



Quality Management in Dental Offices in the Lodz Voivodeship in the Opinion of the Facilities' Employees and Owners

Submitted: 13 October Accepted: 20 November 2022 Published: 30 December 2022

Agata Zuzanna Kunert¹

<https://orcid.org/0000-0002-5392-9548>

Dominika Cichońska-Rzeźnicka²

<https://orcid.org/0000-0001-8623-4307>

Jan Krakowiak¹

<https://orcid.org/0000-0002-3435-9658>

¹ Department of Social Medicine and Preventive Medicine, Medical University of Lodz, Poland

² Department of Health Sciences, Medical University of Lodz, Poland

Address for correspondence

Agata Kunert
Department of Social Medicine
Medical University of Lodz
4 Tadeusza Kościuszki St.
90-419 Lodz, Poland
agata.kunert@stud.umed.lodz.pl

Abstract

Background: *The benefits of introducing specific procedures in a company have been proven. They systematize the work, increase the efficiency of the enterprise and employee productivity. They also allow the owners to reduce waste and maximize the company's profits. The standard for improving quality in the enterprise presented by the International Organization for Standardization is the 9000:2015 norm, it is the applicable standard. Possible barriers to the implementation of the procedures and quality improvement, such as ISO standards or accreditation for dental clinics, were assessed. The main barriers include the standards' inadequacy to the size and structure of the facility, and thus the costs of its implementation are disproportionate to the benefits for dental clinics.*

Objective: *The aim of the study is to assess the demand for a holistic and cross-sectional quality management system in dental clinics in Poland and to create procedures adequate to the needs.*

Material and methods: *The research was carried out among the owners/managers of dental clinics in the Lodz Voivodeship and their employees: doctors, dental assistants/hygienists, medical recorders/patient caregivers. The tool applied was an anonymous questionnaire in an electronic form, intended for self-completion by respondents. The study began in June 2022 and continued until 215 questionnaires were collected from dental office employees and 39 questionnaires from owners and managers. The data was compiled using the Statistica software.*

Results: *The presented results clearly show the need for procedures and their standardization as well as quality improvements in dental offices. More than 66.5% of employees and 68.4% of dental offices' owners point out a positive impact and the need to introduce procedures and improve quality. As many as 72% of employees believe that it would improve work efficiency. They also present the impact of procedures on safety at work, reduction of stress factors, as well as reduction of waste and maximization of profits.*

Conclusions: *The presented data clearly shows that there is a need for procedures and quality improvement, both among employees as well as owners and managers. Specific procedures allow to increase the level of employees' security, ensure the quality of services provided and ameliorate the flow of information in the enterprise. All these benefits support the creation of a holistic and cross-sectional tool that would include all procedures and quality improvement that would systematize the work of dental offices.*

Key words: *quality management system, procedures of conduct, dentistry*

Introduction

In the coming years, the dynamic growth on the dental services market will be caused by the growing health awareness as well as the need for improving the aesthetics of a smile of Poles [1]. In order to have their expectations met, Poles visit private dental offices. The Polish dental market is still very fragmented compared to the market consolidation processes in the west [2]. According to the leading market research company PMR, the private sector is the driving force behind the dentistry market in Poland [3]. It is responsible for over 80% of all expenditures on dental services. For comparison, National Health Fund's expenditure on dentistry amounts to only about 2% of the Fund's budget [4]. Due to the under-financing, poor service quality, limited service package and several-month waiting periods for an appointment, the vast majority of patients use the services of approx. 6,000 private dental offices operating on the Polish market. Research by CBOS (Public Opinion Research Center) shows that private sector services are chosen by 69% of patients against 31% of those who receive treatment under contracts with the NHF. Therefore, dentistry remains the only branch of medicine in which Poles mostly rely on private services [5]. Additionally, the dental services market is one of the fastest growing medical services markets in Poland. It is estimated that patients will spend PLN 15.6 billion on dental services in just two years [6]. This significant increase in costs will allow the owners to develop quality solutions in the management of dental offices, offering them greater opportunities to compete in the private services sector. To this aim, one of the most significant changes will be the adaptation of the quality management system [7]. The quality management system is a set of guidelines that facilitate the management of a company, in this case a dental office [8]. A dental office is nothing more than a small enterprise that needs to be managed efficiently, whose employees and owners need to take care of procedures, regular supplies, quality of services and customer satisfaction [9]. Running a dentist's office entails assuming the role of not only a doctor, but also an entrepreneur, a marketer, a driver, and a supplier. Specific procedures help the owner to fulfil these roles. They allow the automation of activities

which save time and maximize the efficiency of the enterprise. In the example of dental offices, this relationship is even more true as for almost half (46%) of the dentists surveyed the main workplace was their own medical practice, for every fourth doctor (25%) it was a medical entity, and for every fifth respondent (20%) it was practice in such an entity [10]. It is also true that hiring managers to manage dental practices is gaining popularity, but it is not a common practice yet. The vast majority of dental clinic's owners are attending physicians, managers and entrepreneurs who also struggle with administrative obligations. Management procedures can streamline these tasks and thus allow the clinician to spend as much time as possible attending to patients [11]. The aim of the study is to assess the demands (of dental clinics' employees and owners) in terms of the quality management system. Due to the free-market nature of the surveyed entities and the lack of strictly defined requirements for quality management by the authorities, all pro-quality changes shall depend entirely on the owners and employees of private doctor's offices. Patients, as final recipients of services, may of course exert an influence on the owners of facilities, which would increase the facilities' competitiveness, but ultimately the patients' task is only to assess the quality of the services provided. This study is the first attempt to holistically approach the issues related to quality management in dentistry and the analysis of the demand for pro-quality solutions among owners and employees of dental clinics. Therefore, the research may be referred to as innovative one.

Current market situation

ISO standards can be applied and implemented in almost any organization, regardless of its size and type. Dental offices are no exception. ISO standards are basically universal standards that can and should be adapted to one's own needs, goals and intentions. Their ease of implementation is due to the fact that they are not of a technical nature. In terms of quality management systems, the ISO 9001: 2015 standard (Quality Management System requirements) is in accordance with the Polish designation

of the Standardization Committee, which is PN-EN ISO 9001: 2015 [12]. There are also standards compliant with ISO 14001 – environmental management, ISO / TS 27001 – Information security management, PN-N- / OHSAS 18001 – Occupational Health and Safety management. However, the discussion cannot be focused only on the benefits of implementing ISO standards, such as: increasing the quality of medical services provided, ensuring the trust of patients and cooperating companies and institutions, improving the functioning of the company, improving the flow of information within the company, and increasing transparency of rules and procedures which translates into increased competitiveness on the market and reduces the costs of the entity's operation [13]. There is one major drawback to ISO standards, and that is the price. The price of obtaining a certificate issued by a facility accredited by the Polish Committee for Standardization and the comprehensive implementation of the standard in the facility often exceeds PLN 10,000. It is estimated that maintaining the ISO certification in the office costs about PLN 600–700 per month, as calculated over a period of 3 years [14]. In addition, the certificate is limited in time and it must be renewed, which generates additional costs for the facility. For this reason, small dental offices – and most dental offices in Poland are in fact small – rarely undertake the venture of certifying their clinic. Most often, it is the domain of large market players or more popular dental clinics. Moreover, in 2015, the National Health Fund completely removed the requirement for dental clinics to obtain ISO certificates, thus further reducing the certificate's attractiveness even for public entities.

Inadequateness to reality

However, it is important to understand why ISO standards are so unsuited to dental offices on the Polish market. Firstly, it results from the fact that the most popular legal form of practicing the profession of a dentist is individual medical practice – carried out by almost 60% of doctors. Out of that, 70% clinics are usually equipped with only one dental unit. The average number of units in the office is 2.2 [15] (Figure 1).

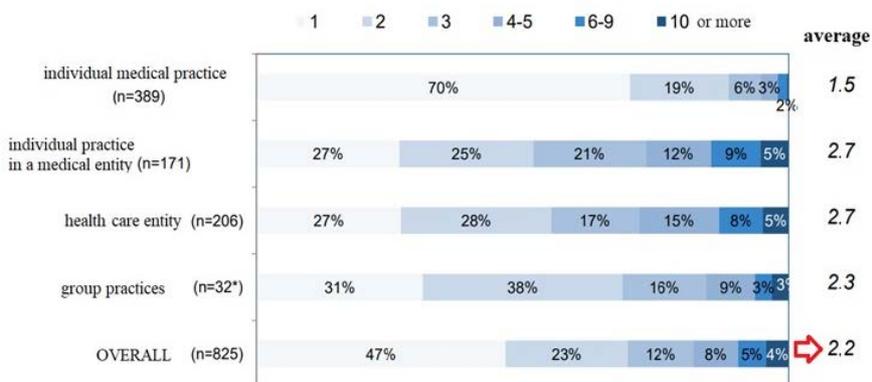


Figure 1. Number of dental units at the main workplace [26]

Accordingly, these are mostly small or medium-sized dental offices for which the cost of certification and its maintenance is definitely too high. Secondly, the reason why being ISO certified is not very popular among the owners of dental offices in Poland is the low awareness of the potential benefits of obtaining such a certificate. It is no wonder, since most of the owners are dentists who were not educated in the field of management and administration in the course of their studies, and who turned into entrepreneurs due to the fact that they own a practice, whether to their liking or not [16]. Consequently, if the doctors – clinic owners do not seek this knowledge on their own, it is of no surprise that they do not notice the benefits of certifying their facilities. It is also understandable for a more prosaic reason. Doctors see the benefit of buying a new endometer, which directly translates into an improvement in the quality and accuracy of the performed root canal treatment; they see the benefit of buying an X-ray machine as it allows for more accurate diagnostics and increases the attractiveness of the clinic. Unfortunately, the benefits of ISO procedures are not immediately visible and only after their meticulous implementation and compliance it will be possible to achieve the expected results, such as increasing efficiency, enhancing the level of safety, or maximizing the employee efficiency [17]. However, for dentist who are considered knowledge workers these benefits may not be so readily apparent and do not provide a sufficient incentive to invest capital in certifying their facility [18].

Procedures currently in place

However, there is an indicator that doctors, office owners and managers employed in dental clinics understand the importance of ISO-related procedures, even if not in the form of an official certificate or external quality confirmation [19]. It is the fact that they themselves create procedures for their own use and needs. But why is it the case? The main reason for such behaviour is the need to structure work and create certain standards so that, regardless of who does the work, the work is always done in the very same way [20]. For instance, if standards and procedures for instrument decontamination and sterilization are in place, regardless of whether it is performed by an assistant with 20 years or 2 months of experience, the instruments will be disinfected in the same way. This allows saving time during the induction of new employees and guarantees a constant standard of the services provided [21]. Procedures to be followed are nothing more but behavioural scenarios. Such repeated scenarios become habits, and habits become daily practice. This explains why dental clinics' owners and doctors create their own procedures that increase safety, save time and eliminate possible human errors when the work is not systematized [22]. However, it causes a significant problem of diversifying the procedures proposed. There are offices that have procedures in place for everything that happens in the clinic. There are facilities that only apply certain rules for dental procedures and disinfecting tools and spaces – they are the most numerous group due to the repercussions related to the COVID-19 pandemic [23]. Unfortunately, there are also dental offices that do not have any procedures in place. It is most often due to the fact that small clinics, e.g. single-station facilities with one assistant who is also a receptionist, see no need to create a procedure for a team of 2–3 people. However, it is not always the right decision. In other cases, the problem is also that each dental office has its own procedures – the ones that work specifically for them. At first glance, it does not seem to be a problem, but since there is a certain standard, for example for filling the canal in endodontic treatment or class II cavity preparation, and it is the current standard in force in dentistry according to the latest medical knowledge recognized in the scientific community, it would be possible to present procedures for each activity in a dental office. The procedures to

be followed may apply to arranging patients' appointments for treatment continuation, placing orders for materials, cooperating with a technician, or dealing with difficult patients or life-threatening situations [24]. Of course, slight changes are possible, depending on the structure or nature of the facility, but a general template of procedures may be such a gold standard in dentistry [25].

However, in order for an undertaking to create such a book of procedures to be successful, it would be necessary to first ask for the opinion and demand of those whom the book will be addressed to. It is very often the case that in the rush of changes we forget ourselves and do not exercise due diligence to find out whether the proposed solution will have a sufficient number of supporters. In the private sector, researchers cannot afford the initial underestimation of the demand for the changes that are proposed.

Results analysis

In the first place, the analysis shall concern the responses from the questionnaire addressed to the employees of dental offices. Among our respondents, almost 41% were assistants and hygienists, 39% were dentists and the remaining 20% were medical recorders. The data is presented in Figure 2.



Figure 2. The structure of employment among the respondents

Source: Author's own study.

The average age of the respondents was 38. At the very beginning of the questionnaire, the respondents were asked a few side questions for the author to determine the level of employees' satisfaction with their work. One of the first questions was about salary satisfaction, "Are you satisfied with the remuneration structure and remuneration management system in your workplace?". In the response to this question, on a five point scale, 80% of respondents awarded 4 points, and only 14% gave 1 point. Another question was related to the atmosphere in the workplace. On a five point scale, 71% of interviewees awarded 5 points, 11% rated the working atmosphere at 4, and only 3% assessed it with the lowest value, i.e. 1. The respondents were also asked to assess their satisfaction with the office equipment. As many as 64% of them rated it as 5 in this survey, 20% rated the equipment of offices as 4, while only 7% rated it as 1. In the further part of the study, the staff evaluated cooperation with doctors, assistants, and registration employees. The respondents assessed satisfaction with the cooperation with doctors in the office on a five point scale. 86% rated it as 5, while the remaining 14% rated the cooperation as 4. Satisfaction with the cooperation with a registration employee was assessed on the same scale. 72% of respondents rated this cooperation at 5, 22% of them at 4, and the remaining 6% at 3. Cooperation with assistants/hygienists in the clinic was another evaluated factor. 50% of respondents rated the cooperation at 5, 43% – at 4, and 7% of employees rated it at 2. The last for of cooperation assessed was the cooperation with the facility owner/manager. 65% of respondents rated their satisfaction with such cooperation at 5, 29% of them at 4, and the remaining 6% assessed it as 3.

The following section of questions dealt with safety at work and procedures and quality improvement. In the question regarding safety in the workplace, 42% of the respondents rated it at 5, and the very same number at 4. The remaining 16% of responses were equally divided between the ratings of 3 and 2. Nobody rated safety in their workplace as 1. The next question was directly related to the procedures applied. The responses to this question are presented in Figure 3 and 4.

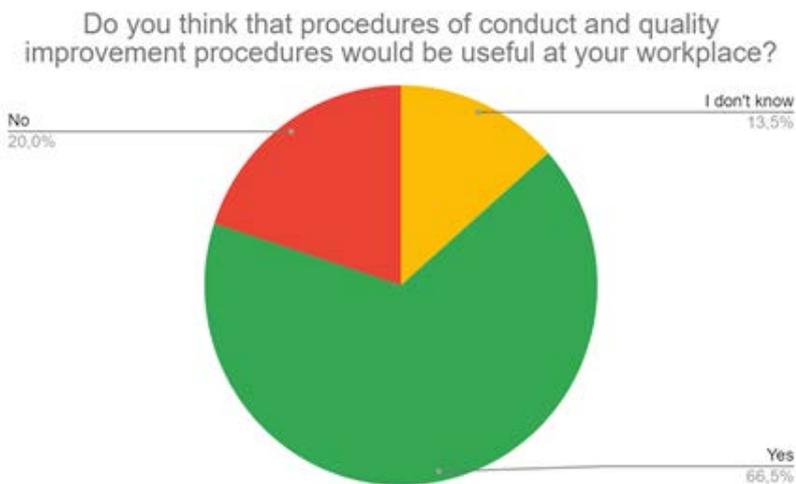


Figure 3. Usefulness of the procedures of conduct and quality improvement in the workplace
 Source: Author's own study.

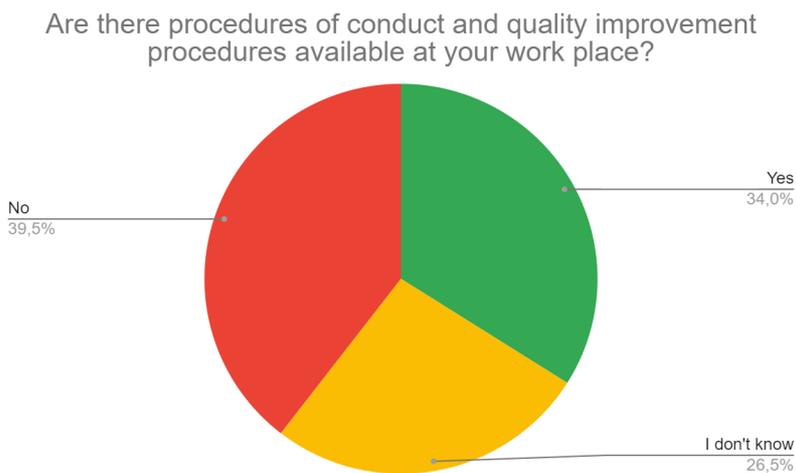


Figure 4. The current situation concerning the possession of procedures for the conduct and quality improvement in the workplace
 Source: Author's own study.

As can be observed, 66% of respondents believe that it would be useful to have procedures to be followed in their workplace. However, only 34% currently have some sort of procedure and quality improvement system in their daily work. Interestingly, when asked if the employees would like to be responsible for creating the procedures of conduct and quality improvement system in their workplace, the votes were split equally (50%-50%). Additionally, 72% of respondents believe that their work would be performed more effectively if all employees in this position performed it in the same way. The remaining 28% considered it irrelevant. The following questions concerned meetings with the staff to provide details on the flow of information in the clinic, which improves the implementation of all changes. The data concerning such meetings is presented in Figure 5.

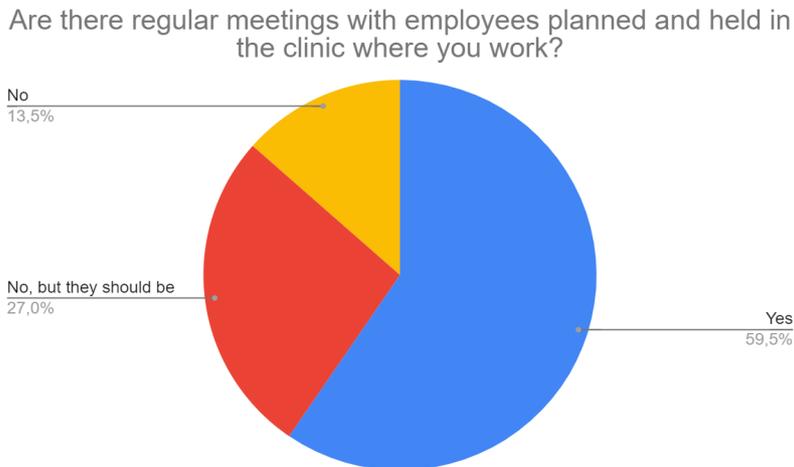


Figure 5. Regularity of meetings with employees

Source: Author's own study.

59.5% of employees declared that regular meetings are held in their workplace, which promotes the flow of information and allows for more efficient implementation of changes. Quality improvement is possible thanks to the systematic assessment and evaluation of progress. Therefore, the following questions focused on the assessment of employees and the entity itself. The results are presented in Figures 6 and 7.

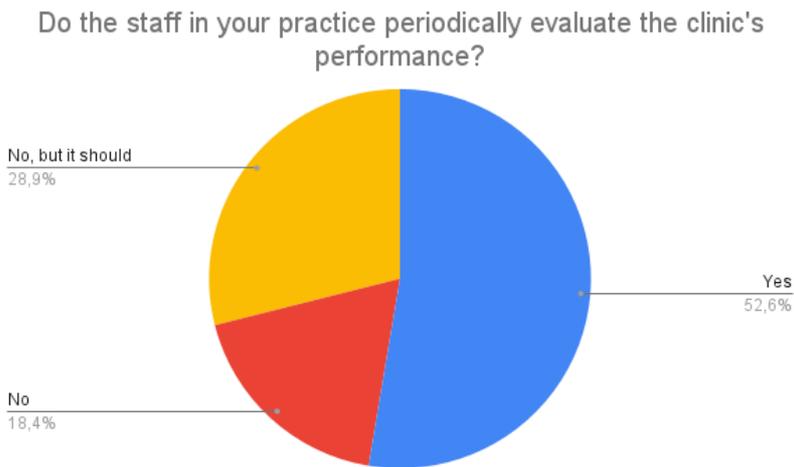


Figure 6. Systematic evaluation of the clinic by the staff – employees’ responses



Figure 7. Systematic evaluation of the staff by the owner/manager or other staff representatives – employees’ responses.

Source: Author's own study.

Only 53% of the respondents regularly assess the functioning of the clinic, and only 33% of the staff are regularly assessed. It means that there is low responsiveness to change and staff often do not have a benchmark for

improving performance. However, the most important question in the entire questionnaire was what procedures and quality improvement would be considered most needed by employees in their workplace. The answer to this question will allow us to determine which of the procedures introduced are the most important. Out of 22 procedures for the conduct and quality improvement, 6 were selected that were the most frequently mentioned. The answers were as follows:

1. Procedures for dealing with a "difficult" patient
2. Procedures for using individual equipment
3. Procedures for registering patients to continue treatment
4. Procedures for reporting problems and equipment/system malfunctions in the clinic
5. Procedures for handling life-threatening situations
6. Procedures for handling warranty claims and complaints

The second questionnaire was addressed to the owners and managers of dental clinics, and the answers provided in it were as follows: In the first question, the owners/managers were asked if they saw the benefits of introducing procedures and improving the quality in their office. The answers to this question provided in the questionnaire are presented in Figure 8.

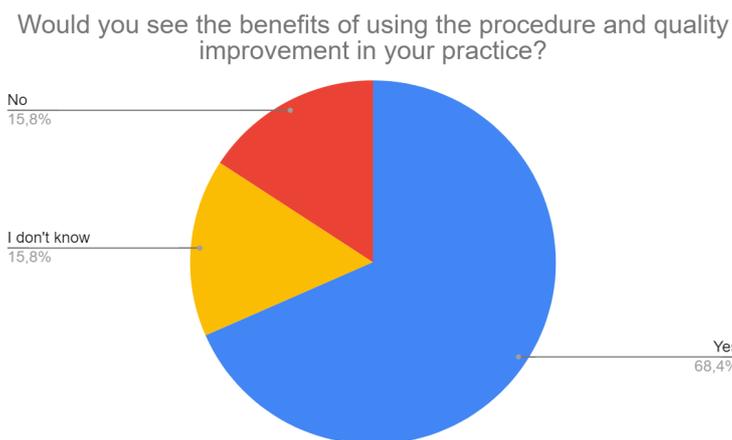


Figure 8. Potential benefit of implementing procedures and quality improvement

Source: Author's own study.

Almost 70% of respondents understand the benefits of introducing pro-quality solutions in their dental offices. This proves that there is a relatively high demand for such a type of procedure. In addition, there is a margin of almost 16% of respondents who are not convinced, but with an appropriate presentation of the benefits, they could become the supporters of this type of solution. Then the owners/managers were asked if there are already any procedures and quality improvement in place in their offices. Only 37% of respondents admitted that there are currently some procedures in place in their dental offices (Figure 9).

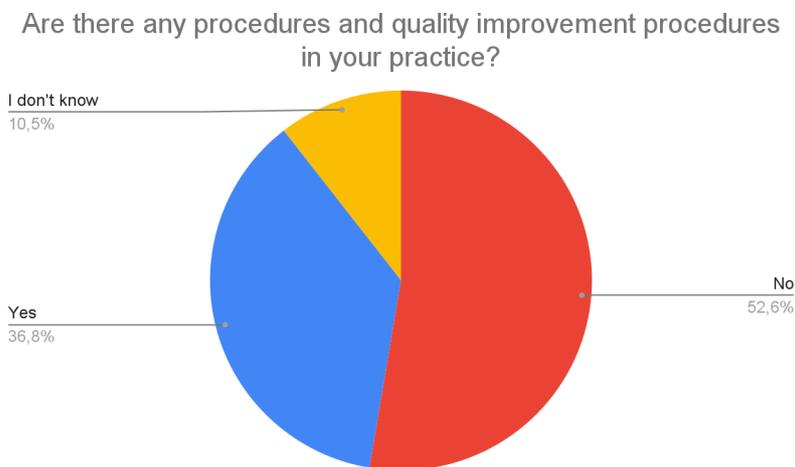


Figure 9. The current situation concerning the possession of any procedures in the dentist's office

Source: Author's own study.

Another important question is the allocation of responsibilities and who should actually be responsible for creating the procedures in the office. The answers to this question provided by the respondents are presented in Figure 10.

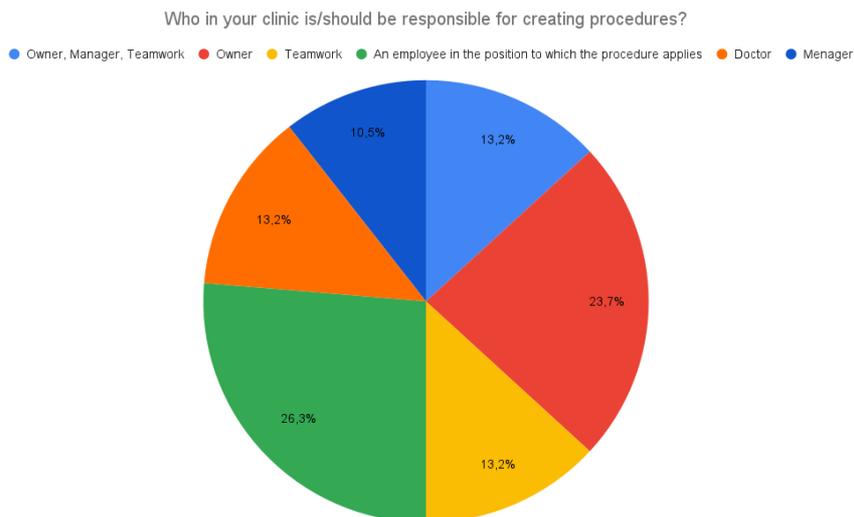


Figure 10. Responsibility for creating the procedures of conduct and quality improvement in the workplace

Source: Author's own study.

The most frequently selected answer was the one indicating the employee involved in a specific procedure, as well as the one saying that creating the procedures should be teamwork. 24% of the respondents feel that the owner should be responsible for creating workplace procedures. Subsequently, the owners/managers were also asked whether they assess their employees periodically and whether the employees are given the opportunity to evaluate the facility and its actions for employees. The answers to these questions are presented in Figure 11 and 12.

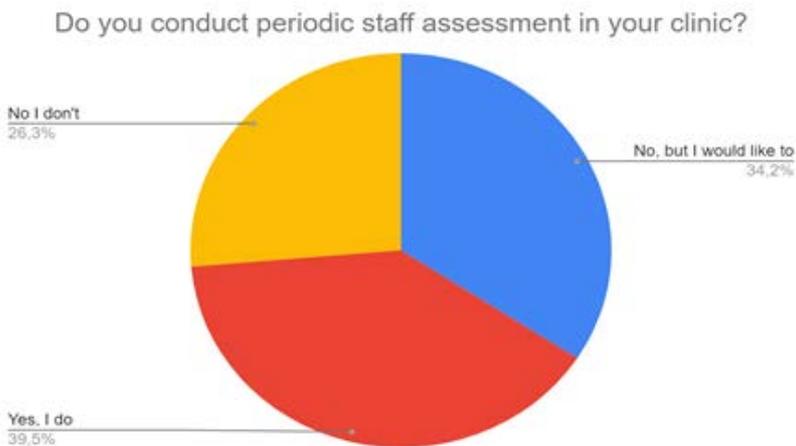


Figure 11. Systematic evaluation of the clinic by the staff – owner’s/manager’s responses

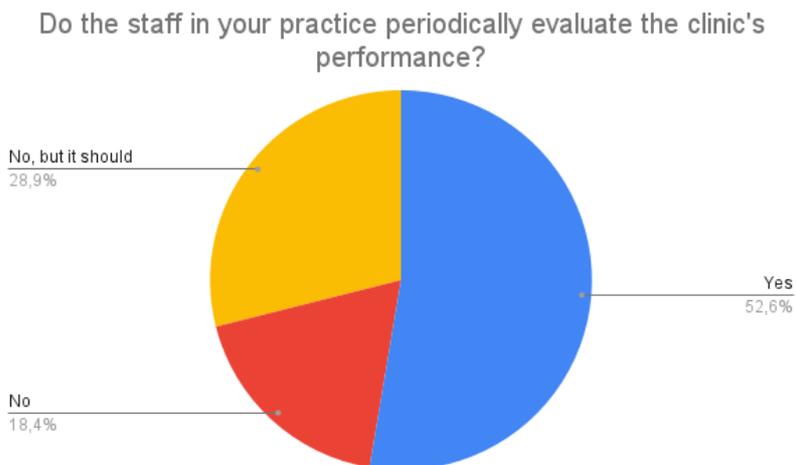


Figure 12. Systematic evaluation of the staff by the owner /manager or other staff representatives – owner’s/manager’s responses

Source: Author’s own study.

Only 40% of owners/managers carry out systematic assessments of their employees, but almost twice as many declare their willingness to carry out such assessments. On the other hand, over 50% of respondents give the employees the opportunity to carry out systematic assessments of the facility's activities, which allows for the clinic's development. The last but one question was whether regular meetings are held in the offices, which allows the staff to assess the flow of information in the office.

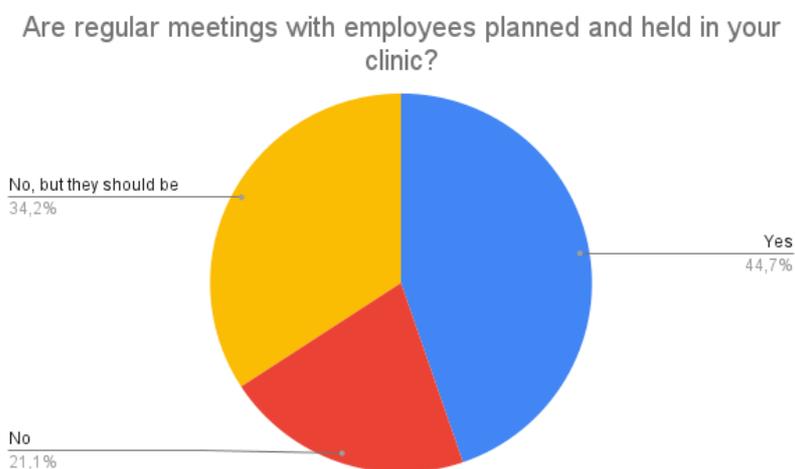


Figure 13. Regularity of meetings with employees – owners'/managers' responses

Source: Author's own study.

The owners/managers of the clinic were asked the same question concerning the regularity of meetings. Only 45% of respondents admitted that regular meetings with employees take place in the office. What is promising is the fact that over 34% of the interviewees declared their willingness to introduce such regular meetings to their daily work, which would improve the flow of information in the office and strengthen all the changes introduced. The last question was the same as in the employee questionnaire: The owners/managers were asked to choose the procedures they believe would be most necessary for their dental practice. Out of the 22 provided, 6 most frequently mentioned responses were selected, and the results are presented below.

1. Procedures for dealing with a "difficult" patient
2. Procedures for handling warranty claims and complaints
3. Procedures for reporting problems and equipment/system malfunctions in the clinic
4. Procedures for using individual equipment
5. Procedures for dealing with patient complaints made to various authorities
6. Procedures for registering patients to continue treatment

Discussion

The issues related to the improvement of quality play a significant role in the health care sector. The conducted study confirms the need for such improvements in dentistry. It draws attention to them from the perspective of the owners of private offices and their employees. Another important aspect to discuss when expanding and deepening the topic is the patient's perspective on quality improvement. Certainly, it shall be the author's next step in the research concerning dental quality management systems. The aspect requiring additional attention is creating a generally available database of procedures that require standardization for operational purposes. An overall study allows the researcher to evaluate the demand for a holistic and cross-sectional quality management system in dental clinics in Poland.

Conclusions

The presented data clearly shows that there is a need for procedures and quality improvement, both among employees as well as owners and managers of dental offices. Moreover, there was a catalogue of most needed procedures in clinics established, starting with the *procedures for handling "difficult" patients, through the procedures for handling warranty claims and complaints, work procedures of each group of staff, instrument decontamination procedures, equipment maintenance procedures, up to the procedures for handling patient complaints made to various authorities*. These are the procedures

that are the most stressful for the staff and, without proper tools, they can cause a decline in employee productivity or even burnout. In addition, clearly formulated and structured procedures would increase the effectiveness of the dental office and reduce waste, thus contributing to the increase in the company's profits. Other benefits include improving the employees' safety, enhancing the quality of services provided and streamlining the flow of information in the enterprise. All these benefits result from the creation of a holistic and cross-sectional tool that would include all procedures and quality improvement systems to systematize the work of dental offices.

References

1. Wapniarska K, Buła K, Hilt A. Parent's pro-health awareness concerning oral health of their children in the light of survey research. *Przeegl Epidemiol* 2016; 70(1) [Internet]. Available from: <https://pubmed.ncbi.nlm.nih.gov/27344476/> [cited 16 September 2022].
2. Rynek usług stomatologicznych w Polsce na etapie konsolidacji. Dentonet [Internet]. Available from: <https://dentonet.pl/rynek-uslug-stomatologicznych-etapie-konsolidacji/> [cited 16 September 2022].
3. Analiza rynku stomatologicznego – analiza rynku [Internet]. Available from: <https://analizarynku.eu/rynek-stomatologiczny> [cited 16 September 2022].
4. Rynek usług stomatologicznych w Polsce wart 8,6 mld zł. Dentonet [Internet]. Available from: <https://dentonet.pl/rynek-uslug-stomatologicznych-w-polsce-wart-86-mld-zl/> [cited 16 September 2022].
5. Centrum Badania Opinii Społecznej. Znak jakości przyznany CBOS przez Organizację Firm Badania Opinii i Rynku 14 stycznia 2016 roku [Internet]. Available from: <http://www.cbos.pl> [cited 16 September 2022].
6. Rynek usług stomatologicznych wzrośnie do 16 mld zł. *Medycyna Prywatna* [Internet]. Available from: <https://medycynaprywatna.pl/rynek-uslug-stomatologicznych-wzrosnie-w-2024-roku-do-prawie-16-mld-zl/> [cited 16 September 2022].
7. Crisan EL, Covaliu BF, Chis DM. A Systematic Literature Review of Quality Management Initiatives in Dental Clinics. *Int J Environ Res Public Health* 2021 Nov 1; 18(21) [Internet]. Available from: <https://pubmed.ncbi.nlm.nih.gov/34769604/> [cited 16 September 2022].

8. Goetz K, Hess S, Jossen M, Huber F, Rosemann T, Brodowski M, et al. Does a quality management system improve quality in primary care practices in Switzerland? A longitudinal study. *BMJ Open* 2015; 5(4).
9. Zabada C, Rivers PA, Munchus G. Obstacles to the application of total quality management in health-care organizations. *Total Quality Management* 1998; 9(1): 57–66.
10. Ile pracują lekarze i lekarze dentyści w Polsce? – Raport z badań opinii środowiska lekarskiego. Ośrodek Studiów Analiz i Informacji. Warszawa, 2018.02 [Internet]. Available from: <https://docplayer.pl/144426864-Ile-pracuja-lekarze-i-lekarze-dentysci-w-polsce-raport-z-badania-opinii-srodowiska-lekarskiego.html> [cited 22 September 2022].
11. Ojha D, Aravamudhan K. Leading the Dental Quality Movement: A Dental Quality Alliance Perspective. *J Calif Dent Assoc*; 2016 Apr; 44(4): 239–244 [Internet]. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27265980> [cited 16 September 2022].
12. Turner C. Interdental brushes and ISO standards. *Br Dent J*. 2022 Jun 10; 232(11): 761–762 [Internet]. Available from: <https://pubmed.ncbi.nlm.nih.gov/35689041/> [cited 16 September 2022].
13. Bittar OJ. Administrative Processes and quality of health certification. *Rev Assoc Med Bras* (1992) 1999; 45(4): 357–363.
14. ISO w gabinecie stomatologicznym – Jak nie utknąć w kanałach przepisów [Internet]. Available from: <https://prawodlastomatologow.pl/iso-w-gabinecie-stomatologicznym/> [cited 16 September 2022].

15. Naczelna Izba Lekarska. Lekarze Stomatolodzy 2016 – raport z badania. Warszawa; 2016, pp. 42–48. [Internet]. Available from: https://nil.org.pl/uploaded_files/1575629638_lekarze-stomatolodzy-2016-raport-z-badania.pdf [cited 16 September 2022].
16. Jones ML, Hobson RS, Plasschaert AJM, Gundersen S, Dummer P, Roger-Leroi V, et al. Quality assurance and benchmarking: An approach for European dental schools. *European Journal of Dental Education* 2007; 11(3): 137–413.
17. Hillsman JT. Quality assurance in dentistry. *J Am Dent Assoc* 1978; 97(5): 787–790 [Internet]. Available from: <https://pubmed.ncbi.nlm.nih.gov/281417/> [cited 16 September 2022].
18. Grocock R. Leadership in dentistry. *Br Dent J* 2020 Jun; 228(11): 882–885 [Internet]. Available from: <https://pubmed.ncbi.nlm.nih.gov/32541752/> [cited 15 September 2022].
19. Weintraub AM. Continuous Quality Improvement and Dental Practice: A Marriage of Necessity. *The Journal of the American Dental Association* 1996 Jul 1; 127(7): 1099–1106.
20. Goetz K, Campbell SM, Broge B, Brodowski M, Wensing M, Szecsenyi J. Effectiveness of a quality management program in dental care practices. *BMC Oral Health* 2014 Apr 28; 14(1).
21. Obadan-Udoh EM, Calvo JM, Panwar S, Simmons K, White JM, Walji MF, et al. Unintended consequences and challenges of quality measurements in dentistry. *BMC Oral Health* 2019 Mar 1; 19(1) [Internet]. Available from: <https://pubmed.ncbi.nlm.nih.gov/30823894/> [cited 16 September 2022].

22. Cassie H, Mistry V, Beaton L, Black I, Clarkson JE, Young L. An evaluation of the implementation of quality improvement (QI) in primary care dentistry: a multi-method approach. *BMJ Open Qual* 2021 Apr 13; 10(2). [Internet]. Available from: <https://pubmed.ncbi.nlm.nih.gov/33849904/> [cited 16 September 2022].
23. Scarano A, Inchingolo F, Lorusso F. Environmental Disinfection of a Dental Clinic during the Covid-19 Pandemic: A Narrative Insight. *Biomed Res Int* 2020 [Internet]. Available from: <https://pubmed.ncbi.nlm.nih.gov/33145359/> [cited 16 September 2022].
24. Amundson CW. Dental Quality Measurement – A Practitioner Perspective. *J Calif Dent Assoc* 2016 Apr; 44(4): 233–237 [Internet]. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27265979> [cited 16 September 2022].
25. Sanazaro PJ. Quality assessment and quality assurance in medical care. *Annu Rev Public Health* 1980; 1: 37–68.
26. Dentists 2016 – study report, Supreme Medical Chamber. Warsaw; 2016 [Internet]. Available from: http://nil.org/uploaded_files/1575629638dentists-2016-research-report.pdf.