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A RELATIONSHIP BETWEEN SOCIO-ECONOMIC STATUS AND ORTHODONTIC TREATMENT NEED

Abstract:

Aims and objective: This study was aimed to examine the relationship between socio-economic status and both normatively assessed and self perceived need for orthodontic treatment.

Materials and Method: The study was conducted regarding orthodontic treatment need and socioeconomic status in Udaipur, Rajasthan India. The Study population was between age group of 13 to 25 years. Two hundred seventy subjects were assessed for orthodontic treatment by trained and calibrated examiners. The Index of Orthodontic Treatment Need was the measuring instrument along with the questionnaire which asked: "Do you think your teeth need straightening? And question about the socioeconomic status."

Results: Normative assessed need and self perceived need for orthodontic treatment was more common among middle and lower class subjects than higher class subjects.

Conclusion: Socioeconomic status affects normatively measured orthodontic treatment need through, as yet undefined mechanisms. It also affects a person's perception of need for orthodontic treatment, but these two associations are separate. The mismatch of need and desire for treatment is a problem for orthodontists.

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Key Words: Orthodontic treatment need, socioeconomic status, IOTN,

Introduction:

Orthodontics' is a specialty in dentistry where need is assessed by dentist evaluating the extend to which the patient's occlusion deviates from an arbitrary Norm.

Norm; particularly in facial form and aesthetic matters, are generally dictated by socio cultural factor. (1) Thus there is no means of measuring absolute need on aesthetic grounds. Need is perceived or felt by the patient or detected by the dentist. Therefore within any given population four categories can be defined.

Those who perceive a need and are also deemed in need by a dental professional.

Those who do not perceive any need but whom the dental profession deems to be in need.

Those who do not perceive a need and dental professionals concur with them.

Those who perceive that they are in need but the dental professional determines there is no need.

The Index of Orthodontic Treatment need (IOTN) developed by Brook and Shaw (1989) (2) and Shaw et al (1991a, b) (3, 4) and validated by Richmond (1990)(5) has been gaining national and international recognition as a method of objectively measuring treatment need.

The index of orthodontic treatment need is a measure that has become accepted in the United Kingdom by dental professionals to determine orthodontic treatment need. (3, 6)

The upper 2 of the 5 grades of IOTN dental health component have been categorized as representing definite need for treatment. In the National health service in the United Kingdom many health authorities use this division of IOTN to identify individuals whose traits of malocclusion are deemed appropriate for the expenditure of resources, that is orthodontic treatment (7) Persons with a high degree of difference and those living in comparative social deprivation are likely to have different social norms in relation to oral health expectation and self-perception of body image.(8) The report notes that middle class patient typically receive better care from their GP, and middle class parent are more likely than working class parents to seek medical attention for their children.(9)

Further studies show that working class people makes less use of dental service (10) and receive dental care than middle class people. In particular Gosney (1989) has noted that the motivation to undergo orthodontic treatment reflects a number of psychological and social factors. (11)

Saltzman (1967) (12) stated that the demand for orthodontic treatment is primarily by aesthetic value and, Samuels and Proshok (1973) (13) indicated a possible link between a person's occupation and the strength of the motivation to optimize their attractiveness. They found that people ranked professional occupation as having the highest need for good dental appearance. This suggests that occupational motivation, which is likely to be higher among middle class people, might influence motivation towards orthodontic treatment. In addition middle class groups are generally more aware, eager, demanding and responsive with regard to health service provision. (14) It has been demonstrated that socioeconomic status and general dental treatment are correlated; such that adults in high socioeconomic groups have more teeth preserved and have more dentistry performed than persons in lower socioeconomic groups. (15)

For children of municipal dental health service, where these two factors are eliminated by free periodic dental examination and treatment, a tendency towards increased caries frequency in low income group and better dental health in patients from higher socioeconomic group would seem to exist. (16)

These findings could be related to family attitude towards home dental care and dietary habits.

It has also been shown that the need for orthodontic treatment is estimated differently according to subject's economic status (17) in the families of a higher socioeconomic status expressed a greater demand for orthodontic treatment. (18)

The aim of this study is to describe a method of determining the amount of orthodontic treatment in population and to investigate whether socioeconomic background influenced the orthodontic situation in a large group of children where orthodontic service was performed mainly according to objective indication for treatment. (18)

The report notes that middle class patients typically receive better care from their GP, and that middle class parents are more likely than working class parents to seek medical attention for their children. (9)

Materials and Method:

A study was conducted regarding orthodontic treatment need and socioeconomic status in Udaipur, Rajasthan India. The study population was between age group of 13 to 25 years. Data collection was done in month of April in year 2008.

Out of total sample of 350 subjects, 310 (88.6%) provided full sets of data. Out of the 310 participants 40 (11.43%) were under going or had previously orthodontic treatment and were therefore excluded from analysis presented. So that finally 270 available for analysis by socioeconomic status.

Ethical clearance was obtained from the ethical committee of Darshan Dental College and Hospital before study.

A Proforma was prepared to collect the data about the relation between socioeconomic and orthodontic treatment need among the general population.

The samples were examined using a plane front surface mouth mirror and explorer both diagnostic instruments were changed after every ten examination.

In the survey assessment of both normatively defined and perceived need for orthodontic treatment was undertaken in Udaipur district.

Each subject's postcode was collected during the study and was used to categorize each subject, according to socioeconomic status using the super profiles geodemographic classification (19). Socioeconomic status scale was split into three quintiles 3 Points scale ranging from Higher to lower class.

These three groups would be likely to very disparate lifestyles and social norms. Normative need was measured using the dental health component of the index of orthodontic treatment need (20).

There are five grades; grade 5 represents the greatest need for dental treatment (for example, overjet greater than 9mm or crowding, retained deciduous teeth etc.) To grade1 which represents no need for orthodontic treatment for example very minor contact point displacement less than 1mm.

Responses to questions "Do you think your teeth need straightening ?" subjective were given the choice of answering "YES" "NO" or "don't know" Those answering "YES" were categorized as having perceived need. Those answering no were grouped as not having perceived need for orthodontic treatment.

There were two trained examines who were calibrated before the survey for Inter examiner variability and the reliability was tested by means of weighted kappa statistic which was 90%.

Dental examination was conducted on the subjects in Mobile Dental Unit. Subjects wearing one in the past orthodontic appliance or who reported with orthodontic appliance were excluded from the analysis.

In this way the proportions of the population with true need (normative plus perceived need) normative need only and no need were determined. The effect of socio-economic status on these four groups of need was examined using cross tabulation and chi-square tests for trends.

Results:

Table1. Distribution of IOTN scores among the study population.

IOTN DHC	N	%
1	62	22.96
2	65	24.074
3	68	25.185
4	41	15.185
5	34	12.592
Total	270	100%

Table 1 shows the distribution of IOTN DHC scores within the population, with (27.77%) of the population having IOTN scores of 4 or 5.

Table 2 Distribution of socio economic status among study population.

SOCIO-ECONOMIC STATUS	N	%
1- Higher class	55	20.37
2- Middle class	133	49.25
3- Lower class	82	30.38
Total	270	100

Table 2 shows the distribution of study population in the relation to socio-economic status. This shows that while 20.37% (55) were in higher class or affluence, 30.38% (82) were in lowest class or deprived and 49.95% (133) were in middle class.

Table 3 Distribution of IOTN scores by socio-economic status.

Socio-economic status (Quintiles)				
	1	2	3	Total
IOTN (1-3)	46(24.46%)	84(44.68%)	58(30.85%)	188
IOTN (4-5)	9(10.97%)	49 (59.75%)	24(29.26%)	82
Total	55(20.37%)	133.(49.25%)	82(30.37%)	270

Chi- square -7.78 (P<0.05) S

Tables 3 Shows that among 270 population for whom socio-economic status data were available there was a trend for normatively assessed need (IOTN score 4-5) to the more frequently present among the lower and middle class and for lack of need to be more prevalent amongst affluent or higher class.

Table 4: Distribution of desire for orthodontic treatment by socio-economic status.

Socio-Economic Status (Quintiles)				
Teeth	1	2	3	Total
Straightening				
Want	22(18.18%)	62(51.23%)	37(30.57%)	121
Don't want	33(22.14%)	71(47.65%)	45(30.20%)	149
Total	55(20.37%)	133.(49.25%)	82(30.37%)	270

Chi- square for trends 0.69 (P>0.05) NS

Table 4 shows the distribution of desire for orthodontic treatment among the respondents with a trend toward predominating in lower class people.

Table 5: Distribution of IOTN scores by socio-economic status among those desiring treatment

Socio-Economic Status (Quintiles)				
Normative need	1	2	3	Total
IOTN 1-3	13(16.66%)	43(55.12%)	22(28.20%)	78(64.46%)
IOTN 4-5	9(20.93%)	19(44.18%)	15(34.88%)	43(35.53%)
Total	22(18.18%)	62(51.23%)	37(30.57%)	121

Chi- square for trends 1.33 (P>0.05) NS

Table 5 illustrates 121 subjects, who reported a self perceived need for treatment (64.46%) (78/121) did not have a normatively assessed need. There was no evidence of a socio-economic influence on normative need for treatment among those who felt a need for treatment themselves.

Table 6: Distribution of desire for treatment by socio-economic status among those with a need for treatment.

Socio-Economic Status (Quintiles)				
Self Perception	1	2	3	Total
Want	6(16.21%)	21(56.75%)	10(27.02%)	37(45.13%)
Don't want	3(6.66%)	28(62.22%)	14(31.11%)	45(54.87%)
Total	9(10.97%)	49(59.75%)	24(29.26%)	82

Chi- square for trends 1.90 (P>0.05) NS

Tables 6 shows that subjects with normative need (45.13%) (37/82) felt they needed their teeth straightening. The distribution of self perceived need for treatment was not influenced by socio-economic status among people who actually had IOTN score of 4 or 5.

DISCUSSION:

These data are helpful in informing our understanding the need and demand for orthodontic treatment. Approximately one fourth of the population required orthodontic treatment as measured by the most stringent interpretation of normative orthodontic treatment need. In terms of perceived need half of the people felt their teeth needed straightening.

One interesting fact revealed by this study was that there were a predominance of deprived people (in middle and lower class) in the group who had the greater normatively measured orthodontic treatment need.

This may in part be explained by greater uptake of treatment in groups with higher socio-economic status this hypothesis would agree with the finding of Kenealy et al.(9)

Treated subjects in this study were excluded from the data and thus, deprived peoples with treatment need predominated. However, Logistic Regression Analysis was performed in this study using the normative measure of need as the dependent variable.

Socio-economic status on a 3-point scale and whether subjects had been in receipt of orthodontic treatment as independent variable. It showed socio-economic status have a significant independent effect on normative need after controlling for whether or not treatment was received. IOTN has been used extensively in the UK for the past decade. DHC of the IOTN with its simple 5 grade scale has been employed as a means of determining acceptance for treatment by consultant orthodontists. (7)

Other reason may account for the higher IOTN score in deprived group for example this finding may be due to higher caries rates in lower social classes resulting in the early loss of deciduous teeth and subsequent drifting and crowding of teeth additionally more higher class people are likely to be regular dental attenders (22) and may have benefited from early intervention by dentist to prevent decay or correct potential problem by Judicious extraction.

A higher objective needs for orthodontic treatment however a relatively high number of middle class populations with a low objective had received orthodontic treatment.' There are a number of possible explanations for this finding:-One possibility is that middle class people attend for dental examination more regularly, so that "marginal" condition are more likely to receive attention. Another possibility is that middle class parents have a higher criterion of "good dental alignment" or are more motivated than working class population to receive corrective attention. A third possibility concerns the perception their patient needs by dentists (9).

As children from high socio-economic group might express higher demand for orthodontic treatment. (23) It could be expected that highest socio-economic levels were best represented in the orthodontic treatment group. The middle group has largest representation in the orthodontic treatment groups which might be explained by greater concern of middle class families with an acceptable dental appearance for their children. They are perhaps also more willing to follow advice given to them by dentist than the parents in the higher or lower socio-economic group. The category discontinued "orthodontic treatment" showed highest values in the two lowest socio-economic groups, leading to the conclusion that families in this group have a slightly less positive attitude towards appliance therapy than families in the other socio-economic group.

In spite of the differences found in the "treatment" and the discontinued treatment" groups, the distribution of the orthodontic categories was found to be remarkably equal in the fine socio-economic groups. This would indicate that the municipal orthodontic service system described here was generally accepted by the patients' at all socio-economic levels (18).

A study conducted by Eduardo Bernabe and Carlos Flores –Mir (24) showed that there were no significant difference in the distribution of normative and self perceive orthodontic treatment need based on sex ,age and SES comparison. Similar results were found in our study which shows that there were no significant differences in the distribution of normative and self perceive orthodontic treatment need based on socioeconomic status.

In contrast to study population as a whole, when only those who felt a need for treatment are examined; normative need is distributed in the same way in both higher and lower class. Also, among those with normative need (table 6) perceive need for treatment is distributed similarly among the socio-economic group. A study conducted by Locker D. (25) showed that a marked difference between normative (29.9%) and self perceived (1.8%) treatment need in this population was detected .A possible explanation for which normatively defined need for orthodontic care was not matched by perceived need that IOTN is a normative measure of something that subjectively defined (aesthetics) . While in our study it was 45.13% and 64.46%.

In our study subjects with either normative need alone or perceived need for treatment alone are predominantly in the lower and middle class socio-economic groups.

Similar results were found in a study, conducted by Bilal Ahmed, Mark S et al (26) in which Subject from lower classes were significantly more likely to concur on normative and perceived need. Finally, socio-economic status affects the normative orthodontic treatment need of the general population. It also effect perception of need for orthodontic treatment but these two effects are separate. This is shown by the fact that although 80(30.48%) of the people had normative need and (44.81%) (121) had perceived need 45.12% (82) have both type of need.

The proportion of the population in each social group that perceive need for orthodontic treatment are quite remarkable similar to that proportion that need treatment. Thus at first sight, it might appear from these figures that the IOTN score accurately predicts those who are likely to want to have their teeth straightened. However it becomes clear from table 5 that the majority of population who feel a need to have their teeth straightened are not actually in need of treatment according to the IOTN (78/121) (63.8%).

A study conducted by Tickle M et al shows that normatively assessed need (IOTN score 4 and 5) to be more frequently present among deprived children and for lack of need to be more prevalent amongst affluent children(X²-21.2., P<0.01). it was similar to our study which shows that there was a trend for normatively assessed need (IOTN score 4-5) to the more frequently present among the lower and middle class and for lack of need to be more prevalent amongst affluent or higher class.(X²-7.78, P<0.05)(27)

Orthodontic treatment need was not only influenced by objective occlusal characteristic but also by the subjective appreciation of their own facial aesthetic and sociocultural character. (28-30)

CONCLUSION: Socioeconomic status affects normatively measured orthodontic treatment need through, as yet undefined mechanisms. It also affects a person's perception of need for orthodontic treatment, but these two associations are separate. The mismatch of need and desire for treatment is a problem for orthodontists.

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