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Research Article

Characteristics of Motivation for Orthodontic Treatment. Classification

Yulia Bogdanova Peeva*

Associate Professor, Department of Social Medicine and Public Health, Faculty of Public Health, Medical University, Plovdiv, Bulgaria

***Corresponding Author:** Yulia Bogdanova Peeva, Associate Professor, Department of Social Medicine and Public Health, Faculty of Public Health, Medical University, Plovdiv, Bulgaria.

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Abstract

Introduction: During orthodontic treatment, children face various difficulties. One of them is awareness and the fact that the patient is facing for the first time something that is essentially unknown to him. The requirements that the orthodontist sets for hygiene and diet are an irrevocable part of a successful orthodontic treatment. Patient motivation and cooperation are variable during the treatment and depend on different factors. The question is how to retain children's cooperation at the highest level.

The aim of the current study is to present a classification of motivation for orthodontic treatment. In fact, the classification proposal is based on more than 10 years of own research on motivation and awareness of orthodontic treatment.

Materials and Methods: Children participated in the study with an average age of 12.56 ± 3.14 years, respectively 12.38 ± 3.22 years for boys and 12.69 ± 3.07 years for girls, $P > 0.05$.

Results and Discussions: The most significant is the decision to undergo treatment made by the child himself, $P = 0.01$ ($\chi^2 = 20.17$, df = 8). The unfavorable fact is that regardless of the initiated treatment with braces, 12.28 ± 4.35% of the children are not convinced of the correctness of this decision or they lack motivation to continue their treatment.

Conclusions: The proposed classification for motivation in orthodontic treatment will support the work of both students in the last years of education and the work of already prominent orthodontic clinicians.

Keywords: New Classification; Motivational Strategy; Orthodontic Treatment

Introduction

Strategy when starting orthodontic treatment

Orthodontic treatment is long and drawn out and it is quite possible that one of the three parties will lose motivation. And the three parties are child as a patient, parents and orthodontist.

The child's first orthodontic examination should be carried out no later than 7 years of age. Every parent wants to do the best for his child, and according to the common understanding, good oral health means healthy teeth and a beautiful smile. It's well known from the literature, that social factors for increased motivation prevail over those related to functional insufficiency. This is the assessment given by parents in ours previous sociological surveys. In modern society, parents are aware that their child becomes much more attractive with well-arranged teeth, and a beautiful smile gives them a chance for *a better quality of life*. It has been confirmed in the scientific literature that the more important positive results for the patient have a time stamp through professional realization and the choice of a life partner. Motivation for orthodontic treatment among patients is related to their response during treatment. Parents have also been found to influence their motivation. However, very often deviations in the child's teeth or jaws are first noticed in the family. The AAO recommends that every child's first orthodontic examination be performed no later than 7 years of age.

According to Amy Morgan, no one can make another person do something they don't want to do.

Motivation is a process that must come from within; the best reason for a child to cooperate is when he thinks about what the benefit is to him [4,5,10].

The word „want" is the key to motivation.

On the other hand, „Leadership is the ability to get someone to do something you want done because they want to do it" according to D. Eisenhower. Well known is Maslow's hierarchy of motivational strategy, which has five levels. Each level is independent, but also necessary for the existence of the others. The following approaches were used in the study of Gardner's motivational strategies: Music; Visualization; Verbal; Logical; Physical; Personal; Interpersonal; Natural; Existential.

The basis of the strategy for orthodontic treatment in the present study is „educate and motivate".

The motivational strategy also depends on the ability to encourage the positive features of the child's inner world and which will give him the opportunity for an external manifestation of his abilities. The child understands the love of the orthodontist to change his lifestyle for better and the treatment of no cooperative children with a lot of patience is a real challenge.

Dissatisfaction with the appearance, the need for orthodontic treatment, parental concern and the influence of classmates who are being treated are significant factors in the child's motivation. Understanding and managing these factors allows for the correct and better treatment, targeting the priorities in the work of the Doctor of Dental Medicine (DDM) and the orthodontist. This question concerns the DDM, who conducts prevention or treatment of minor cases in orthodontics, as well as the possibility for the child to empathize and support the work on his treatment [4-6,11].

A motivational strategy to improve communication between patient and orthodontist

Effective communication is a key process in healthcare delivery. This establishes informed consent as paramount for the patient.

After the initial consultation, leaflets (brochures) are an invaluable source of information for the patient. A huge problem is that the terminology used in the leaflets is incomprehensible to 60% of parents. In order to obtain communication, rather than a one-sided message to the patient, it is necessary to „translate" the medical language into something more accessible to the parents and the child.

There are various motivational strategies to improve communication between the child and the orthodontist. This crisis in treatment does not occur initially, but about a year after starting treatment. In some more severe cases, continuing treatment already started by other colleagues requires even more patience. And this is because everyone is responsible not only for the vision of their own practice, but also for the image of the dental profession in society. Swapping one orthodontist for another is actually a loss of trust, miscommunication and greed. Greed for patients is actually greed for money. This is one of the worst vices of modern medicine

- *So, how to motivate the patient who get tired from treatment and lose his trust to the doctor?* Shown photographs of finished treatment in similar cases always have a positive effect.
- Initial cast models and photographs shown improve confidence because the patient can see the difference for themselves.
- Engaging parents in frank discussion will result in full disclosure of the problem.
- Comparing current and last year's photo is important to improve communication.
- According to data from the literature, the opinion of a grandmother or grandfather (a person we do not see in practice, but whom the child respects and loves immensely) is extremely important.

Patients are happy when the orthodontist encourages them – with treatment progress that is visible; with adequate personal oral hygiene, with the continuing efforts, etc [6-9].

From the very beginning, patients must be aware that there can't be compromises in orthodontic treatment - on a personal level, the patient must take into account the quality, consistency and harmfulness of the food he consumes, and in another aspect, adequate oral hygiene must be priority. The present study investigates the different aspects of motivation for orthodontic treatment among patients, their parents/guardians and dentist/orthodontist The aim is to present a classification of motivation for orthodontic treatment.

Materials and Methods

In the statistical processing of the data with IBM SPSS 22.0, the formula for calculating the required number of observation units for variation signs was applied, with P(u) = 0.95, S_x = 3.45 years and the maximum permissible error Δ = 0.5 years. The calculated necessary number of units for children to obtain 95% confidence of the results is 183. The study performed was on 259 children. The average age is 12.56 ± 3.14 years, resp. 12.38 ± 3.22 years for boys and 12.69 ± 3.07 years for girls, P > 0.05. The socio-demographic characteristics are presented in table 1.

The distribution of the relative shares by gender for the children is also presented: 53.28 ± 3.11% for girls and 46.72 ± 3.11% for boys.

On the base of the scientific literature, own questionnaires were compiled, which were validated after a pilot study in 2019, of children (n = 50), parents (n = 50) and dental physicians (n = 50) [4,5,14]. The following primary sources were used for the relevant group:

- Questionnaire for children - Child Perceptions Questionnaire (CPQ).
- Questionnaire for parents - Parental Perceptions Questionnaire (PPQ) [10].
- Questionnaire for dental doctors - Professional Perceptions of the Benefits of Orthodontic Treatment [11,4].

The final questionnaire for children includes four main tools for conducting an orthodontic survey

Age (years)	Gender						Total	%	Sp
	(n) boys	%	Sp	(n) girls	%	Sp			
7	6	5.00	1.99	5	3.68	1.61	11	4.26	1.26
8	7	5.83	2.14	5	3.68	1.61	12	4.65	1.31
9	18	15.00	3.26	14	10.29	2.61	32	12.40	2.05
10	17	14.17	3.18	21	15.44	3.10	38	14.73	2.21
11	7	5.30	2.14	13	9.56	2.52	20	7.75	1.66
12	1	0.83	0.83	9	6.52	2.10	10	3.88	1.20
13	7	5.83	2.14	4	2.90	1.43	12	4.26	1.26
14	17	14.17	3.18	19	13.97	2.97	36	13.95	2.16
15	20	16.67	3.40	20	13.97	2.97	40	15.12	2.23
16	8	6.67	2.28	14	10.29	2.61	22	8.53	1.74
17	6	5.00	1.99	8	5.88	2.02	14	5.43	1.41
18	6	5.00	1.99	7	4.41	1.76	13	4.65	1.31
Total	121	46.72	3.11	138	53.28	3.11	259	100.00	-

Table 1: Age-sex distribution of children.

- Functional Limitations (FL).
- Oral symptoms (OS).
- Emotional Well-being (EW).
- Social Well-being (SW) [1,7].

Check for adequacy (applicability) of factor analysis using KMO and Bartlett's Test in children is presented on table 2.

Adequacy test KMO (Kaiser-Meyer-Olkin Measure of Sampling Adequacy)		0.57
Bartlett's Test of Sphericity	Approx. Chi-Square	408.06
	df	36
	Sig.	0.000

Table 2: Kaiser-Meyer-Olkin Measure of Sampling Adequacy.

The data does not lie on a straight line in space; therefore the data cloud has a spherical shape. In this case, the null hypothesis was tested using Bartlett's test. The adequacy of the technique depends on HMO = 0.57 and Bartlett's test P = 0.000; the determinant is 0.038, not 0, and formally factor analysis can be conducted.

Classification of motivation for orthodontic treatment

Motivation and cooperation before, during and after orthodontic treatment are particularly important as they affect the satisfaction of the three parties' communication. Cooperation means control by the dentist/orthodontist and the parents of the patient's oral hygiene and diet. Diet in orthodontic treatment means limiting carbohydrates and food consistency. Its hardness is important, because if it is too soft, it is sticky and easily visible on a tooth surface. An increased risk of treatment-related white spots and carious lesions has been reported with such feeding. If the food is very hard, such as nuts, chips or fried corn, this will also be a reason for restriction and prohibition of use. Cooperation over time means control of wearing the retention appliances.

The child's motivation before orthodontic treatment sometimes remains incomprehensible to the dentistorthodontist. It is comparable to the too strong desire for something that is unknown until one specific moment of initiation. The comparison is with striving for a cake, the problem is that it is unfamiliar (incomparable) as a taste sensation. In this particular situation, there are two age groups with different motivations for initiating treatment. One is about the 12-year-olds who say, "I want!" and the meaning is emulation, since other kids in the class have braces. Their expectations are to be fashionable, current in school. The other is the group of 16-year-olds who realize they have prom in two years and they'll miss the train. Their expectations are probably mainly from an aesthetical orirgin [5,7,8,11].

On a personal level, I think back to my overwhelming desire at the age of 4 to learn to play violin. To this day, my parents prefer to listen a classical music, and that determined my desire. The reality is different. Still, I love my violin.

Based on the importance for the patient, the following classification for motivation in orthodontic treatment was derived

Classification of motivation in orthodontic treatment

Motivation of child (patient)

- Before initiation of treatment;
- During treatment
- Descending
- Ascending
- In a different time range
  - In the first month-awareness
  - 1 year after initiation of treatment
  - In treatment much longer than expected
- according to the severity of the case
  - If tooth extractions are necessary
  - If orthognathic surgery is necessary
  - In treatment with extraoral devices
- After orthodontic treatment
  - Descending
  - Uniform

Parents' motivation for orthodontic treatment of their child

- Descending - lack of control, lack of time, financial security
- Ascending – empathetic and responsible
- The obsessive mother

Motivation of the dentist/orthodontist

- High (responsibility, professional competence, contract, informed consent)
- Low or descending - in the absence of cooperation of the child and parents.

  With the descending motivation of the orthodontist, his responsibility towards the specific case grows, since no matter how informed the child and the parents are, their knowledge is not professional. *Informed consent is not sufficient to evaluate the negative consequences that may occur as a result of irregular visits to the orthodontist.*
- Poor health management - admitting more patients than can actually be served.

The situation can be considered in two aspects

- The health insurance system (resp. the State, the responsible institutions) does not provide a sufficient number of specialists and the treatment is carried out on the basis of a monopoly on the market, both on the number of patients and on pricing. The famous quote is, "The more, the more" - Winnie the Pooh, incompatible unlike the literary character within the ethical principles of a modern physician practice.
- Greed as the main negative characteristic of the DDM/orthodontist's personality is the reason for admission and treatment of more patients than can actually be served.
- **Stockholm syndrome:** When the child suffers from the end of treatment and wants the braces back in the mouth. The feeling is that "I have no teeth", patients share.

Insufficient motivation to initiate treatment

Insufficient financial security of orthodontic treatment – it is too expensive, the costs are not covered by the National Health Insurance Fund.

Treatment-related discomfort (combined surgical-orthodontic treatment).

Conclusions

The most significant is the decision to undergo treatment made by the child himself, P = 0.01 (χ^2 = 20.17, df = 8). The unfavorable fact is that regardless of the initiated treatment with braces, 12.28 ± 4.35% of the children are not convinced of the correctness of this decision or they lack motivation to continue their treatment. Being informed improves children's chances for optimal treatment. Children easily use Internet sources to inform themselves about the possibilities of orthodontic treatment.

Thus, the presented classification for motivation in orthodontic treatment will support the work of both students in the last years of education and the work of already prominent orthodontic clinicians. It is an extremely powerful means of support during treatment as it enables the orthodontist to adapt to the possible risks and changing motivation of the patient.

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