40.08 ± 4.678 , who visited a highly specialized dental clinic for the first time. The clinic caters to both children and adult patients.

ETHICAL CONSIDERATIONS

The survey was conducted anonymously to protect patient privacy. All participants provided informed consent, and the study was approved by the Ethics Committee of with approval Code: N37/BK-544. The clinical procedures were carried out according to the guidelines of the World Medical Association's Declaration of Helsinki and the Ministry of Health for Good Clinical Practice.

SURVEY INSTRUMENT

The survey included anonymous questions to collect basic demographic information (name, age, address, name of parent or guardian). Patients were also asked: "Who referred you for an examination at the dental clinic?" and "Where did you get information about the clinic?" Additionally, patients provided anamnestic data necessary for their examination. The survey questions were designed to understand the sources of information influencing patients' choice of the clinic.

Patient gouping: It is shown on Table 1.

Table 1. Patient grouping.

Patient grouping by	Referral source:	Age	Place of residence:	Treatment complexity (determined after initial examination)
Group 1	Patients referred by their personal dentist.	Children up to 18 years (decision made by a parent or guardian) - 60 prs.	Patients residing in Sofia (where the clinic is located) - 86 patients.	Treatments requiring routine methods and knowledge.
Group 2	Patients referred by relatives and friends.	Patients aged 18 to 30 years -36 prs.	Patients from other cities - 38 patients.	Treatments with a high degree of manipulation complexity and requiring high qualification.
Group 3	Patients who choose the clinic based on Internet information.	Patients aged 30 to 45 years -18 prs.		Treatments that will support subsequent treatments in other specialties.
Group 4		Patients aged 45 to 60 years -10 prs.		

DATA ANALYSIS

The obtained survey data were analyzed using SPSS 19.00 for Windows. Descriptive statistics were used to summarize the patient demographics and referral sources. Chi-square tests were conducted to examine the differences in clinic choice across various age groups and referral sources. The percentage segmentation of the different treatment groups was also analyzed to understand the distribution of treatment complexity.

RESULTS

The primary objective of this study was to analyze the factors influencing patients' choice of a dental clinic, focusing on referral sources, age demographics, place of residence, and the complexity of treatments required. By conducting a survey among 124 first-time visitors to a specialized dental clinic, we aimed to gain insights into patient behavior and preferences. The following section presents the detailed findings of this survey, highlighting key patterns and trends observed in the patient data. On Figure 1 are shown detailed data for patients' demographics and distribution.

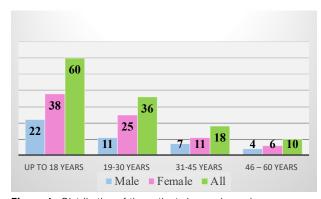


Figure 1. Distribution of the patients by gender and age.

The demographic breakdown of the patients indicates a balanced representation across different age groups, with a higher proportion of female patients. The significant number of children (up to 18 years) visiting the clinic suggests a strong reputation among families and pediatric dental care.

The results regarding the distribution of patient groups depending on the source of information for dental clinic are presented in Table 2. When analyzing this indicator, we must take into account that the patients of group 1 cannot make an independent decision, but it is taken by their parents, who are most often of an age group that coincides with group 3. Therefore, we analyze three real age groups: 19-30 years-36 patients; 31-45 years -78 patients and 46 -60 years-10 patients.

According to factor the source of information that influenced patients' choice of clinic results have shown that: 56 prs (45.16%) were advised by their general dentist, 38 prs (30.64%) by relatives and friends and 30 prs (24.20%) searched the Internet for help.

When analyzing referral sources by age groups, it was noted that: Among children up to 18 years, the majority (66.7%) were referred by their personal dentist, adults aged 19 to 30 years primarily chose the clinic based on internet information (61.1%). Patients in group 3-31 to 45 years relied mostly on recommendations from relatives and friends (55.6%). All patients aged 45 to 60 years were referred by relatives and friends (100%). The reliance on the Internet information (24.20%) was particularly notable among younger adults (19 to 30 years). This underscores the growing influence of digital presence and online reviews in healthcare decisions. Enhancing the clinic's online visibility through an informative website and positive social media engagement could attract more patients from that group.

Results based on information about place of residence and clinic choice are shown on Table 3. As can be seen patients that are in the same city as the clinic is placed, are referred mostly by their general dentists (45.16%), due to easy recognition of the specialists in the clinic among their colegues, indicating a high level of trust in professional recommendations. This suggests

that maintaining strong professional relationships and a good reputation among referring dentists is crucial for patient inflow. Travelling patients (47.4%) rely mostly on their relatives for recommendation, highlighting the importance of word-of-mouth marketing and the perceived quality of services among the community.

The analysis of patient residence shows that a significant number of patients (30.65%) travel from other cities to receive dental care at the clinic. This indicates the clinic's strong reputation and perceived quality of services extending beyond its immediate geographic location. It highlights the need for maintaining high standards of care and possibly marketing these unique strengths to a wider audience.

The different groups of potential patients that make up the base market can be outlined through market segmentation. Evaluation of the different spectrum of treatments offered in the clinic defines the basis of target marketing.

The types of treatments sought by patients indicate that nearly half (48.4%) required high complexity treatments, reflecting the clinic's specialization and advanced capabilities. The lower proportion of routine treatments (32.2%) suggests that patients with simpler dental needs may be distributed among various local clinics, while those seeking specialized care prefer this clinic. The 19.4% of treatments supporting subsequent procedures by other specialists underline the clinic's role in comprehensive and collaborative dental care (Table 4).

This breakdown was further analyzed based on the patients' place of residence, that travelling patients with high case complexity (63.2%) very often seek help in bigger cities due to larger number of specialists.

Table 2. Distribution of groups of patients by feature - source of information leading to their choice.

Distribution of patients by age	Referred for treatment by dentist		Recommended treatment by relatives		Clinic choice by information from the Internet		Total number	
	Number	%	Number	%	Number	%	Number	%
Children up to 18 years	40	66.7%	14	23.3%	6	10.0%	60	100%
Adults 18 to 30 years old	10	27.7%	4	11.1%	22	61.1%	36	100%
Adults from 30 to 45 years	6	33.3%	10	55.6%	2	11.1%	18	100%
Adults from 45 to 60 years	-	-	10	100%	-	-	10	100%
Total	56	45.16%	38	30.64%	30	24.20%	124	

Table 3. Choice of clinic depending on the place of residence and the source of information.

	Referred for treatment by dentist		Recommended treatment by relatives		Treatment decision as a result of information from the Internet		Total number of patients distributed according to their place of residence	
	Number	%	Number	%	Number	%	Number	%
Patients with residence in Sofia	48	55.8%	20	23.3%	18	20.9%	86	69.35%
Patients with other residence	8	21.1%	18	47.4%	12	31.5%	38	30.65%
Total	56	45.16%	38	30.64%	30	24.20%	124	100%

Table 4. What type of treatments attract patients to the clinic.

Patients	Treatments requiring routine methods and theoretical knowledge		Treatments with a high degree of complexity and requiring high qualifica- tion		Treatments that will support subsequent treatments in other dental specialties	
Total number of patients - 124	40	32.2%	60	48.4%	24	19.4%
Patients with residence in Sofia - 86	32	37.2%	36	41.9%	18	20.9%
Patients with other residence - 38	8	21.1%	24	63.2%	6	15.7%

DISCUSSION

The results of our study reveal several critical insights into the factors influencing patient choice in dental clinics and underscore the importance of targeted marketing strategies for healthcare services. Our findings have important implications for the marketing and operational strategies of dental clinics, especially in the context of increasing digitalization and the need for a multidisciplinary approach to patient care.

Our survey of 124 patients highlighted that only 24.2% trusted internet information when choosing a dental clinic, with the majority relying on personal referrals. This suggests a general skepticism towards online information in the healthcare sector, consistent with Popovic et al. (17). However, the remaining 75.8% relied on traditional sources of information, such as personal referrals from their dentist (45%) and recommendations from family and friends (30.8%). Parents or guardians make decisions for patients under 18, primarily following the recommendations of their personal dentists. This suggests a strong trust in professional referrals for this demographic. The highest trust in internet sources was observed among young adults aged 18 to 30 (61.1%), indicating a potential target demographic for digital marketing efforts. This is not small percentage, and is a signal that the reliable information in social media should be paid attention to in the overall process of transformation. Contrarary the group 4, those aged 45-60, who predominantly rely on personal networks, such as friends and family, indicating that word-of-mouth remains a crucial marketing channel for these age groups.

The knowing of the specific dental clinic by the general dentists working in other settlements is not realistic, therefore a referral cannot be expected from them. Due to the insufficient infrastructure and insufficient support at the national level, private stakeholders, specifically hospitals and clinics, are left with the daunting task of promoting medical tourism (18). Therefore, the other channels for information remain relatives (47.4%) and the internet (31.5%). These results once again remind of the need to develop the digital marketing in the direction of advertising and positioning in social media. This type of media positioning should be oriented towards both the direct user (the patient) and the indirect one - the dental doctors.

Modern research on the characteristics of health services includes the degree of patient orientation in the choice of treatment and clinic, as well as an assessment of the multidisciplinary and multiprofessional approach of the team chosen by them (19). The higher percentage of severe treatments among patients who have to travel proves that it is difficult to build a high-tech base and attract specialists with sufficient experience in smaller towns.

The results indicate a strong potential for digital transformation within dental clinics. The integration of digital diagnostics, CAD-CAM

technologies, and customized treatment plans can significantly enhance service quality and patient satisfaction. The necessity for clinics to internalize additional steps of the treatment process, such as laboratory and X-ray tests, can streamline operations and provide a more comprehensive service to patients (20-22). Therefore, investments should be in the direction of the professional development of the team, new software products that technologically support complex treatment procedures, and also the targeted promotion of this type of service. not just a dental service. The value of the dental service offered can be increased by: developing a new unit to the clinic, shorten the time to achieve the final treatment result - manufacturing of medical constructions and appliances through CAD/CAM technologies, directly in the clinic, offering additional activities supporting the treatment already carried out (aesthetic and cosmetic), targeted and correct marketing approach, tracking patient perceptions and satisfaction.

The transformation of business operations emphasizes maximum automation to reduce human error (8). Researchers assert that using digital analytics in dentistry speeds up clinical decisions by quickly interpreting large data volumes (23). This technocratic restructuring necessitates updating protocols across medical, administrative, and data storage operations, and demands new management approaches and skills. The new business model and development should be in the direction of creating a higher quality and value of the service (treatment) offer.

The new business model should focus on offering high-quality services tailored to specific

patient groups through advanced technologies and clear communication. Teams must develop new communication skills for interacting with diverse age groups and varying levels of health knowledge. Key metrics for the clinic to monitor include treatment quality, patient satisfaction, internal process improvements, and business outcome (24-27).

Effective oral health management also involves psychosocial elements, enhancing awareness among children and adults (27). Providing scientifically reliable information helps patients make informed decisions. Content marketing that educates patients on available treatments fosters trust and influences their choices. Accurate information builds trust and enhances the clinic's reputation. Visualizing treatment outcomes (VTO) motivates patients and should be standard in consultations. The importance of healthcare marketing for the development of clinics is the established link between corporate image and corporate reputation and and their perception by patients (15). The integration of AI in Orthodontics has the potential to revolutionize orthodontic practice, offering a pathway toward more efficient, accurate, and patient-centered care (28). The strength of our study is the comprehensive analysis of different patient demographics and their decision-making processes. However, limitations include the relatively small sample size and the focus on a single clinic. Future research should involve larger and more diverse populations to validate our findings.

The findings in the present study suggest several strategic directions and implications for practice that can be referred to other clinics, shown on Table 5.

Table 5. Research findings and Practice recommendations for Dental clinics.

Research findings	Practice recommendations
45.2% of patients were referred by their general dentist.	Strengthen professional networks with referring dentists.
47.4% of traveling patients relied on family recommendations.	Word-of-mouth: Encourage satisfied patients to share their positive experiences with friends and family.
24.2% of patients (mostly aged 19-30) used Internet sources.	Improve digital presence (website, social media).
48.4% of patients sought high-complexity treatments.	Highlight the clinic's ability in managing complex cases to build trust among patients seeking high-level care.
Patients travel from other cities for specialized care.	Expand Reach: Offer services such as online consultations or collaborate with regional clinics to make it easier for patients from other cities to access your care.

CONCLUSION

The digital transformation of the dental clinic is a consequence of a meaningful need for real change, striving for leadership in the dental services market. The introduction of innovations and new technological solutions should be dictated by patient needs and readiness for cooperation in treatments. The analysis of the current state of the dental clinic allows taking potential risks for its modernization. Digital transformation implies changes in the creation of value, expectedly greater than previously achieved by conventional means. It is good to proactively assess the new revenue potential of digitally enhanced products, services and interactions with patients.

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AUTHOR CONTRIBUTION STATEMENT

Conceptualization: I.K. and M.G. Literature Review: I.K. and M.G. Methodology and validation: I.K.

Formal Analysis: I.K.

Investigation and data collection: I.K.

Resources: I.K.

Data analysis and interpretation: M.G. Writing-original draft preparation: M.G. Writing-review & editing: I.K. and M.G.

Supervision: M.G.

Project administration: I.K. and M.G.

Funding acquisition: I.K.

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