ANALYSIS OF PUBLICLY FUNDED ORTHODONTIC SERVICES IN NORTH MACEDONIA

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Abstract: Health is priceless, but it does have specific costs. Medical coverage is financing medical treatment, whereas access represents the method of receiving that care. Malocclusion, or deviation from the ideal occlusion, is typical in many children and teenagers. However, most of these deviations fall into what is considered a normal biological variation. Understanding the regulation of orthodontic services in publicly funded healthcare systems is essential to ensuring quality care and efficient resource allocation. When the funds are limited, the question is: How to ensure these limited resources are spent efficiently? Which kinds of orthodontic malocclusion might justify a legitimate claim for treatment financed by the public? This research aims to review the current regulation of orthodontic treatment covered by the Health Insurance Fund of North Macedonia, the only public institution implementing mandatory health insurance in the country, regarding treatment accessibility, outcome control, and payment methods. To achieve this goal, we sought guidelines, protocols, and legislative texts to understand how orthodontics is regulated in the country's publicly funded health system. We researched as follows: analysis of the legal and regulatory framework governing the provision of orthodontic services in the public health care systems of North Macedonia. Then, informative conversations with accountable persons working as general dental practitioners, orthodontists, and policymakers. At last, an unsystematic review of the literature was done.
Publicly funded orthodontic treatment is available to insured individuals up to 18 years of age in case of malocclusion, impaired articulation, and aesthetics. Only specialists in orthodontics can prescribe a removable appliance based on medical necessity determined by honoring the International Classification of Diseases (ICD) and age. Code K07: Dentofacial anomalies (including malocclusion) are eligible for publicly funded orthodontic treatment; no further guidelines or requirements are given. Fee-for-service is the primary payment method, and the orthodontist is reimbursed up to a maximum of three removable appliances. The efficiency of the removable appliances is most outstanding during the growth period. Studies show that compliance is suboptimal, and patients' motivation and cooperation significantly impact their effectiveness. There are no objective criteria to measure the treatment outcome. We suggest that the responsible healthcare authorities in North Macedonia improve the current regulation of orthodontic treatment. This includes the reforms and coverage of orthodontic treatment as per evidence-based dentistry instead of only funding certain appliances. A research project based on patients' and orthodontists' needs and the healthcare system conditions may help develop a framework for effective regulation on the provision of orthodontic care.
Keywords: public health, publicly funded healthcare system, orthodontics, malocclusion

1. INTRODUCTION

Health is priceless, but it does have certain costs. A country's healthcare systems greatly influence a country's ability to guarantee that every individual has equitable access to services, hence boosting welfare and general quality of life. A publicly financed healthcare system is a form of financing structure to cover the cost of healthcare needs from a publicly managed fund. Medical coverage is financing medical treatment, whereas access represents the method of receiving that care. However, the array of regulations can be overwhelming, and the policymakers must ensure that citizens get quality treatment at an affordable price with easy access. A well-functioning system is one where all three features are in balance.

The Health Insurance Fund of North Macedonia is established by the Law on Health Insurance to implement compulsory health insurance. It is the only state insurance organization in the country that performs activities of public interest and public authorizations determined by the Law. With some help from the Pension Fund, the Unemployment Fund, and general government revenue, payroll contributions are the main contributors to the Health Insurance Fund. Compulsory health insurance in North Macedonia is settled for all citizens to provide health services and monetary benefits based on comprehensiveness, solidarity, equality, and effective use of funds. This includes the right to health care in case of illness and injury outside of work, injury at work, and professional disease. The right to health care also includes preventing and treating oral and dental conditions.

Orthodontics is a dental specialty concerned with preventing and correcting dentofacial anomalies, and orthodontic therapy is usually a long and expensive procedure. Treatment costs and durations are generally the primary reasons

some individuals do not receive treatment. While we cannot directly influence the duration of the treatment, implementing it under publicly funded treatments makes it more accessible to all patients. Nevertheless, when the funds are limited, the question is: Which kinds of orthodontic malocclusion might justify a legitimate claim for treatment financed by the public? When should individuals be responsible and cover their orthodontics treatment? How do we make sure limited resources are spent efficiently?

Malocclusion, or deviation from the ideal occlusion, is typical in many children and teenagers. However, most of these deviations fall into a normal biological variation. Since having an orthodontic anomaly is not the same as the need for orthodontic treatment, it requires objective criteria to determine who is eligible for publicly funded orthodontics treatment because these resources are limited. For this purpose, numerous standardized systems and indices have been developed worldwide, such as - Index of Orthodontic Treatment Need -IOTN (UK, Ireland), Peer Assessment Rating - PAR, and Index of Complexity Outcome and Need - ICON. However, occlusal indices are strongly morphological, while the need for orthodontic treatment is primarily subjective. Studies have shown that self-perception of orthodontic treatment needs and an Orthodontist's assessment can be highly variable. That is why, for best results, clear protocols with a combination of objective indices and subjective questionnaires are warranted.

When discussing public funds allocated for health care, a common perception is that they are not always deployed optimally. Regulations must ensure that health services are provided as and where needed, without bias. But, when the health system is regulated, the question is: *Does it work? Does regulation affect the quality of health care services delivered to the patients?* This paper will analyze and answer these issues by examining Macedonian's current basic assumptions, goals, and regulatory mechanisms of orthodontic care. It aims to highlight the opportunities and limitations related to access to treatment, quality control, and payment methods.

2. MATERIALS AND METHODS

To obtain the results, we did the research in three parts.

First, we did an overview of official laws and regulations to determine if and how orthodontic care is covered under the public health sector. Data published on the official website of the Health Insurance Fund of Macedonia (http://www.fzo.org.mk) were considered. The searches were conducted by reviewing public health laws and regulations, the rights of insured persons, the indications for exercising the right to orthopedic and other aids, the limitations, quality control, outcome control, and reimbursement. For a more efficient search, the following keywords were used: publicly funded treatment, indications, orthodontics, orthopedic aids.

We also had informative conversations with accountable persons and subject matter experts to gain an inside perspective of how the system is functioning. Additionally, we did an unsystematic literature review to gather information on current orthodontic treatment options, cost-effectiveness of publicly subsidized treatment, and evidence-based dentistry.

The criteria used were as follows:

- Use of occlusal indices for an assessment of the need for orthodontic treatment;
- Use of International Classification of Disease;
- What is the funding process like;
- What is the cut-off age for funding by the public healthcare sector;
- Is the outcome controlled – by objective and subjective criteria;
- Are there recommendations and guidelines for diagnosis and treatment plans?

Answering these questions will provide a clear picture of the advantages and disadvantages of the current orthodontic regulation within the publicly funded system.

3. RESULTS

In North Macedonia, orthodontics is part of public health. The Health insurance fund covers three removable orthodontic appliances for every patient under 18 in case of malocclusion, impaired articulation, and aesthetics. The patient needs a referral from a general dental practitioner to an orthodontist specialist to determine the need. Then, the orthodontist can prescribe an orthodontic appliance based on a comprehensive exam. Code K07 from the International Classification of Diseases ICD is used to justify the right to publicly funded orthodontic appliances. Another limiting factor is the age. Apart from this, we could not find any other requirements for documentation that need to be submitted with the prescription, such as intra and extra-oral photographs, space analysis, indices, or x-rays.

Every appliance has a fixed price; the fund pays the entire amount when the documentation is submitted and approved. There are no official criteria for regulating the therapy outcome as well. The regulatory structure in North Macedonia needs to be uniform and consistent and needs improvement. Therefore, it is mandatory to implement

clear criteria and indices when determining the need for orthodontic treatment and the right for it to be covered by HIFNM. Also, it is desirable to measure the treatment outcome to compare the costs and benefits of treatment.

4. DISCUSSION

Orthodontic therapy is a long and expensive procedure, and publicly subsidized care makes it more accessible to patients in high need. However, funds should be carefully distributed, and treatments better identified. When orthodontics is part of public healthcare, coverage should focus on appliances delivering the most efficiency and effectiveness with the least risk and burden to the patient and the insurance. Scientifically proven standards for quality regulation of orthodontic treatments in public health should be established. This is the only way to achieve satisfactory results. On the contrary, poorly regulated public health typically provides unsatisfactory quality of service.

HIFNM covers only part of removable orthodontic appliances, removable functional appliances, and retentive devices. The advantages of removable appliances are that they are easy to fabricate and use, patients' oral hygiene is unaffected, and, most importantly, they are affordable and effective during growth. However, some studies show the motivation and cooperation of patients, perhaps over the age, have a more significant impact on their effectiveness. Studies show that compliance can improve. Microchips have been used lately to measure wear time, and the results are surprising. Although patients knew they were monitored, the majority of them did not meet the recommended wear time. The same study also noticed a difference in compliance between genders and between types of appliances. In one systematic review study, the results show there is a need for evidence that early treatment has an advantage over treatment that begins later. However, another study shows that early treatment with removable appliances can reduce the need for definite treatment.

Orthodontic diagnosis and treatment planning are determined after analysis of patients' initial records. Orthodontic records include clinical examination, alginate impressions for fabrication of study models, extraoral and intraoral photographs, and radiographic examination such as panoramic and cephalometric analysis. In most cases, these parameters are sufficient to diagnose and develop a treatment plan. However, these records will not only help in diagnosis but help measure the progress and the outcome of the treatment. The most frequently used space analysis are Moyers and Bolton, for mixed and permanent dentition, respectively.

To the best of our knowledge, there is no need for supportive documentation such as space analysis, dental radiographs, or indices to warrant and grant access to publicly funded treatment. Although an objective diagnosis K.07 is used to prescribe removable appliances, the determination is left solely to the orthodontics' subjective criteria, and no additional proof is required from HIFNM to approve the treatment. This could lead to the misuse of finite funds. Another disadvantage of the current regulations is that neither the treatment's outcome nor the results' stability is measured. The Peer Assessment Rating (PAR) index is a tool to measure the effectiveness of the treatment. The score difference between the pre-and post-treatment cases demonstrates the degree of improvement and, thus, the efficacy of the treatment.

Limited funds must be directed to initiatives proven to be successful. Data on the population's orthodontic treatment needs are necessary for planning orthodontic care within a public health system. Orthodontists and HIFNM can achieve "value for money" by using cost-effectiveness assessments to find procedures and appliances that better utilize resources and aid in implementing efficient working methods.

5. CONCLUSION

Based on the above arguments, we propose changing the current regulations of orthodontic treatment in North Macedonia. The most critical move is to reduce subjective judgment. Occlusal indices are a great start in the right direction. They are defined as quantitative diagnostic aids for an objective assessment of the need for orthodontic treatment and the severity of the anomaly. They can also be used to evaluate the outcome of orthodontic treatment. They are good indicators and can be used as orthodontic review tools for research purposes. We also recommend a study and analysis of the demand for orthodontic treatment and funds available for publicly funded orthodontic treatment in Macedonia. Clear guidelines of which cases are eligible for publicly funded treatment and supportive documentation to prove that the patient is eligible. And lastly, we propose that supporting for orthodontic therapy be based on quality, not quantity, and instead of covering certain appliances, to cover treatments.

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