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Research Report

Cooperation of patient as key factor to overcome oral habits

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ABSTRACT

Introduction*: Orthodontic treatments have developed rapidly on the last decade even though; the sophisticated treatment has been limited by patient's behavior. Orthodontist should acknowledge that the success of treatment not only depends on the knowledge and skill of the operator, but on the patient's behavior as well, which is very critical to overcome the oral habit, including anterior tongue thrust swallow (ATTS). Patient's cooperation is the key factor to set prognosis of oral habit correction and have to be proven through analysis of questioners.* ***Methods:*** *Patient cooperation scale (PCS) was made for this research involving 68 orthodontic patients for correction of ATTS from Faculty of Dentistry Indonesia University and Ladokgi as respondents. PCS assessment was based on data sets of: Patient awareness of ATTS (PAw), Patient Acceptance to receive treatment (PAc), and Patient Comfortable for using appliances (PC). The evaluation was obtained by calculation the total score of 10 items from each component, which gave 0–30 range of scale and would be 0–90 range of cooperation scale as the final result.* ***Result:*** *PCS assessment can be based on data sets of PAw, PAc, and PC. It is valid and reliable. The score for the cooperative patients range between 0–25. The higher the score from this questionnaire shows less cooperation from respondent. On the other hand, the lower the score showed better cooperation.* ***Conclusion****: PCS can be used for the prognosis of the successful oral habits correction and has a significant relation with the length of successful treatment.*

Key words*: anterior tongue thrust swallow (ATTS), patient cooperation, patient awareness, patient acceptance, patient comfortable*

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INTRODUCTION

The success of orthodontic treatment depends not only on the skill and knowledge of the operator, but also understanding the psychological aspect of the treatment. Various treatments and appliances have been done and developed to overcome anterior tongue thrust swallow (ATTS), but have failed to fix ATTS permanently, it may be lead the relapse of the malocclusion.[1]

The difficulties to overcome the oral bad habit, might be due to the treatment that only focused on mechanical aspects but ignoring the psycho-physiological aspects. The psychological aspect of orthodontic treatment needs to be taken care as it often creates a problem in the future, for example the length and discomfort caused by the treatment. Therefore for the success of the orthodontic treatment, psychological approach needs to be done such as educating the patient, building the expected behavior, guiding to observe important thing, changing the environment, bringing back self respect and showing the attitude to support the success of the treatment.[2,3]

It is recognized that encouraging individuals to change their behavior with respect to health is a considerable challenge. Behavioral psychologists have developed an approach to therapy for changing patient's behavior, known as behavior modification therapy. The usefulness has been realized in dental treatment. Behavior modification technique is required to change diverged behavior into structured behavior by using learning principle. The behavior is "shaped" in a systematic step-by-step manner until it conforms to the desired pattern. Researcher has been encouraged to use the behavior modification technique to overcome ATTS.[4,5]

The key success for stopping oral habit is a good cooperation of patient through psychological approach.[6,7] Cooperation of patient is needed to obey the rules of

treatment, such as regularity visiting the doctor, using and taking care of the appliances, doing exercise as instructed and maintaining oral hygiene.[6] Cooperation towards treatment is an interaction between patient's character, treatment, and the operator.[3] Those characteristics can be measured using questioners,[8,9] and for this research were used questionnaires of: Patient Awareness of ATTS (PAw), Patient Acceptance to receive treatment (PAc), and Patient Comfortable for using appliances (PC). These questionnaires were designed as a modification of Ngan's Questionnaire.[9]

Degrees of patient cooperation scale assessment are important in determining the prognosis of the treatment,[10] and for this research was based on data sets analysis of PAw, PC and PAc as the evaluation of patient's behaviors (awareness, acceptance and comfort ably). The advantage of using Patient Cooperation Scale(PCS) is to predict the effectiveness of a correcting device and to know which component will be the risk factor for the successful of treatment.

The validity of PCS value, needs to be done to proof that PCP can be used as prognosis assessment of ATTS treatment. To asses the validity of PCP in this research need measurement in construction validity, that confirms every item in PCP can represent what is measured. For the reliabilities, the Cronbach Coefficient Alpha was used to asses the internal consistency.

MATERIALS AND METHODS

Sixtyeight patients were collected from orthodontic clinic Faculty of Dentistry Indonesia University and LADOKGI and would be the tongue guidance (TG) appliance users for correcting retained ATTS. TG is a modification of Hawley retainer. Patients were in 0-2 months retention period during September 2004 to May 2005, with completed anterior teeth and had fully erupted. These patients would be the subjects of clinical test for ATTS correcting device effectiveness. Subjects were informed about ATTS existence and problem caused by ATTS, what to do or treatment would be given, and consequences of the treatment.

At the beginning of treatment subjects were instructed to be the respondents in a questionnaire research (preliminary research) to determine the prognosis of ATTS treatment based on their cooperation value as key factor for successful treatment. For that purpose, the subjects need to fill in respondent data sheet, assignment sheet and signing medical informed consent. They were given questionnaires and report card, must be filled everyday, for the recording of total hours using the appliance and intensity of tongue exercise.

To assess patient cooperation scale (PCS), three components data set were needed: data set of ATTS existence awareness component (PAw) consists of 10 items, data set of Comfort component (PC) consists of 10 items; data set of willingness to accept treatment component (PAc) consists of 10 items.

From those components measurement were done: for *Paw* 10 items that indicated patient's awareness of ATTS as a problem that needed to be observed and corrected; for *PC* 10 items that indicated functional and social comfort using TG appliance, which would be sensed during treatment, and for *PAc* that indicated patient's willingness to accept the ATTS treatment. Scoring criteria for these questionnaires were excellent – sufficient – insufficient – nil with the scale 0/1/2/3. The evaluation was obtained by calculation the total score of 10 items from each component, which gave 0-30 range of scale and would be 0-90 range of cooperation scale as the final result during the treatment. The higher the score from this questionnaire shows less cooperation from respondent. On the other hand, the lower the score showed better cooperation. The score for the cooperative patients range between 0–25. A good cooperation behavior during treatment is required for behavioral change to the establishment of a new swallowing pattern.

The explanation for questionnaire completion was given on the 1st meeting day between researcher and respondent; that was after the respondent had signed the informed consent. It took one month to complete questionnaires of comfortable component as it had to recorded on the 1st day, 1st week, and 1st month. Respondents had to complete the questionnaires by their self (respondent's self report). There were no difficulties to complete these questionnaires.

Questionnaires to assess PCS consists of: questionnaires of ATTS existence as problem awareness (PAw); questionnaires of TG appliance comfortable (PC); questionnaires of treatment acceptance (PAc). The following items of PAw should be noted: awareness to use retention appliance for the stabilization result in malocclusion treatment; awareness that ATTS can create relapse after malocclusion treatment; awareness that relapse can cause disturbances in orofacial function; awareness that relapse can make treatment and all sacrifice become useless; awareness that ATTS needs to be corrected; awareness that ATTS correction needs the usage of the appliance; awareness that ATTS correction appliance is also retention appliance; awareness the importance of tongue exercise according to SOP; awareness the importance of regular visit to the doctor; awareness that the success of the treatment really depends on self willingness to change tongue behavior.

Comfortable using ATTS correcting appliance would be noticed from 10 items of PC : comfortable speaking; comfortable swallowing; comfortable appearance; comfortable socializing; comfortable doing daily activity; comfortable sleeping; comfortable to follow treatment rules; comfort for the teeth; comfort for the soft tissue; comfortable doing tongue exercising.

The following 10 items of treatment acceptances (PAc) should be noted as willingness feeling discomfort during the treatment; willingness facing difficulties;

willingness adhering to treatment rules; willingness adhering to visiting schedule; willingness adhering to use appliance regularly; willingness adhering to oral hygiene instruction; willingness doing tongue exercises; willingness filling report correctly; willingness participating actively; willingness communicating openly.

Questionnaire to measure respondent's awareness towards ATTS (*PAw*)

The purpose of *PAw* questionnaire is to know respondent's response towards ATTS treatment, which will be taken later. The positive or negative attitude towards treatment is one of the important factors, which determine the success of treatment.[11] Questionnaire is completed after the explanation of what is ATTS and how it can cause malocclusion relapse with interrelated problems in the future. By using the mirror and mouth mirror, ATTS existence is shown to the respondents. They are also given explanation how important it is to correct the ATTS using a correcting device and have to combined with tongue exercise according to the rules (SOP) has been given.

Questionnaire of patients comfortable (PC)

In order to correct ATTS, wearing an appliance in the mouth can cause physical (functional) and psychic (social) discomfort.[12-14] This will have significant effect on the attitude through treatment, which will impact the success of the treatment.[15] As the time goes, Comfort will become more after using the appliance for 1 day, 1 week, and 1 month.

Questionnaire of patient willingness to accept treatment (PAC)

This questionnaire shows patient motivation for the success of ATTS correction treatment. The completion of report card by the patient needs to be checked by operator on every visit. At the end of the treatment, after ATTS has been corrected or examination time period was over, and the evaluation will be conducted for the average of visiting frequency per month, average appliance usage (hours) and exercise frequency every day. Cooperation applied as willingness to communicate openly with the researcher.[3]

RESULT

Table 1 showed the range of correlation for the 30 items of PCP: 0.0149 – 1 PCP analysis was done with Stata 7. The weakest correlation (0.0149) was the correlation value between item no 19 with item no. 13. This correlation was in the same component:PC. The strongest correlation (1.000) was correlation value between item no. 6 (awareness) with item no. 7 (awareness), item no. 22 (willingness) with item no. 21 (willingness), between item no 5 (awareness) and item no 2 (awareness), and between item no. 10 (awareness) with item 8 awareness (8). Each of these 8 items shows the compatibility in 1 component.

The Cronbach coefficient alpha value of 0.9668 shows that PCS is reliable, so that it can be used for the clinical research of Tongue Guidance appliance effectiveness comparing with the Tongue Crib appliance as a correcting device of ATTS for all this time.

In table 2, the value of Cronbach coefficient alpha for all items in PC were strong, not only in the component but also to total component. It means that the items were in the right place and could be an indicator of patient's cooperation.

In this research the test for validity and reliability of PCP was being done. The PCP validity testing was based on thinking if PCP can be functioning as a measure to predict cooperation in ATTS treatment. For PCP validity testing only conducted through construction validity measurement to confirm that every item in PCP represents what will be measured. The test result of 30 items shows correlation range between all items divided in 3 components (comfort, awareness, willingness). Table 2 shows if every item is coincidentally for the component.

The values 0.9643, 0.9512, and 0.9299 respectively for PC, PAw and PAc from data analysis with Cronbach alpha, means that these questionnaires can be used for treatment prognosis assessment based on patient motivation and cooperation which are imperative for the successful of changing the tongue behavior.

Subject characteristics that will take part in the success of ATTS correction for this research was shown in table 3 through Cox Regression Test.

Table 1. Cronbach coefficient alpha value

Total Observation	Total Item	Cronbach Alpha	Coefficient Range	Component	Item Correlation	Power Level
68	30	0.9668	0.0149	PC-PC	13 & 19	Weak
			1.000	PAc-PAc	27 & 25	Strong
			1.000	PAc-PAc	21 & 22	Strong
			1.000	PAw-PAw	5 & 2	Strong
			1.000	PAw-PAw	6 & 7	Strong
			1.000	PAw-Paw	10 & 8	Strong
			1.000	PAc-PAc	27 & 25	Strong

Table 2. PCP coefficient correlation item to total

Total Respondent	Component	Total Item	Item No.	Correlation to total in component (PCP)
Respondent = TG Users Subject (68)	PAW	10	1	0.9279/strong ; 0.6059/strong
			2	0.8840/strong ; 0.4495/weak
			3	0.8374/strong ; 0.1437/weak
			4	0.9279/strong ; 0.2646/weak
			5	0.8809/strong ; 0.6680/strong
			6	0.9776/strong ; 0.7056/strong
			7	0.8809/strong ; 0.6680/strong
			8	0.9776/strong; 0.7056/strong
			9	0.9776/strong ; 0.7056/strong
			10	0.8020/strong ; 0.6626/strong
	PC	10	11	0.9427/strong ; 0.8310/strong
			12	0.9874/strong ; 0.8790/strong
			13	0.9855/strong ; 0.9072/strong
			14	0.9848/strong ; 0.8076/strong
			15	0.9475/strong ; 0.8790/strong
			16	0.9817/strong ; 0.9144/strong
			17	0.9817/strong ; 0.9144/strong
			18	0.9415/strong ; 0.6087/strong
			19	0.9800/strong ; 0.7882/strong
			20	0.9415/strong ; 0.6087/strong
	PAC	10	21	0.9337/strong ; 0.8592/strong
			22	0.9337/strong ; 0.8592/strong
			23	0.9498/strong ; 0.8528/strong
			24	0.8018/strong ; 0.6476/strong
			25	0.9230/strong ; 0.8697/strong
			26	0.9558/strong ; 0.9265/strong
			27	0.9230/strong ; 0.8697/strong
			28	0.9863/strong ; 0.8986/strong
			29	0.9144/strong ; 0.8565/strong
			30	0.9558/strong ; 0.9265/strong

Table 3. Characteristic factors that influence the TG accomplishment

Characteristic	Haz. Ratio	P > |z|	[95% Conf. Interval]	
Comfortable	0.6472874	0.014	.4571853 0.916436	
Acceptance	1.006794	0.913	.8916583	1.136797
Awareness	1.04062	0.728	.8316845	1.302045

The result of this analysis has shown that "comfortable" was the most influence factors for the treatment result.

DISCUSSION

Comfort data of a device can be a cooperation predictor between subjects and operators.[6,9,14,16] This comfort feeling include speech function, swallowing, and appearance,[8] as items in PC. According to Nanda,[8] comfort/discomfort feeling influences cooperation during treatment. The value of PCS, describes subjects characteristics that contribute to the prognosis of treatment and was obtained through analysis of PAw, PC, and PAC questionnaires.

According to Rich,[4] cooperation is an absolute condition for the successful of treatment. Cooperation prediction is required before applying the correcting appliance. As cooperation predictor was comfortable,[9,10,14,16] awareness of ATTS as a problem, and willingness of undergoing treatment, that can be measured with PC, Paw and PAc. With Ficher's exact calculation result and t test, the p value was 0,0000 for TG comfort, willingness to accept treatment and awareness of ATTS. This showed that the factors that contribute to the achievement of ATTS treatment through behavior modification were willingness, comfortable, and awareness. Cooperation applied at the time doing behavior

modification program and needs to be observed during treatment, so that it can be done consistently, preventing the relapse of ATTS.

Patients cooperation scale can be used for the prognosis of oral habits therapy so that operator can do the anticipation for the successful outcome.

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