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Complete blood count and biochemistry: dental surgeons' knowledge of these tests and their importance in dental practice

Hemograma e exames bioquímicos: conhecimentos dos cirurgiões dentistas sobre tais exames e importância na prática odontológica

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ABSTRACT

Since 2002, dental surgeons have been authorized to request complementary examinations, including laboratory tests, recognizing their relevance in dental practice. Surgical or invasive procedures in the oral cavity require a thorough medical history and clinical examination to minimize complications during treatment. **Objective:** This study aimed to assess the frequency of requests and the level of knowledge among dental surgeons regarding routine laboratory tests, such as the complete blood count (CBC) and biochemical tests, using a structured questionnaire. **Material and Methods:** This descriptive, observational, cross-sectional study was conducted with a random and convenience sample of dental surgeons from the state of Minas Gerais (Brazil) (n=279), evaluating various aspects related to the request and interpretation of these tests. The majority of the professionals in this study graduated after 2002, with 77.2% holding a specialization. **Results:** Regarding the frequency of laboratory test requests in dental practice, 58.3% of dental surgeons reported rarely requesting biochemical tests and CBC. In cases of oral manifestations without a prior diagnosis of systemic disease, 41.2% of dental surgeons reported requesting laboratory tests, while 14.2% referred the patient to a physician. In terms of knowledge and interpretation of laboratory tests, particularly CBC and biochemical analyses, most dental surgeons (55.2%) scored below 9.0, indicating a limited level of proficiency. **Conclusion:** These findings highlight a gap in the training of dental surgeons in Minas Gerais, underscoring the need for intervention by Regional Dental Councils, universities, and other relevant institutions. Such initiatives should aim to bridge this knowledge gap and enhance the quality of dental care provided to the population.

KEYWORDS

Clinical laboratory techniques; Dentistry; Diagnosis; Health policy; Public health dentistry.

RESUMO

Desde 2002, os cirurgiões dentistas têm autoridade para solicitar exames complementares, incluindo exames laboratoriais, devido à importância desses exames na prática odontológica. Procedimentos cirúrgicos ou invasivos na cavidade bucal exigem uma anamnese detalhada e exame clínico do paciente para minimizar intercorrências durante o tratamento. **Objetivo:** Este estudo teve como objetivo avaliar a frequência de solicitação e o conhecimento dos cirurgiões dentistas sobre exames laboratoriais de rotina, como hemograma e exames bioquímicos, por meio de um questionário específico. **Material e Métodos:** Trata-se de um estudo transversal observacional descritivo com uma amostra aleatória e de conveniência de cirurgiões dentistas do estado de Minas Gerais (Brasil) (n=279), avaliando diferentes aspectos relacionados à solicitação desses exames. A maioria dos profissionais do estudo graduou-se após 2002, e 77,2% possuem alguma especialização.

Resultados: Em relação à frequência de solicitação de exames bioquímicos e hemograma na prática odontológica, 58,3% dos cirurgiões dentistas afirmaram que raramente solicitam tais exames. Em casos de manifestações bucais sem diagnóstico de doença sistêmica, 41,2% dos cirurgiões dentistas solicitam exames laboratoriais, enquanto 14,2% encaminham o paciente para um médico. Quanto ao conhecimento e interpretação de exames laboratoriais, especialmente hemograma e exames bioquímicos, a maioria dos CDs (55,2%) obteve pontuação abaixo de 9,0, indicando um conhecimento considerado insuficiente. **Conclusão:** Esses resultados revelam uma lacuna na formação dos CDs em Minas Gerais, destacando a necessidade de intervenções por parte dos Conselhos Regionais de Odontologia, Universidades e outros órgãos pertinentes. Tais intervenções visam suprir essa deficiência de conhecimento para melhorar a qualidade dos serviços odontológicos oferecidos à população.

PALAVRAS-CHAVE

Técnicas de laboratório clínico; Odontologia; Diagnóstico; Política de saúde; Odontologia de saúde pública.

INTRODUCTION

Integrating laboratory testing into dental practice is essential for enhancing diagnostic accuracy and ensuring patient safety. As dentistry is an integral part of overall health, the mouth and face serve as vital structures influencing both clinical and mental well-being. Understanding the role of laboratory tests allows dental surgeons to assess better systemic conditions that may impact oral health and adjust treatment plans accordingly. However, despite their significance, laboratory tests are often underutilized in dental care, raising concerns about potential gaps in professional knowledge and decision-making [1].

During patient anamnesis, when systemic disease is reported or when the dental surgeon suspects pathological alterations based on clinical signs, laboratory tests should be requested. Altered reference values in laboratory tests may indicate a temporary or definitive contraindication for certain procedures. Therefore, dental surgeons must possess sufficient knowledge to analyze and interpret these results. However, these complementary tests should not be routine in dental care and should only be requested when indicated based on the patient's medical history and clinical examination [2].

Surgical or invasive oral procedures require a thorough clinical examination and detailed anamnesis to gather critical information that may help minimize complications during treatment. Additionally, patients undergoing invasive procedures, those presenting with oral manifestations, those with pre-existing systemic diseases, or those using medications that affect hemostasis or bone marrow function should undergo laboratory testing [3].

The most requested tests include complete blood count (CBC) and biochemical tests, as they can confirm or rule out various diseases, contribute to diagnosing other conditions, and impact dental care by requiring specific precautions. Since systemic conditions with oral manifestations are common, many patients may require invasive dental procedures. Therefore, the use of anticoagulants and other medications that may interfere with these procedures should be carefully investigated by dental surgeons and factored into clinical decision-making [4].

In this context, high-quality dental care depends on professionals with specialized knowledge, emphasizing the dentist's critical role in managing patients, particularly those with special healthcare needs. Since laboratory tests play a crucial role in identifying systemic conditions that may impact dental treatments, proficiency in their selection, interpretation, and clinical application is essential. Dental expertise should extend beyond the management of systemic diseases with oral repercussions to include a clear understanding of routine laboratory tests, their diagnostic value, the effects of medications on oral health, and the necessary pre-, peri-, and post-operative precautions [5].

Given the fundamental role of laboratory tests in optimizing patient safety and treatment outcomes, this study was motivated by the need to assess the knowledge and practice of dental surgeons in the state of Minas Gerais regarding laboratory test requests, considering various professional aspects. The primary objective was to describe and analyze factors influencing dental surgeons' understanding and use of laboratory tests in dental practice. Identifying knowledge gaps among Minas Gerais dental surgeons may

inform targeted interventions by Regional Dental Councils (CROs), universities, and other relevant institutions, ultimately enhancing clinical decision-making and improving patient care.

METHODS

This cross-sectional, observational, and descriptive study aimed to assess the knowledge of dental surgeons in the state of Minas Gerais regarding the request and interpretation of laboratory tests in dental practice. The research was conducted through a structured electronic questionnaire applied to a non-probabilistic convenience sample consisting of dental surgeons registered with the Regional Dental Council of Minas Gerais (CRO-MG) [6]. The study adhered to the guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement, an internationally recognized checklist for the transparent and comprehensive reporting of observational studies. Compliance with the STROBE checklist ensured that all essential methodological elements were adequately described, promoting greater scientific rigor and reproducibility [7].

Data collection was conducted between February and November 2022 using an electronic questionnaire developed in Google Forms. The questionnaire link was made available exclusively in the CRO-MG Weekly Electronic Bulletin, which was sent to all registered dental surgeons (n = 39,814), as previously agreed with the institution's board. The questionnaire was published only once in the bulletin, in accordance with CRO-MG regulations, without the possibility of direct email distribution to professionals to ensure confidentiality. Before answering the questionnaire, participants were presented with an invitation letter, which outlined the study's objectives, key information about the questions, and the estimated response time of approximately 10 minutes. They were then directed to the Informed Consent Form (TCLE), where they voluntarily agreed to participate by clicking the "I agree to participate in the study" option. Only after providing consent did participants gain access to the questionnaire. The TCLE was automatically sent to the participant's registered email, ensuring that they had a copy for their records.

The study included all dental surgeons registered with CRO-MG who completed the electronic questionnaire during the recruitment period. Only professionals who fully answered the questionnaire and provided their registration number with the council were considered eligible. Participants who responded to the questionnaire more than once using the same registration number and email address, those who did not provide their CRO-MG registration number, and those registered with other state Regional Dental Councils were excluded, as a professional may be concurrently registered in more than one CRO. Participants who wished to withdraw from the study after submission could request the removal of their data by contacting the principal researcher via email or phone. Duplicate responses or those from individuals who opted out were identified and excluded using the CRO-MG registration number.

The questionnaire was developed by the study's researchers based on frequently described laboratory aspects in the literature, particularly regarding hematological and biochemical changes. It included sections addressing the sociodemographic and professional profile of participants, such as gender, graduation year, specialization, area of practice, and performance of invasive procedures. Additionally, the questionnaire evaluated the level of knowledge regarding hematological and biochemical tests, including situations requiring test requests and their frequency in clinical practice, as well as knowledge about oral manifestations associated with systemic diseases and medication use. It also investigated the management of patients with alterations detected in complete blood count results, the care of patients with systemic diseases requiring special considerations in dental practice, and the understanding of hemorrhagic risks and the measures adopted to minimize them. To ensure instrument validity, the questionnaire was pre-tested with five dental surgeons from different specialties to assess clarity, consistency, and relevance. Based on participant feedback, adjustments were made to improve content and question formulation, following the methodological recommendations of Lakatos and Marconi [8].

To assess dental surgeons' knowledge regarding the request and interpretation of laboratory tests, a scoring system was developed, in which questions directly related to laboratory tests were assigned different weights. The selection of questions included in the score, as well as the point allocation for each item, was based on the researchers' expertise and current literature on laboratory

tests in dental practice. In other words, to ensure greater reliability and validity of the score, it is emphasized that it was analyzed and extensively discussed by competent professionals in the fields of dentistry and clinical laboratory work, which made it applicable to the present study, since its limitations were minimized. The classification assigned to each question was defined based on its importance; that is, the questions considered most relevant received higher scores, while those with an indirect relationship to the topic received lower scores.

The maximum possible score was 21 points, as described in Appendix A. The total score obtained was used to classify dental surgeons into three knowledge categories: weak (score ≤ 9.0), average (score 9.5-13.5), and good (score ≥ 14.0). This classification was based on the distribution of scores among participants, enabling a quantitative and standardized assessment of dental surgeons' knowledge regarding laboratory tests. A detailed description of the questions included in the score and the points assigned to each question is provided in Appendix A.

Data were organized and analyzed using Microsoft Excel 2019 and SPSS version 19. Descriptive statistical analysis was performed, including calculations of absolute and relative frequencies for categorical variables. The results were presented in tables, facilitating visualization and interpretation. The knowledge score was analyzed according to the pre-established classification. Variables with $p < 0.20$ in the bivariate analysis were included in an unconditional logistic regression model using Epi Info™ software (version 7, CDC, Atlanta, USA). Odds ratios (OR) and their respective 95% confidence intervals (95% CI) were estimated adopting a significance level of $p < 0.05$.

The total sample comprised 279 respondents; however, the denominators vary across tables due to item nonresponse and missing data. Therefore, percentages were calculated based on the number of valid responses for each variable (available-case analysis), after removing duplicate records, when applicable.

This study was approved by the Research Ethics Committee of the Federal University of São João del-Rei (UFSJ/CCO) under CAAE: 52593221.0.0000.5545. All participants electronically signed the Informed Consent Form (TCLE) before accessing the questionnaire.

RESULTS

The analyzed data from the questionnaires on various aspects of dental surgeons in Minas Gerais, Brazil, are presented in the following tables. Table I summarizes the profile of the participating dentists, with female professionals comprising the majority (68.8%). Most professionals graduated after 2002, and 77.2% reported having a specialization. Additionally, 70.9% of the surveyed dental surgeons reported performing invasive procedures in their dental practice.

Table I - Sociodemographic and professional profile of dental surgeons in the state of Minas Gerais, Brazil, 2022

Variables	N (%)
Gender (n=276)	
Female	190 (68.8)
Male	86 (31.2)
Year of Graduation (n=273)	
Until 2002	88 (32.2)
After 2002	185 (67.8)
Holds a Specialty?* (n=272)	
Yes	210 (77.2)
No	62 (22.8)
Main Area(s) of Practice** (n=266)	
No Specialty	19 (7.1)
Endodontics	28 (10.5)
Restorative Dentistry	15 (5.6)
Prosthodontics	33 (12.4)
Orthodontics	68 (25.5)
Periodontics	20 (7.5)
Oral Medicine	1 (0.3)
Oral Radiology / Imaging	1 (0.3)
Pediatric Dentistry	12 (4.5)
Public Health	29 (10.9)
Orofacial Harmonization	11 (4.1)
Implantology	28 (10.5)
Oral Surgery / Maxillofacial Surgery	22 (8.2)
Hospital Dentistry	1 (0.3)
TMD (Temporomandibular Disorders)	3 (1.1)
Performs Invasive Procedures (n=278)	
Yes	197 (70.9)
No	81 (29.1)
Type of Practice (n=277)	
Private Practice	185 (66.8)
Public Sector	49 (17.7)
Both Private and Public	40 (14.4)
Other	3(1.1)

*The question refers to a specialization title.
**Some professionals reported more than one specialty.

Table II - Knowledge of dental surgeons in the state of Minas Gerais regarding the indication and frequency of complete blood count and biochemical test requests, Brazil, 2022

Variables	N (%)
Do you know when a complete blood count (CBC) or biochemical tests should be requested? (n=277)	
Yes	212 (76.5)
No	65 (23.5)
Do you know which tests should be requested to assess the patient's liver and kidney function? (n=276)	
Yes	93 (33.7)
No	183 (66.3)
In dental practice, how often are these tests requested and utilized in professional activities? (n=278)	
Always	08 (2.9)
Frequently	61 (21.9)
Rarely	162 (58.3)
Never	47 (16.9)
For a patient reporting an oral manifestation without a systemic disease diagnosis, do you request laboratory tests?	
Yes	113 (41.2)
No	122 (44.5)
Referral to another professional (physician or specialist dentist)	39 (14.2)

Table III - Knowledge of dental surgeons in the state of Minas Gerais regarding oral manifestations caused by medications or systemic diseases and the management of patients with hematological alterations, Brazil, 2022

Variables	N (%)
Do you know which medications can cause oral manifestations? (n=277)	
Yes	180 (65.0)
No	97 (35.0)
Do you know the oral manifestations of Sjögren's syndrome, lupus, rheumatoid arthritis, and other autoimmune diseases? (n=276)	
Yes	128 (46.4)
No	136 (49.3)
Some manifestations	12 (4.3)
Do you know which systemic diseases can cause oral manifestations? (n=275)	
Yes	175 (63.6)
No	72 (26.2)
Some diseases	28 (10.2)
In case of anemia detected in the complete blood count, do you have knowledge about the necessary patient care? (n=275)	
Yes	158 (57.5)
No	117 (42.5)
In case of polycythemia (increase in red blood cells, hemoglobin, and hematocrit), do you know the possible complications for the patient after a dental procedure? (n=277)	
Yes	92 (33.2)
No	185 (66.8)

The data in Table II illustrate the knowledge of dental surgeons regarding situations that require the requesting of biochemical and hematological tests, as well as the frequency with which these tests are requested. The majority of respondents (76.5%) stated that they know when to request a complete blood count (CBC) and general biochemical tests. However, when asked specifically about which tests should be requested to assess liver and kidney function, 66.3% reported not knowing. Regarding the frequency of requesting and using these tests in dental practice, 58.3% of the dental surgeons reported rarely requesting them. In cases where patients present oral manifestations but have no systemic disease diagnosis, 41.2% of respondents request laboratory tests, while 14.2% prefer to refer the patient to a physician. Complementary findings regarding oral manifestations related to medications or systemic diseases, as well as the management of patients with hematological alterations, are presented in Table III.

Table IV presents the experience of dental surgeons in Minas Gerais in treating patients with systemic diseases that require special considerations during dental procedures. The findings indicate that 39.0% of respondents have treated patients with chronic kidney disease

Table IV - Experience of dental surgeons in the state of Minas Gerais in treating patients with systemic diseases requiring special care, Brazil, 2022

Variables	N (%)
Have you treated a patient with chronic kidney disease undergoing dialysis? (n=277)	
Yes	108 (39.0)
No	169 (61.0)
If yes, do you feel confident treating this patient? (n=164)	
Yes	67 (40.9)
No	84 (51.2)
Referral to a physician / Request for surgical risk assessment	13 (7.9)
Have you treated a patient with sickle cell anemia? (n=277)	
Yes	71 (25.6)
No	206 (74.4)
For diabetic patients, do you assess capillary blood glucose before treatment? (n=277)	
Yes	139 (50.2)
No	138 (49.8)
Have you treated a patient undergoing cancer treatment? (n=276)	
Yes	200 (72.5)
No	76 (27.5)

undergoing dialysis, yet only 40.9% reported feeling confident in treating these patients. Additionally, a significant proportion (50.2%) of dental surgeons assess capillary blood glucose before treating diabetic patients.

Table V - Knowledge of dental surgeons in the state of Minas Gerais regarding the management of patients at potential risk of hemorrhage, Brazil, 2022

Variables	N (%)
Have you treated a patient on oral anticoagulants? (n=275)	
Yes	247 (89.8)
No	28 (10.2)
Do you take any special precautions to diagnose thrombocytopenic purpura before interventions with bleeding potential?	
Yes	31 (11.7)
No	215 (81.4)
Referral for medical evaluation / Request for laboratory tests	18 (6.8)
Do you take any additional precautions not mentioned in this questionnaire to prevent excessive bleeding or impaired healing in invasive procedures?	
Yes	31 (11.7)
Yes (Preoperative, intraoperative, or postoperative)	18 (6.5)
No	176 (65.2)

Table V provides insight into dental surgeons' knowledge regarding the management of patients at risk of excessive bleeding. The data show that 89.8% of respondents have treated patients on oral anticoagulants, while only 11.7% take special precautions to diagnose conditions such as thrombocytopenic purpura before performing procedures with bleeding potential.

The knowledge assessment, based on the scoring system previously described, revealed that most dental surgeons had a low level of knowledge regarding the interpretation of laboratory tests. More than half of the respondents (55.2%) scored ≤9.0 points, indicating a weak level of knowledge. A total of 29.4% of the participants achieved an average score (9.5-13.5 points), while only 15.4% obtained a good score (≥14.0 points). These findings suggest significant gaps in knowledge related to the interpretation of complete blood count and biochemical tests among dental surgeons in the state of Minas Gerais, highlighting the need for further training and educational initiatives in this area. Comparisons across knowledge categories are presented in Table VI. The bivariate analysis of factors associated with

Table VI - Comparison between the sample of dental surgeons with knowledge classified as weak, medium and high, regarding the necessary care during dental treatment (data collected from 10/02/22 to 20/06/22)

Variables	Weak	Medium	High	p-value*
Year of graduation				
Until 2002	50	28	10	
After 2003	99	53	33	0.385
Has a specialty				
No	39	14	09	
Yes	110	67	33	0.300
Lab tests				
Never/rare	136	59	14	
Frequently/always	17	23	29	<0.001
Do you perform invasive procedures? (tooth extractions, subgingival scaling, implants, biopsies)				
No	66	11	04	
Yes	87	71	39	<0.001
Do you know when a blood count or biochemical tests should be ordered?				
No	65	0	0	
Yes	87	82	43	<0.001
Are you aware of any medications that can cause oral side effects?				
No	88	09	0	
Yes	64	73	43	<0.001
If anemia is detected by a blood test, are you aware of the necessary care for the patient?				
No	107	10	0	
Yes	44	71	43	<0.001
In cases of polycythemia (increased red blood cell count, hemoglobin, and hematocrit), do you know what the possible complications are for the patient after a dental procedure?				
No	128	50	07	
Yes	25	31	36	<0.001
In patients with diabetes mellitus, is capillary blood glucose testing performed prior to consultation?				
No	108	28	02	
Yes	44	54	41	<0.001

*Chi-square test

Table VII - Bivariate analysis of the knowledge of dental surgeons who perform invasive procedures regarding patient care, Brazil, 2022

Do you perform invasive procedures? (tooth extractions, subgingival scaling, implants, biopsies) n= 197					
Variables	**N total**	**N**	**%**	**OR (CI 95%)**	**p-value**
Are you aware of any medications that can cause oral side effects?					
No	97	59	60.82	1.00	
Yes	180	137	76.11	2.05 (1.20-3.49)	0.008
Do you know when a blood count or biochemical tests should be ordered?					
No	65	37	56.92	1.00	
Yes	212	159	75.00	2.27 (1.27-4.06)	0.005
If anemia is detected by a blood test, are you aware of the necessary care for the patient?					
No	117	72	61.54	1.00	
Yes	158	122	77.21	2.12 (1.25-3.58)	0.005
In cases of polycythemia (increased red blood cell count, hemoglobin, and hematocrit), do you know what the possible complications are for the patient after a dental procedure?					
No	185	123	66.49	1.00	
Yes	92	73	79.35	1.94 (1.07-3.49)	0.027
In patients with diabetes mellitus, is capillary blood glucose testing performed prior to consultation?					
No	138	78	56.52	1.00	
Yes	139	119	85.61	4.58 (2.56-8.18)	<0.001
Do you know which tests to order to evaluate a patient's liver and kidney function?					
No	183	117	63.93	1.00	
Yes	93	79	84.94	3.18 (1.67-6.06)	<0.001
Have you ever treated a patient with chronic kidney disease undergoing hemodialysis?					
No	169	107	63.31	1.00	
Yes	108	90	83.33	2.89 (1.61-5.34)	<0.001

Table VIII - Factors associated with dental surgeons who perform invasive procedures (adjusted multiple logistic regression model), Brazil, 2022

Variables	Adjusted Odds Ratio	Confidence Interval – 95%	p-value*
Have you ever treated a patient with chronic kidney disease undergoing hemodialysis?	2.03	1.04-3.95	0.04
Do you know when a blood count or biochemical tests should be ordered?	4.51	1.64-12.36	<0.001
In patients with diabetes mellitus, is capillary blood glucose testing performed prior to consultation?	3.15	1.68-5.92	<0.001

*Unconditional Logistic Regression.

knowledge among dental surgeons who perform invasive procedures is shown in Table VII, and the adjusted multiple logistic regression model is presented in Table VIII.

DISCUSSION

This cross-sectional survey identified meaningful gaps in dental surgeons' knowledge and clinical decision-making regarding laboratory testing in dental practice. Although most respondents reported knowing when to request complete blood counts and basic biochemical tests, many were uncertain which markers are appropriate to assess hepatic and renal function, underscoring the need for stronger training in laboratory diagnostics within undergraduate curricula and continuing education [2].

The overall underuse of laboratory tests, reflected by the low frequency of requests, aligns

with prior reports that dental surgeons frequently rely on clinical evaluation rather than adjunctive diagnostic tools [9]. While this approach may suffice in low-risk scenarios, unrecognized systemic conditions can delay or compromise care. Contributing factors likely include limited exposure to laboratory medicine during training, uncertainty about interpretation, and logistical barriers in routine practice.

Limited confidence in managing patients with systemic diseases that require laboratory monitoring also emerged as a salient finding [10]. Many respondents had never treated patients receiving hemodialysis or with sickle cell disease; among those who had, uncertainty regarding appropriate precautions was common. These observations suggest gaps that are both cognitive (what to order) and procedural (how and when to integrate results into decisions), supporting targeted, case-based educational interventions.

Patients undergoing cancer treatment constitute another group requiring careful planning, given chemotherapy-related immunosuppression and the risk of oral complications [11]. Although most participants reported experience with this population, specific precautions were not explored. Future studies should assess adherence to best-practice protocols for immunocompromised individuals (eg, timing relative to treatment cycles, a recent hematologic assessment, and antimicrobial prophylaxis when indicated).

With respect to hemorrhagic risk, many respondents treated patients receiving anticoagulant therapy, yet only a small proportion reported measures to identify thrombocytopenic purpura or other hemostatic disorders before invasive procedures [12]. Given the potential for excessive bleeding and impaired wound healing, preoperative risk stratification should include a focused history and, when clinically indicated, laboratory testing (eg, platelet count and selected coagulation studies), particularly in patients with comorbidities that influence pharmacokinetics, anesthesia, and hemostasis.

Overall performance in interpreting laboratory tests was suboptimal, with more than half of respondents scoring poorly [13]. Misinterpretation may lead to both undertreatment and unnecessary referrals. Concise, scenario-based guidelines, paired with accessible training resources, could help bridge this gap and enhance patient safety in dental settings [14].

Practical and ethical-legal implications

Beyond clinical performance, the topic presented in this article has immediate implications for patient safety and professional responsibility. Failure to order laboratory tests when clinically indicated (for example, patients with hereditary or acquired coagulopathies and platelet disorders, those using oral anticoagulation, or individuals undergoing chemotherapy or with significant hepatic/renal dysfunction) can result in avoidable adverse events and be interpreted as a breach of the duty of care. According to Brazilian regulations, the liability of individual professionals is generally based on fault. Thus, the omission of an indicated test can be interpreted as negligence if a causal link with the harm is established. Dental clinics and establishments may also incur broader liability under consumer protection law. Consequently, the standardization of risk-based protocols, ensuring complete documentation of decision justifications (including informed refusal when applicable), coordination with physicians when risks extend beyond dental care, and investment in continuing education are essential for both clinical quality and risk mitigation.

Strengths and limitations

The study included a diverse sample of dental professionals from various specialties, providing a broad view of current knowledge and practices. The questionnaire captured both self-perceived knowledge and reported behaviors, allowing for comparison between knowledge and practice. However, self-reporting introduces a potential response bias. Recruitment through a single CRO-MG bulletin may have reduced the response rate and limited generalizability. The cross-sectional design prevents temporal or causal inferences, and the research did not investigate specific reasons for the underutilization of laboratory tests.

Future directions

Multicenter studies using probabilistic sampling and clinical outcomes (e.g., bleeding, infection, treatment delay, referrals) could quantify the impact of adequate laboratory assessment on outcomes. Pragmatic educational trials testing checklists and decision algorithms for ordering and interpreting tests—with objective measures such as interpretive accuracy, decision time, and protocol adherence—are warranted [13,14].

CONCLUSIONS

This study identifies meaningful, actionable gaps in dental surgeons' selection and interpretation of laboratory tests, particularly in scenarios involving immunosuppression, anticoagulation, and hepatic or renal dysfunction. Despite the relevance of laboratory data for recognizing systemic conditions that affect oral care, tests remain underused, likely reflecting limited training, uncertainty in interpretation, and insufficient integration of laboratory medicine into dental curricula. These deficits may contribute to missed diagnoses and suboptimal treatment planning. Combining structured education with simple, risk-based decision support, robust documentation practices, and coordination with physicians when risks exceed the dental scope may improve patient safety and align care with professional and legal standards [2,9-14].

Author's Contributions

JHC: Investigation, Formal Analysis, Data Curation, Writing – Original Draft Preparation. GCSB: Investigation, Formal Analysis, Data Curation, Writing – Original Draft Preparation. NAA: Conceptualization, Methodology, Writing – Original Draft Preparation. NGPS, ACGC: Conceptualization, Methodology. MGC, MBP: Writing – Review & Editing, Visualization, Supervision.

Conflict of Interest

No conflicts of interest declared concerning the publication of this article.

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Regulatory Statement

This study was formally and ethically reviewed and approved by the Research Ethics Committee of the Federal University of São João del-Rei (UFSJ), Centro-Oeste Dona Lindu (CCO) (CAAE: 52593221.0.0000.5545). All participants received the Informed Consent Form by e-mail and provided electronic informed consent prior to completing the research questionnaire.

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Appendix A. Questionnaire: "Complete Blood Count and Biochemical Tests: Dentists' Knowledge and Their Importance in Dental Practice"

ALTERNATIVES	SCORE
Do you know when a complete blood count (CBC) or biochemical tests should be requested?	
YES	2
NO	0
In dental practice, what is the frequency of requesting and using these tests in your professional activities?	
ALWAYS	2
FREQUENTLY	1
RARELY	0.5
NEVER	0
Do you know which medications can cause oral manifestations?	
YES	1
NO	0
In case of anemia detected in the complete blood count, do you have knowledge about the necessary patient care?	
YES	2
NO	0
In case of polycythemia (increase in red blood cells, hemoglobin, and hematocrit), do you know the possible complications for the patient after a dental procedure?	
YES	1
NO	0
For patients with Diabetes Mellitus, do you assess capillary blood glucose prior to treatment?	
YES	2
NO	0
Do you know which tests should be requested to assess liver and kidney function?	
YES	2
NO	0
Do you know the oral manifestations of Sjögren's syndrome, Lupus, Rheumatoid Arthritis, and other autoimmune diseases?	
YES	1
NO	0
SOME	0.5
Do you know which systemic diseases can cause oral manifestations?	
YES	1
NO	0
SOME	0.5
For a patient reporting an oral manifestation without a prior diagnosis of systemic disease, do you request laboratory tests?	
YES	2
NO	0
Refers to another professional (physician/stomatologist)	1
Do you take any special precautions to diagnose thrombocytopenic purpura before performing procedures with potential bleeding risk? If so, which ones?	
YES	0.5
NO	0
Referral for medical evaluation	1
I request laboratory tests	1
Do you take any additional precautions not mentioned in this questionnaire regarding invasive procedures to prevent excessive bleeding or impaired healing? If so, which ones?	
YES	0.5
NO	0
YES (preoperative)	1
YES (intraoperative)	1
YES (postoperative)	1