

A Model for Successful Development and Optimal Management of Human Resources in a Dental Mechanics Laboratory

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Abstract - Human resources management is a system of activities that effectively uses staff to achieve particular goals of an organisation and at the same time satisfies the needs of employees. Human resource management (HRM) is a set of attitudes, decisions and actions of managers and connects human resources (HR) to the other resources of the organisation in order to fulfil its aims. The aim of the article is to present a model for successful development and optimal management of human resources in a dental mechanics laboratory. A documentary method, a sociological method and a SWOT analyses have been used. An in-depth research on literary sources dealing with various organisations, methods, functions and practices for human resource management as well as human resource management in dental mechanics laboratories has been carried out. The strengths and the weaknesses of human resource management in dental mechanics laboratories have been defined. The existing opportunities and threats to the environment have also been outlined. The area of study and research also covers the organisational and leadership skills of managers of dental mechanics laboratories; the motivation, qualification and professional abilities of dental technicians; the effective communication and teamwork with dentists. It has been established that the factors which influence the successful development of the dental mechanics laboratory are the following: the professionalism of employees and managers, the training of staff, motivation, micro climate, justified wages, effective communication between dental technicians and dentists and good teamwork.

Keywords: model, human resource management, dental mechanics laboratory, research.

I. INTRODUCTION

Human resources management (HRM) is an approach to the management of people based on the following principles: human resources are the most significant assets in any organisation and their effective management is the key to success; the success of any company is possible only if its

workforce policies and procedures are linked and contribute to the fulfillment of the corporate goals and strategic plans; the corporate culture and values as well as the rules of an organisation and its management attitudes have a direct influence on the achievement of excellence; attitudes should be managed in order to change or strengthen the values within the organisation, so a constant effort, which starts from the top of the organisation, is required; human resources management implies the integration of all members, so they can work and be aware of a common goal [2,5].

Human resources management is the combination of the managers' attitudes, decisions and actions, which are connected to the rest of the resources of the organisation to achieve its goals [1, 8, 12].

What makes a company successful is its ability to attract and keep the suitable employees – people who are happy with their occupation and their work environment. Such people can be productive for a long period of time [9].

HRM is the obligation of every manager in a highly competitive business environment. The most essential responsibilities of a manager are the following: the analysis of certain positions and staffing, the introduction of a legal and ethical management system, the organisation and optimisation of the workforce, the measurement and evaluation of achievements in the workplace, the introduction of a bonus system for the employees, the opportunities for professional growth and the maintenance of the workforce [14, 15].

Human resources management is a system of activities that effectively uses staff to achieve particular goals of an organisation and at the same time satisfies the needs of employees [7, 13].

A research has shown that the effective implementation of a human resources management system can be a major driving force for achieving better personal and professional results within an organization. When the employees consider the practices of the company's HRM as mutually beneficial and fair, they have a positive attitude which leads to better

performance in their workplace [11]. The majority of empirical research materials dealing with the relationship between HRM and the efficiency of an organization focus on the importance of various mediation mechanisms which allow HRM systems to improve the organization's overall performance in competitive environment [10]. In order to establish and maintain good relations with the staff, successful communication and feedback should be a priority. A good leader must not only become very familiar with the team, but also understand what motivates and engages each person to spare no effort [4]. The manager, who knows what motivates the employees working in the organisation, can easily modify their actions [3]. It is important for the manager to respond to the different needs of the employees, for example, to meet their social needs such as the sense of belonging, the sense of being important, the need of security and respect. In addition, a good manager should be able to react adequately to any unexpected situations [7].

The dental technician works in an independent medical-technical laboratory, but does not always work alone. In many cases the dental technician is the leader of a team of several dental technicians. Being the main figure in the dental mechanics laboratory and its activities, the dental technician performs all levels of management simultaneously. It is necessary to have the skills to set goals for the development of the dental practice as well as skills to organise, implement and control the various activities related to the working processes [17]. The dentist and the dental technician form a team that takes care of patients' dental health by making dentures, which repair dentition defects, as well as orthodontic appliances, which treat dentition defects, and dental braces, which stabilize dentitions [16].

When the employees of an organisation are surrounded by supportive and understanding colleagues and there is a pleasant working atmosphere, they are able to give their best in order to achieve excellent results. This is valid for any team, especially for dental laboratories, where dental technicians have to cooperate with each other as well as with the dentists [6].

II. AIM

The aim of the present article is to propose a model for successful development and optimal management of human resources in a dental mechanics laboratory.

III. MATERIALS AND METHODS

An in-depth study of literary sources, which deal with the organisation, methods, functions and activities of HRM and HRM in a dental mechanics laboratory, has been done. A survey has also been conducted in order to investigate the

influence of the human factor on the development of an independent medical-technical dental laboratory. The survey was conducted for the period between May and October 2017 in Varna, Dobrich and Bourgas and included 58 managers of dental mechanics laboratories, 126 dental technicians and 66 dentists. The survey was distributed in the form of three types of anonymous questionnaires. A SWOT analysis was finally carried out to define the strengths and weaknesses of HRM in dental mechanics laboratories as well as the existing opportunities and threats of the external environment.

IV. RESULTS AND DISCUSSION

The subject of the present research is focused on the organizational and managerial skills of the managers of dental laboratories, the motivation, qualification and professional skills of dental technicians, good communication and teamwork with dentists. The following conclusions have been made:

1. All respondents are unanimous that there is a need of additional training for dental technicians in regard to the improvement of their skills (managers 87.93%; dental technicians 77.78%; dentists 90.91%). Short-term courses are the preferred form of training (managers 55.17%; dental technicians 61.90%; dentists 71.76%).
2. The main form of financing of the qualification training courses for dental technicians is the financial burden shared between the employee and the employer (38.89% dental technicians; 32.76% managers).
3. The main way to maintain a good microclimate in the dental mechanics laboratory is based on mutual respect between the team members and leader (over 90% of all respondents).
4. The main qualities of a dental technician are professional skills and competencies, responsibility, discipline, organizational skills and motivation.
5. The most important qualities of a manager of a dental mechanics laboratory are professionalism, honesty, respect for employees and fairness when evaluating their work.
6. Material incentives are typical of dental technicians (managers 96.55%; employees 87.30%), while dentists prefer non-material incentives (95.45%).
7. The main factor influencing staff turnover is, according to managers (82.76%) and dental technicians (69.84%) – insufficient payment, and, according to dentists – conflicts (92.42%).
8. A very large part of the respondents state that good communication leads to identifying certain problems (managers – 82.76%; dentists – 87.88%; dental technicians – 69.05%) as well as to conflict prevention

(managers – 86.21%; dentists – 86.36%; dental technicians – 71.43%).

9. Dentists (95.45%) and managers (93.10%) state that the main role of communication is related to the optimisation of the work process, while dental technicians (91.27%) state that it is of equal importance to the improvement of work quality and the creation of better work environment (91.27%).
10. All respondents have provided a positive answer to the question if they feel a sense of belonging to the ‘dentist – dental technician’ team [6].

A SWOT analysis has been further conducted. It was aimed at identifying the strengths and weaknesses of dental mechanics laboratories in regard to human resources management. The existing opportunities and threats of the external environment have also been analysed. (Table 1), The SWOT analysis has enabled the development of the model for successful development and optimal management of human resources in a dental mechanics laboratory [6].

To create the model for successful development and optimal management of human resources in the dental mechanics laboratory, the experience of various organizations, and especially world leaders in the organization of human resources management, has been used as a stepping stone. For this purpose, the list of ‘best job positions’ for 2017 cited by Fortune magazine, which covered different organizations in the field of services, was used. The list was based on the following indicators: Communication; Bonus system; Working environment and Microclimate; Belonging to the organization; Management qualities of managers; Desire of employees to increase their contribution to the organization.

Table 1: SWOT analysis – Strengths and weaknesses of HRM in a dental mechanics laboratory

Strengths
<ul style="list-style-type: none"> ✓ Considerable experience of the managers of the independent dental mechanics laboratories; ✓ Availability of qualified specialists and potential for development in the field of modern technologies; ✓ The majority of dental technicians are willing to continue their training in the field of dental mechanics; ✓ Teamwork and mentoring; ✓ High flexibility and ability to meet the needs of patients and dentists for fast and quality production of dental mechanics products; ✓ Existence of an established system for staff motivation.
Weaknesses
<ul style="list-style-type: none"> ✓ Lack of additional management qualification among managers of independent dental mechanics laboratories; ✓ Conflicts in the dental mechanics laboratory and between the dental team; ✓ Lack of strategic thinking of managers regarding the

<ul style="list-style-type: none"> development of human resources; ✓ Insufficient motivation of employers to improve the skills of their employees; ✓ Insufficient management skills; ✓ Huge workload for dental technicians; ✓ Need of investments in the improvement of safe and healthy working conditions; ✓ Considerable staff turnover leading to a lack of stability in production.
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The following organizations were selected: Kimley-Horn, CHG, Healthcare Services, Scripps Health, Texas Health Resources. When the employees of these companies were asked, over 90% replied that their managers possess special qualities of integrity and ethics and their professional competence was extremely high and the employees felt proud to work for them. The employees in these companies stated that due to the good feedback, they perceived themselves not only as very valuable resources for the company, but also as an indispensable part of the work process and team members possessing the necessary confidence to belong and empathize with the goals of the organization [18, 19, 20, 21, 22].

Table 2: SWOT analysis – Opportunities and threats of external environment

Opportunities
<ul style="list-style-type: none"> ✓ Staff training to be focused mainly on qualification training courses organized by Medical College – Varna; ✓ Expansion of the services offered by the dental mechanics laboratory and parallel staff training; ✓ Optimal use of available resources with regard to the future strategic development of the dental mechanics laboratory in the dental services sector; ✓ Introduction of a register that will help to actively and effectively regulate the market (‘compliance with the rules of the game’).
Threats
<ul style="list-style-type: none"> ✓ Lack of sufficient financial resources by the users of dental services; ✓ Emigration of specialists to countries offering better working conditions; ✓ Increase in the requirements of patients regarding the aesthetics of the prosthetic structure and the inability of the dental laboratory to meet these needs due to the lack of equipment and / or trained staff; ✓ Low salaries of dental technicians, which will lead to an outflow of the discipline; ✓ Dynamics and changes in the legislation regulations regarding the activity of the dental mechanics laboratory, which the independent dental mechanics laboratories are not prepared; ✓ Lack of mechanisms for linking the laboratory with the health insurance fund; ✓ Lack of specializations in Dental Mechanics; ✓ Lack of management specialty providing competencies about the management of a dental mechanics laboratory.

Taking into account the specifics of organizational processes in the dental mechanics laboratory, due to the small number of staff and the presence (in most cases) of only one manager, who is responsible for all functions and activities of human resources management, 8 basic organizational and managerial directions can be derived. The improvements in each of them, as well as in their function as a unity, bring the organization closer to its optimal model for successful practice (Figure 1).

Organisation management directions

1. Staffing of the dental mechanics laoratory
2. Training and opportunities to increase the professional skills of dental technicians
3. Motivation of dental technicians
4. Conflict management and maintaining a good microclimate in the dental mechanics laboratory
5. Fair bonus system (monetary and non-monetary)
6. Direct control on the production process
7. Creating a real team relationships between dental technicians and dentists
8. Creating an effective communication policy and feedback

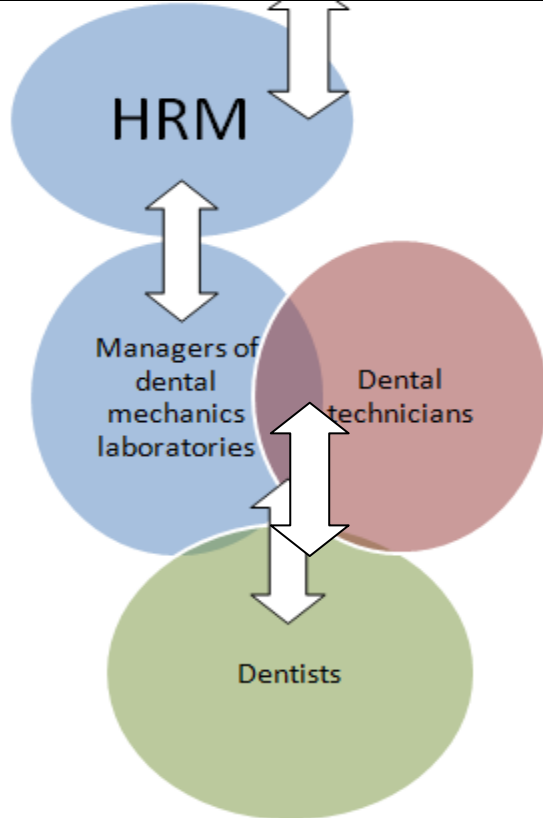


Figure 1: Model for successful development and optimal management of human resources in a dental mechanics laboratory

Theoretical justification of the Model:

1) Staffing of the laboratory, according to its individual technical characteristics and the number of dentists it works with:

- Optimal number of staff;
- Hiring staff with appropriate qualifications;
- Determining the optimal duration of working hours;

2) Training and opportunities to increase professional skills and competencies

- Organizing short-term courses and one-year specializations depending on the needs of the dental laboratory and the staff;

3) Motivation of dental technicians:

- Use of material and non-material incentives;

4) Conflict management and maintaining a good microclimate in the dental mechanics laboratory:

- Creating formal and informal relationships;
- Identifying the conflict from the very beginning and implementing measures to prevent it;
- Timely resolution of conflict situations;
- Personal recognition of importance and significance;

5) Fair bonus system (monetary and non-monetary) linked to individual results:

- Fair evaluation of labor;
- Additional remuneration related to the quantity and quality of work;

6) Direct control on the production process:

- Establishment of a quality monitoring and control system;
- Attestation of dental technicians for a certain period of time;
- Regular reporting on production results;

7) Creating a real team relationship between dental technicians and dentists:

- Clear and open communication
- Maintaining feedback
- Setting collective tasks for dental technicians in the process of work
- Organizing team buildings activities to unite the team

8) Creating an effective communication policy and feedback:

- Using modern methods of communication;
- Improving the forms of communication;
- Digitalization of the communication process;
- Constant feedback between the dental technicians and the manager and between the dental mechanics laboratory and the dentists.

When the employees of an organization are surrounded by supportive and understanding colleagues, a good working environment is created and they are able to perform in the best way to achieve excellent results.

This is valid for any team, especially for teams in dental mechanics laboratories, where dental technicians must cooperate with each other, as well as with dentists [6].

Teamwork is not related only to personal gain. It is also beneficial for third parties –patients as users of the cares provided by the effective team of many individual medical professionals. Clear communication and a motivated team lead to better results for patients. Table 3 presents the main directions for building an effective team in the dental mechanics laboratory.

Table 3: Main directions for building an effective team

Direction	Description
Teamwork means understanding the common goals	Each team members should understand the collective goals in order to engage with the team. In the dental mechanics laboratory the goal can be related to good results for the patients, safe working conditions or timely production and delivery of dental prosthetic structures. It is difficult for the team to stay motivated if there are no clear goals. The lack of specific goals leads to problems and creates preconditions for conflicts, as well as to low quality of work.
Every team member can have the role of a leader	Team work is not only related to the goals of the company. It is also about the opportunities for development of the team members and the opportunities for personal expression in solving various clinical cases.
Encouraging personal relationships to unite the team	It is important to give opportunities for the building of informal relationships by encouraging conversations between team members, organizing meetings outside the work environment, organizing team building activities to stimulate better personal

	communicaton.
Finding common methods for communication	In any organization communication takes place in different ways, so it is necessary to find the optimal options that are preferred by different team members.

The production of dental prosthetic structures and the observance of the technological processes requires great precision. Therefore, concentration is crucial for dental technicians whose work is related to detail and focus [6].

Staying absolutely productive for an eight-hour working day is almost impossible, but there are several things that can be done to maintain and improve dentists' concentration.

Opportunities for the improvement of work efficiency:

- 1) Introducing pauses in the work process – work in the dental mechanics laboratory is very stressful and requires a lot of concentration. When there are no breaks and the deadlines are close, there is a danger of making mistakes. In regard to this, it is necessary for dental technicians to take regular short breaks at certain intervals to restore the ability to concentrate and the attention to details in order to achieve precision of the construction.
- 2) Time management – concentration and productivity are individual and their intervals and duration vary for each specialist in the dental mechanics laboratory. One of the obligations of the manager is to monitor when each of the dental technicians is most productive. Therefore, a schedule with the tasks for dental technicians according to their best concentration time periods should be designed. For instance, if a dental technician is more concentrated in the morning, the respective schedule should include more activities or the construction of more complex structures in the particular time zone. In the afternoon, when the concentration and productivity are reduced, easier tasks can be assigned: transfer of structures to dentists, communication, review of available materials, organizing future tasks, etc.
- 3) Reduction of distractions – some people may be able to concentrate better and be more productive when listening to music, for example, while others prefer to work in complete silence. In such cases it is necessary to assess what is the most appropriate environment for achieving optimal concentration and productivity by the different team members. Headphones are an option to avoid distraction. Short breaks, which are meant to refresh the mind and change the atmosphere, are also a good solution.
- 4) Constant motivation – maintaining a sense of importance among dental technicians is crucial for their belonging to

the team. Loss of motivation can be detrimental to work results, as well as to contribute to the loss of concentration and energy during the work process. Dental technicians with sufficient experience can suffer loss of interest and boredom due to the routine and the feeling that they have learned everything in professional point of view. Modern dental mechanics is an area that is constantly evolving and new technologies and materials are created all the time. In regard to this, the manager keep the interest of all the employees by constant work innovations or by creating opportunities for professional development in the sphere of technological advancement in the dental mechanics sector.

Good communication is essential in the dental sphere, especially between the dental practice and the dental mechanics laboratory. Today, there are various digital options that make it extremely easy to transmit information. The existing automatic process as enable the best possible alternatives. Effective communication involves much more than sending emails and text messages. Direct contacts and personalized relationship will continue to play an important role in the future. Each medical dental case is different, so it is necessary the members of the dental team to work in collaboration to achieve great precision and good results.

The ability of specialists to identify with others is absolutely necessary for constructive and successful cooperation. Dental technicians should be familiar with the work of a dentist and vice versa. The work in the dental office is completely different from that in the dental mechanics laboratory and the dentists have their specific needs and concerns about the end result of the treatment. For these reasons, it is necessary the participants in the dental team to show mutual respect and understanding in order to prevent misunderstandings and mistakes during the work process. As equal members of the dental team, dental technicians have the right to give professional advice related to the materials and methods for making dental constructions that are most appropriate for the respective clinical case. In regard to this, not only the dentist but also the patient should be involved in the communication process. The purpose of the communication with the patients is to provide them with professional guidance throughout the treatment process. This will allow everyone to make sure that the basic criteria of aesthetics, phonetics, form and function are entirely met.

In order to achieve effective communication, it is necessary to create a strong team relationship between dental technicians and dentists. This can be achieved through the joint participation of specialists in both spheres in qualification training courses.

The resolution of individual clinical cases should be managed as a project. Excellent coordination and close cooperation are indispensable prerequisites for achieving excellent results. Consistent development and training will broaden the horizons of dental technicians and dentists and strengthen the established professional relationships. Joint clinical case planning will also determine the direction of the future treatment. The clinical case planning is a project with:

- Established goals (desires and needs of the patients);
- Definition of a deadline and expenses;
- Specific stages (experimental period, temporary treatment, permanent recovery)
- Follow-up measures (follow-up care) [6].

V. CONCLUSION

What makes a company successful is its ability to attract and retain the right employees – people who are satisfied with what they do and the environment they work in. Such people can remain productive for a longer period of time. Organizations, which have human resources with the necessary personal qualities and professional competencies, have a significant competitive advantage. The SWOT analysis, which has been conducted, is the basis for the development of the model for successful management. The model for optimal human resource management in a dental mechanics laboratory is an integrated approach to the optimization of the resources of an organization with the aim of achieving optimal results. What is essential for successful practice is based on the derived eight main organizational and managerial strategies. The theoretical justification of the model creates the opportunity the model to be applied within small teams in other areas of activity.

REFERENCES

- [1] Angelov, A., 'Alphabet of Management', Graphit Amad Publisher, Sofia, 1994.
- [2] Armstrong, M., 'Management of Human Resources', Doplhin Press, Bourgas, 1993.
- [3] Atanasova, A., Toncheva, S., Varneva, M., 'Motivating Factors in the Professional Activity of Dental Technicians', Management and Education, b. 5, vol. 11, Bourgas, pp. 16-20, 2015.
- [4] Atanasova, A., Toncheva, S., Varneva, M., 'Factors for Successful Management and Development of an Independent Dental Mechanics Laboratory', Sankt Peterburg Institute of Project Management, Kult Inform Press, pp, 124-129, 2016.
- [5] Atanasova, A., 'The Importance of Human Resources for the Successful Development of an Independent Medical-technical Dental Mechanics Laboratory',

- Doctor degree dissertation, Medical University-Varna, Varna, 2018.
- [6] Borisov, V., 'Health Management – The New alphabet of Health Management', Medical University Sofia, Sofia, 2009.
- [7] Drucker, P., 'Practice of Management', Classics and Style Publisher, Sofia, 2001.
- [8] Harvard Business Review on Talent Management Copyright, Harvard Business School Publishing Corporation, 2005
- [9] Huselid, M.A. (1995). 'The impact of human resource management practices on turnover, productivity, and corporate financial performance.' *Academy of Management Journal*, 38(3), 635–672.
- [10] Lepak, D. P., Liao, H., Chung, Y., & Harden, E. E., A conceptual review of human resource management systems in strategic human resource management research. *Research in Personnel and Human Resources Management Review*, 2006, 25, 217–271.
- [11] Mladenov, Y., Terziev, V., 'Organisation and Management of the Company', Siloam Press, Rousse, 2009.
- [12] Penchev, P., 'Basics of Management', Veliko Tarnovo, 2007.
- [13] Rajendra, N., 'The impact of human resources management on quality services of healthcare organizations', *International journal of advance research and innovative ideas in education, IJARIIIE-ISSN(O)- 2395- 4396, Vol-3 Issue-1, 2017.*
- [14] Singh, K., 'Impact of HR practices on perceived firm performance in India Asia Pacific', *Journal of Human Resources*, Vol.42, 3, 2004, 301-317.
- [15] Varneva, M., 'Retrospection, analysis and social-psychological problems during the preparation and realisation of Bachelor degree in Dental Mechanics', Dissertation work, Medical University-Varna, Varna, 2013.
- [16] Varneva, M., 'Marketing and Management of Dental Mechanics Practice.', *Health economy and management*, Year 14, issue, 1(51), Steno Publisher, pp. 33-37, Varna.
- [17] <http://reviews.greatplacetowork.com/chg-healthcare-services-inc>
- [18] <http://reviews.greatplacetowork.com/kimley-horn>
- [19] <http://reviews.greatplacetowork.com/scripps-health>
- [20] <http://reviews.greatplacetowork.com/texas-health-resources>
- [21] <https://www.greatplacetowork.com/best-workplaces/100-best/2018>

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