

THE ROLE OF PARENTS IN MOTIVATION FOR ORTHODONTIC TREATMENT FOR CHILDREN

ROLA RODZICÓW W MOTYWOWANIU DZIECI DO LECZENIA ORTODONTYCZNEGO

Anna Ye. Karasiunok, Liubov V. Smahliuk

HIGHER STATE EDUCATIONAL ESTABLISHMENT OF UKRAINE "UKRAINIAN MEDICAL STOMATOLOGICAL ACADEMY", POLTAVA, UKRAINE

ABSTRACT

Introduction: One of the main features of orthodontic treatment is the cooperation of the doctor with the patient. Active growth of a child's organism at the age from 6 to 12 has not only physiological but also psychological aspects of development. Motivation for orthodontic treatment is absent during mixed dentition. Only taking into account the somato-psychological status and the psycho-emotional condition of the patient during the orthodontic treatment allows to choose an optimal treatment option and to predict its effectiveness.

The aim: The aim of our study was to increase the motivation for orthodontic treatment for children during the period of mixed dentition by using informative and accessible psychological methods to raise awareness and the role of parents.

Materials and methods: 30 patients at the age from 6 to 12 received orthodontic treatment. The treatment contains targeted psychological training, aimed at activating, strengthening and reinforcing the motivation for treatment for children and their parents.

Results: The proposed method gives a significant reduction in the percentage of treatment interruption – according to the literature up to 35.7%, in our study – up to 13.4%. The active treatment period decreased by 1.6 times, and the patient's lack of discipline – by 4 times compared with the control group. There were 2.5 times less undisciplined patients in the experimental group than in the control group.

Conclusions: The obtained results testify to the necessity of using psychological methods to increase the motivation for orthodontic treatment for children during the period of mixed dentition.

KEY WORDS: orthodontic treatment of children, motivation

Wiad Lek 2018, 71, 3 cz. I, 529-533

INTRODUCTION

Increasing the effectiveness of orthodontic treatment is one of the most urgent tasks of modern orthodontics and a constant object of searching for new methods of influencing this process [1, 2, 3]. It is the instrumental method in orthodontics that is one of the most specific and effective mechanisms for treating children with dento-facial anomalies [4]. Children, however, find it as an additional stimulus of continuous and prolonged action, which in 35.7% of cases leads to treatment interruption [5]. Due to the psychological characteristics of the child during the period of occlusal changes, motivation for orthodontic treatment is practically absent [6, 7], since personal and dental self-esteem are overestimated. It is important to remember that the motive is called the motive power of person's actions and behaviour (Vitenko S. I., 2007). Motive is a conscious need, which in a certain case becomes the basis for the purposeful actions of the individual. The basis of the motivational sphere is the needs. Need is considered to be the condition when person has a necessity in something specific. The scheme of transition of need to motive is as follows: first, a person feels need for something, then there is an awareness of

the need (motivation), and then a reasonable decision appears, that is, a motive is formed. But motivation is not just about action. It is closely connected with the determination of the process of cognition, because cognition, like action, is closely related to person's needs and goals. Nevertheless, even with the presence of real morphological, functional and aesthetic disorders in the child, only the parents express complaints to the doctor [4, 8, 9]. At the same time, taking into account the somato-psychological status and the psycho-emotional condition of the patient during the orthodontic treatment allows choosing the optimal treatment option and predicting its effectiveness [10, 11]. The most effective thing that an orthodontist can use while treating a child with occlusal changes is the dominant role of the parents. The family is the closest socium, which determines what will be the impact on the child of all other social factors, so the cooperation of the doctor with the parents is an obligatory part of orthodontic treatment. Therefore, the success of orthodontic treatment depends on the readiness and ability of parents to follow doctor's prescription and on their active participation in treatment [12, 13, 14].

THE AIM

The aim of our study was to increase the motivation for orthodontic treatment for children in the period of occlusal changes by using psychological methods to influence the role and awareness of parents.

MATERIALS AND METHODS

From the examined 532 children at the age from 6 to 12, 30 patients having Angle class I and II pathologies were selected. Patients were grouped into two clinical groups: the experimental and the control group, with 15 patients in each. The treatment of patients in the experimental group differed from that in the control group by using our proposed method for increasing the effectiveness of orthodontic treatment of dento-facial anomalies containing targeted psychological training aimed at activating, strengthening and reinforcing the motivation for treatment for children and their parents. To achieve this goal, the effectiveness of orthodontic treatment by using psychological methods was investigated. In order to outline the normative range of therapeutic measures and treatment duration in patients of both groups, the severity of orthodontic treatment was determined by Zibert-Malygin method [15]. Basing on the results of this method, patients with the same anomalies of bite, average degree of severity of morphological and functional disorders of the dento-facial system, and the difficulty of their removal were chosen in order to compare the results of orthodontic treatment in the experimental and control groups.

The method for increasing the effectiveness of orthodontic treatment of dento-facial anomalies included several stages. The conversation between the orthodontist and parents and patients was of a confidential nature and included psychological training aimed at increasing the motivation and awareness of parents towards the treatment of their children. Parents were informed about the etiological factors and about the essence of morphological, functional and aesthetic changes, which occurred in their child. Particular attention was paid to the complications and consequences that arise in case of refusal or indifferent attitude to treatment. Verbal elements of orthodontic information were supported by the demonstration of orthodontic devices, photos of children before, during and after orthodontic treatment and the author's informational video film "To Parents about Orthodontics and Orthodontic Treatment".

Before and after the demonstration, parents filled specially designed questionnaires to determine the initial level of orthodontic education of parents. In order to consolidate the results, parents were offered sources of information on paper carriers - information leaflets telling about the prevention of dento-facial anomalies, characteristics of orthodontic treatment and care for orthodontic devices. In conversation with the parents, the motivation to help the child in this process was supported during the entire treatment (every 3 months).

To assess the effectiveness of the use of psychological methods in orthodontic treatment, each case was analysed taking into account the duration of orthodontic treatment,

the number of visits and discipline of patients.

RESULTS

Adolescents and adults come to the orthodontic department with a clearer motivation than children [5]. But the importance of anxiety due to dento-facial anomalies in adults is lower due to more mature and more stable mechanisms of psychological defense [1]. Therefore, the work was carried out with parents, for whom information leaflets of a cognitive nature were developed.

Analysis of the results of our studies suggests that in 80% of cases during the first visit to the orthodontist, the patients' parents of both groups did not have enough information on the characteristics of orthodontic treatment. After watching the author's informational film and the first conversation with the patients' parents of the experimental group, we found an increase in their awareness up to 100%, as far as parents did not hesitate to answer the questionnaire.

We considered effective treatment to be one that allowed in a shorter time to achieve morphological, functional and aesthetic optimum, taking into account the quality of orthodontic treatment. Qualitative indicators included the duration of treatment, the number of visits, the discipline of patients and the number of interruptions of orthodontic treatment. To assess the effectiveness of the proposed psychological methods in orthodontic treatment, each case of treatment was analysed in the light of these qualitative indicators (Table I).

The evaluation of patients' discipline revealed a clear difference in the results in the control and experimental groups: out of 30 patients in the control group, 8 people (26.8%) showed lack of self-discipline during the treatment process, that is, more than a quarter of the patients did not attend the doctor in time.

In the control group, the phenomenon of indiscipline was identified only in 2 patients (6.7%) who, despite the psychological training of their parents, also showed undisciplined behaviour during the treatment process.

The difference in the number of interruptions during the orthodontic treatment between the experimental and control groups was no less interesting. Among the patients in the experimental group, only 13.4% (4 patients) discontinued the treatment.

However, 33.4% (10 patients) of the control group did not complete treatment on dento-facial anomalies, which was 2.5 times higher than in the experimental group.

The obtained data also indicate that in patients of the experimental group the duration of treatment was significantly reduced and the total number of visits decreased. Thus, the average treatment duration for the patients of the experimental group with the bite pathology class I by Angle was 11.56 ± 0.65 months, and the same duration for patients of the control group - 18 ± 0.97 months. In the patients of the study group with class II pathology by Angle, the average treatment duration was 13.85 ± 0.66 months, and the treatment of the corresponding anomaly in patients of the control group averaged 21.42 ± 0.96 months.

Table I. Treatment duration, number of visits and discipline of patients of the experimental group and the control group.

		The experimental group				The control group			
		Medical Record No.	Treatment Duration (months)	Number of Visits	Discipline	Medical Record No.	Treatment Duration (months)	Number of Visits	Discipline
1	2	3	4	5	6	7	8	9	
Patients having Angle class I pathology	1	14	10	disciplined	1	21	15	disciplined	
	2	17	17	disciplined	2	19	16	disciplined	
	3	12	12	disciplined	3	22	16	disciplined	
	4	11	13	disciplined	4	24	18	undisciplined	
	5	14	12	disciplined	5	18	7	undisciplined	
	6	11	13	disciplined	6	19	14	disciplined	
	7	11	4	inter. treat.	7	20	10	inter. treat.	
	8	14	3	inter. treat.	8	20	10	inter. treat.	
	9	8	12	disciplined	9	17	22	disciplined	
	10	7	10	disciplined	10	10	10	inter. treat.	
	11	14	12	undisciplined	11	18	11	undisciplined	
	12	11	10	disciplined	12	12	12	disciplined	
	13	10	8	disciplined	13	21	10	undisciplined	
	14	12	10	disciplined	14	20	8	inter. treat.	
	15	8	9	disciplined	15	13	15	disciplined	
	16	11	10	disciplined	16	14	17	disciplined	
Patients having Angle class II pathology	1	11	12	disciplined	9	16	12	undisciplined	
	2	13	11	disciplined	10	19	7	undisciplined	
	3	14	8	undisciplined	11	26	21	disciplined	
	4	14	11	disciplined	12	18	15	disciplined	
	5	10	12	disciplined	13	20	4	inter. treat.	
	6	13	15	disciplined	14	20	5	inter. treat.	
	7	11	10	disciplined	15	26	11	inter. treat.	
	8	15	12	disciplined	8	21	25	disciplined	
	9	14	14	disciplined	9	25	13	undisciplined	
	10	18	15	inter. treat.	10	22	12	undisciplined	
	11	13	12	disciplined	11	15	18	disciplined	
	12	14	14	disciplined	12	24	11	inter. treat.	
	13	19	17	inter. treat.	13	24	8	inter. treat.	
	14	15	12	disciplined	14	24	6	inter. treat.	

Thus, the average treatment duration in the experimental group, both in patients with class I and in patients with class II pathologies by Angle, decreased by 1.5 times in comparison with the results of the control group ($p < 0.001$).

The number of visits to the patients of the experimental and control groups was also different. The children of the experimental group with Angle class I visited the doctor on average 10.3 times. At the same time, patients with Angle class I in the control group came for consulting 12.5 times, that is, 1.28 times more often. In patients with Angle

class II, the difference in the number of visits between the experimental and control groups was not observed.

Statistical evaluation of the obtained results allowed to reveal a probable difference between the treatment duration of patients in the experimental and control groups (Table II).

As can be seen from Table II, the decrease in the duration of treatment in patients of the experimental group is confirmed by a high probability ($p < 0.05$) both for patients with class I and class II pathologies by Angle.

Table II. Statistical comparison of the treatment duration of patients of the experimental and control groups (M± m).

Type of pathology	Treatment duration (months)		p<
	The experimental group	The control group	
Angle class I (n = 16)	11,56 ± 0,65	18 ± 0,97	0,001
Angle class II (n = 14)	13,85 ± 0,66	21,42 ± 0,96	0,001

We were unable to statistically investigate the probability of a difference between the number of visits to the doctor because of undisciplined patients and those who interrupted treatment. But a significant difference was found in the decrease of the treatment duration of the experimental group ($p < 0.05$). These data confirm the positive result obtained from the use of the proposed method.

Thus, the use of a method for increasing the effectiveness of orthodontic treatment of dento-facial anomalies with removable orthodontic devices in children with occlusal changes gives the following results: the duration of orthodontic treatment was reduced by 1.5 times; the number of treatment interruptions decreased by 2.5 times; the disciplined behaviour of patients increased by 4 times.

The results indicate that receiving by parents informative and illustrative knowledge on the importance and complexity of orthodontic treatment at all its stages contributes to increasing the motivation for this complex process in children with dento-facial anomalies at the age from 6 to 12.

DISCUSSION

Our assessment of patients' discipline revealed a statistically significant difference in the results in the control and experimental groups: more than a quarter (26.8%) of patients in the control group visited the doctor untimely. In the experimental group, the phenomenon of indiscipline decreased by four times. Only 6.7%, in spite of the parents' psychological training, still showed undisciplined behavior during the treatment course (if within 1 month from the appointed date the patient did not appear for consultation, he was considered undisciplined).

33.3% of orthodontic treatment interruptions were recorded among the patients of the control group, which coincides with the data of literary sources [5, 6]. The number of interruptions decreased by 2.5 times ($p < 0.05$) in the patients of the experimental group, in which the author's method of increasing the effectiveness of orthodontic treatment of dento-facial anomalies with removable orthodontic devices in children with occlusal changes was used. This confirms the effectiveness of the method and it qualitatively affects the results of orthodontic treatment.

Decrease in the treatment duration and a decrease in the number of visits were revealed in patients of the experimental group. Thus, the average treatment duration in patients of the experimental group with Angle class I pathology was 11.6 months, and the duration in patients of the control group was 18 months. Patients of the experimental group with Angle class II pathology had an average treatment duration of 13.9

months, and the treatment of the corresponding anomaly in the control group patients averaged 21.4 months. Therefore, in patients with Angle class I pathology treatment duration decreased by 1.55 times ($p < 0.05$), and in patients with class II – by 1.54 times ($p < 0.05$). Thus, the average treatment duration in the experimental group, both in patients with Angle class I and class II pathologies, decreased by 1.5 times in comparison with the results of the control group, which was confirmed by statistical data, that is, there was a probable result ($p < 0.05$), which does not depend on the type of orthodontic pathology.

CONCLUSIONS

The conducted studies prove the necessity of using psychological methods of influence on all subjects of orthodontic treatment (children during the period of occlusal changes and their parents). The method presented by us supposes active involvement of parents in influencing the child's motivation, and, consequently, increasing the effectiveness of orthodontic treatment and fighting against its interruption. The increase in effectiveness is based on increasing motivation for treatment in children due to targeted psychological influence on parents, taking into account the cognitive nature of motivation (improving efficiency is achieved by raising parents' awareness about orthodontic pathology and forming motivation for orthodontic treatment for children). The obtained results testify to the necessity of using psychological methods for orthodontic treatment for children during the period of occlusal changes.

REFERENCES

1. Bobrov AP, Kuterhyna KA, Korsak AV. Rol' mezhlychnostnoho kontakta pry ortodontycheskom lecheny [The role of interdisciplinary contact during orthodontic treatment]. *Stomatolohyya det-skoho vozrasta y profylaktyka*. 2003; 3-4: 18-22.
2. Smahlyuk LV, Kulish NV, Sydorenko AYU. [Dyspanserizatsiya dytyachoho naseleण्या – holovna skladova profylaktychnoyi ortodontiyi Dispensary of children's population – the main component of preventive orthodontics]. *Visnyk problem biolohiyi i medytsyny*. 2014; 3 (110):326-329.
3. Lyakhova NO, Bilous AM, Nesterenko OM. Medyko-sotsial'ni ta orhanizatsiyno-pravovi pytannya orhanizatsiyi nadannya ortodontychnoyi dopomohy dytyachomu naseleण्याy Ukrainy v period reformuvannya haluzi okhorony zdorov'ya [Medico-social, organizational and legal issues of organizing the provision of orthodontic care to the children's population of Ukraine during the reform of the health care sector]. *Visnyk problem biolohiyi i medytsyny*. 2014; 3 (110):213-216.

4. Schopf P. Pokazannya k ranney ortodontycheskoy terapiy y predupreditel'nyh meram y ykh chastota [Indications for early orthodontic therapy and precautionary measures and their frequency]. *Ortodontycheskyy referatyvnyy zhurnal*. 2004; 3:17.
5. Kuroyedova VD, Sedykh KV. Sovremennyy vz-hlyad na bolezni «Malocclusion» [Modern look at the disease "Tooth-jaw anomaly"]. Poltava: TOV NVP «UPT-S»; 2014, 263 s.
6. Kuroyedova V, Dovzhenko A. Psykholohichni osoblyvosti adaptatsiynoho periodu ortodontychnoho likuvannya [Psychological features of the adaptation period of orthodontic treatment]. *Psykhologhiya i osobystist'*. 2017; 1:120–129.
7. Trofymenko KL, Karasyunok AYE. Kompleksnyy pidkhid do ortodontychnoho likuvannya patsiyentiv v rann'omu zminnomu prykusi [An integrated approach to orthodontic treatment of patients in early mixed dentition]. *Aktual'ni problemy suchasnoyi medycyny: Visnyk Ukrayins'koyi medychnoyi stomatolohichnoyi akademiyi*. 2016; 3(55):23–26.
8. Villanueva-Arriaga RE, Garsia-Lopez S, Masin-Cabrera S et al. Orthodontic treatment needs in schoolchildren in south east Mexico city. Abstracts 75th Congress of the Europ. Orthod. Society. *European Journal of Orthodontics*. 1999; 21(5):627.
9. Bymbas ES, Myahkova NV. Motyvatsyya vzroslykh patsiyentov k ortodontycheskomu lechenyyu [Motivation of adult patients for orthodontic treatment]. *Ortodontyya*. 2001; 2:8–9.
10. Smahlyuk LV, Karasyunok AYE, Trofymenko MV. Porivnyal'na kharakterystyka morfo-funktsional'noho stanu zuboshchelepnoyi dilyanky u patsiyentiv v period rann'oho ta pizn'oho zminnoho prykusu [Comparative characteristic of the morpho-functional state of the dento-jaw area in patients during the period of early and late mixed dentition]. *Visnyk problem biolohiyi i medycyny*. 2016; 2(128):267–270.
11. Doroshenko SI, Kul'hins'kyi YEA, Iyevlyeva YUV ta in. Rozpovsyudzhenist' zuboshchelepnykh anomalii ta deformatsiy, a takozh defektiv zubiv ta zubnykh ryadiv sered ditey shkil'noho viku m. Kyyeva [The prevalence of tooth-jaw abnormalities and deformations, as well as defects in teeth and dentition among children of school age in Kyiv]. *Visnyk stomatolohiyi*. 2009; 2:76–81.
12. Dehtyareva YN, Bulyakov RT. Problema podhotovky patsyenta k ortodontycheskomu lechenyyu v trudakh otechestvennykh y zarubezhnykh yssledovateley [The problem of preparing a patient for orthodontic treatment in the works of domestic and foreign researchers]. *Dostyzhennya ortodontyy, ortopedycheskoy y obshchey stomatolohyy po spetsyal'nosti y ee prepodavanyyu: sb. nauch.-prakt. materyalov. Rossyyskaya medycynskaya akademyia posledyplomnoho obrazovannya*. Moskva: 2005:214–216.
13. Shpak SV, Ivanova VO, Horokhovs'kyi VV. Vplyv medychnoyi aktyvnosti sim'yi ta motyvatsiyi do profilaktyky stomatolohichnykh zakhvoryuvan' na stomatolohichnyy status ditey [Influence of medical activity of the family and motivation to prevent dental diseases on the dental status of children]. *Stomatolohichne zdorov'ya – dityam Ukrayiny: mizhnar. nauk.-prakt. konf. Kyiv*: 2007:266–268.
14. Durka-Zajac M, Mitus-Kenig M, Wozniak K et al. Perception of discomfort and pain as a result of orthodontic treatment. Abstracts 90th Congress European Orthodontic Society. Warsaw: 2014:SP18.
15. Khoroshylkyna FYA. Rukovodstvo po ortodonty [Orthodontic Guide]. Moskva: Medycyna; 1999, p. 13.

ADDRESS FOR CORRESPONDENCE**Anna Ye. Karasiunok**

Higher State Educational Establishment of Ukraine

"Ukrainian Medical Stomatological Academy"

Shevchenko str. 23, 36011, Poltava, Ukraine

tel: +380677544193

e-mail: Orthodontic.umsa@gmail.com

Received: 26.02.2018**Accepted:** 30.04.2018