Research Article

Comparison of Graphoanalysis with Blum's Method in Prediction of Complete Denture Patient's Mental Attitude - A Prospective Comparative Study

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Abstract:

Understanding mental attitude is one of the most important factor in the diagnosis of prosthodontic patients. Prosthodontist must fully understand their patients as it helps the patients to accept the kind of treatment they need. As a correlation exists between emotional state and handwriting, therefore, using the concept of graphoanalysis in complete denture patient, they were categorized based on their handwriting analysis into having realistic or unrealistic expectations thereby, helping dentists in dealing with their patients better.

Key Words: Complete denture treatment, Graphoanalysis, Blum's classification.

Introduction:

The success of a denture is related to many factors which include technical procedures, functional factors, esthetics, biologic determinants and psychological factors. Psychological factors include the preparedness of the patients and their mental attitude towards denture; their relationship with and attitude towards the dentist, their intelligence and ability to learn how to use the dentures. There are various methods for evaluating complete denture patient's behaviour. Some of them are as follows:

Cornell medical Index is a health questionnaire used to obtain a large amount of relevant medical and psychiatric information. Psychological testing (psychometrics) is a field characterized by the use of behaviour samples to assess the cognitive and emotional functioning of an individual. Denture adjustment inventory is used to assess mental health problem in psychiatric and medical settings. Diagnostic denture is used to prevent denture disaster as it is used for analyzing, refining and confirming clear speech and correct jaw relations. House classified patient's psychology into four types as philosophic, exacting, hysterical and indifferent. Blum classified patient's psychology as reasonable/realistic and unreasonable/ unrealistic (Potgeiter & Carey, 1983).

Handwriting analysis can play an important role whenever it is useful to know something about human personality. It can be of use in personnel selection, compatibility analysis, career guidance, assisting lawyers and law enforcement agencies; enabling teachers to identify the strengths, weaknesses, aptitudes of students; supporting social workers and counsellors in identifying and dealing with their client's behaviours and personalities and diagnostic procedures in medical field.

Graphology is described as a scientific study and analysis of handwriting, or the art of interpreting character and personality from peculiarities in handwriting (Gardner, 1997).

According to Webster's dictionary, graphology is the study of handwriting for the purpose of analyzing a person's character or personality .No one knows for sure where or when it started. Some speculate that it started soon after handwriting was invented. The earliest written references were found in the writings of Aristotle (Gardner, 1997) where some of his observations about cursive writing were interpreted as commentary on handwriting analysis (Dennis, 2001). The science of graphology has for many years been a tool to increase awareness of one's character or personality.

However, the first serious treatise on handwriting analysis was written in 1622 by Camillo Baldo, an Italian physician and a Professor at the University of Bologna (Dennis,2001). He wrote the first known book on graphology which was titled "How to Judge the Nature and the Character of a Person from his letter". He commented on the fact that all writers write differently and that no one can write like another.

Handwriting is essentially a brain writing, the pen is merely a tool, directed through the movement of arm by impulses that originate in the cerebral cortex. The message is sent via the nervous system to arms,

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hands and even toe muscles, which motivate the pen to produce the symbols we call writing.

On the surface, handwriting styles may appear to be the same, especially among family members. Generally, in such cases, the superficial resemblance is due to common traits, which are often reinforced in family or communal structure. Conscious or unconscious attempts to emulate style can always cause a similarity in scripts. The significant differences of personality, however, will always be revealed by a detailed handwriting analysis.

An attempt was made in this study to evaluate whether there is any relationship between graphoanalysis and denture expectations of the patient. The subjects were classified according to Blum's classification and analysis was done to find whether there is any influence of age or sex on a patient's expectations from denture.

Material and Methods:

Part - I: Fifty consecutive complete denture patients attending as out patients in the Postgraduate Department of Prosthodontics, Mahatma Gandhi Postgraduate Institute of Dental Sciences, Pondicherry, who knew to write in English and Tamil (prevalent language) were selected for the study. The age group of the subjects varied from 38 to 84 years. Out of 50 subjects, 40 were males and 10 were females.

Subjects were explained about the study and their consent was obtained. They were asked to write down what their expectations were from the treatment modality in few lines on one unruled white page and some other matter comprising three pages in English or Tamil in their own handwriting. They were asked to write only on one side of the paper to avoid superimposition. They were asked to use the pen which they were comfortable with. Routine case history was taken and treatment procedures were completed as required and the patients were evaluated and categorised based on clinical experience during treatment according to Blum's classification who divided patients into two types as realistic and unrealistic. Analysis was done to find out influence of age and sex on it.

Blum in 1960 suggested a scheme for classifying patients as reasonable or unreasonable, realistic or unrealistic (Sharry, 1974). According to him unreasonable patient have:

1. Unreasonable expectations towards the doctor and medical science with regard to the quickness and certainity of diagnosis and treatment and with regard to the power and selfless benevolence of the physician.
2. Unreasonable expectations about the fee and a basic unwillingness to pay unless completely satisfactory results are obtained.
3. Unreasonable beliefs about the general incompetence or unpleasant and untrustworthy nature of physicians in general.
4. Under careful inquiry, unreasonable patients often will be able to recognize and admit to themselves problems such as nervous tension, superstition, oversensitivity, fearfulness, overcritical nature, weakness of will, frequent sadness, perfectionistic tendencies and occasionally stupidity. Their social backgrounds are similar.
5. In general, unreasonable persons are less educated than reasonable ones and are more frequently labourers, whitecollar workers or skilled and semiskilled workers. In contrast, reasonable patients more often hold professional and managerial jobs.
6. The unreasonable patients usually have lower incomes than reasonable ones. Unreasonable persons are most often in the lower and lower-middle classes and reasonable persons are more often from the upper and upper-middle class groups.

Part – II: The handwriting samples were submitted for graphoanalysis. The graphoanalyst was not given any details about the subjects. The samples were numbered and sent to him. He was given the criteria for classifying subjects according to Blum's classification. Graphoanalyst used magnifying glasses; emotional gauge/slant gauge and grid recomended by the International Graphoanalysis society to measure angle between the baseline and slant line for analysis of handwriting (Fig I). The detailed analysis of the basic strokes is what enables a graphologist to analyze the writing of an individual of any nation, the analyst need not know the language. The strokes are the same in all languages.

Handwriting is comprised of many diverse elements like various strokes, such as i dots, hooks, t bars and loops which are connected together to form letters, words and sentences. When analyzed, these strokes can be decoded to reveal any or all of the aspects of personality. The importances of diverse elements of handwriting are as follows: t bars - the

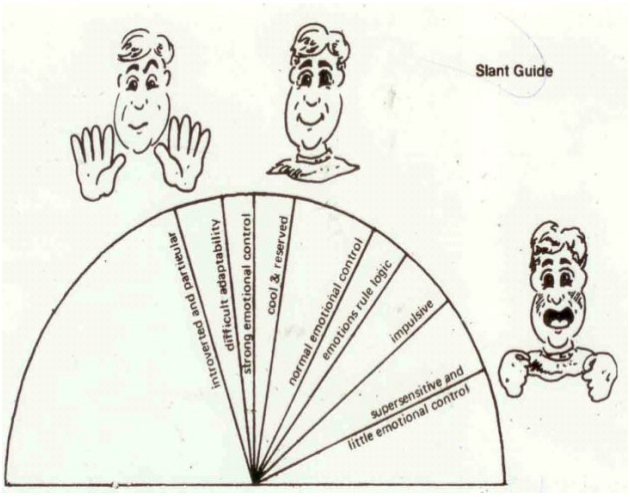

Fig. I: Emotional gauge which is used for measuring angle between the baseline and slant line.

placement of the bar on stem represents goal orientation (higher the bar, higher the goals). The sweep of t bar shows the enthusiasm level, the longer the bar sweeps from the left to right, the more the enthusiasm. The i-dots indicate ability to pay attention to details. The well placed dot indicates good attention to details whereas dot placed away indicates less attention to details. No dots indicate lack of enthusiasm, whereas rounded dot indicates loyality. On analyzing various loops, upper loops denote capacity for abstract thought whereas lower loops denote capacity for creativity and imagination. Slants reveal the degree to which an individual expresses the emotional feeling to others. Slanting to right is to express the real emotional feeling (extrovert). Writing vertically is to be objective and relies on judgement and logic emotional feeling. Slanting to left indicates repressal or withholding of emotions. On analyzing hooks-initial hooks indicate desire to acquire things and final hooks indicates tenacity. Amount of pressure applied while writing reveals mental energy level and stress level. Rhythm of writing denotes fluid thought and mental discipline, similarly margins and spaces denote extravagance if much space is left while writing and frugality if page is filled up. Wedges represent that writer is good at research and enjoy searching answers. Retracing of letter while writing show repressed thoughts, feelings or emotions (Fig. II a-h) Moving on to zones the dominating zone indicates that the writing is taller or more elaborate in that particular zone. Dominating upper zone denotes intellectual or abstract, middle zone denotes daily action or tangible and lower zone denotes desire, drives or biological (Fig. III a-c).

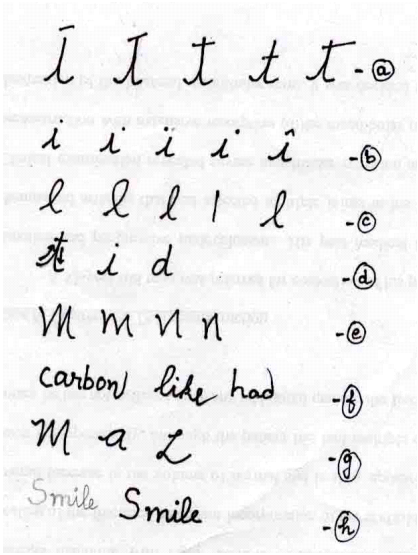

Fig. II: Showing handwriting diverse elements as : (a) t-bars represents goal orientation and enthusiasm level;(b) i-dots indicate attention to details;(c) loops denote abstract thoughts;(d) retracing shows repressed emotions;(e) wedge represents writer's interest in research; (f) ending strokes indicates social attitude; (g) hooks denote desire to acquire things;(h)pressure indicates mental energy level.

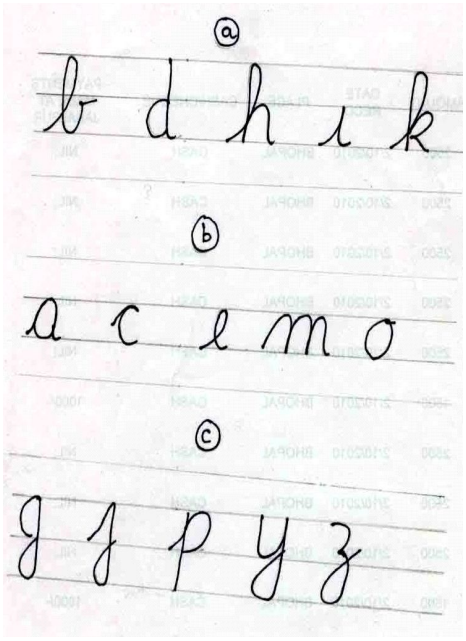

Fig. III: Shows details of dominating zone:(a) upper zone denotes ability to conceptualize;(b) middle zone denotes daily action;(c)lower zone imagination and creativity

Results:

The present study evaluated the expectations, attitudes and reactions of the patients before, during and after treatment by clinical experience and compared this with emotional and behavioural patterns predicted by graphoanalysis (analyst's report). Table I shows classification of subjects according to clinical

experience (Blum's classification). It was observed that total number of patients with realistic expectations were more than the unrealistic.

The age range of the patients observed varied from 38 to 84 years. To see whether there was any relationship between age of patient and he/she being realistic/unrealistic, the categorisation of subjects was done.

Patients were categorised as those below 60 years (n=31), 60 years and above 60 years (n=19). Among patients below 60 years, 87.1% were realistic & 12.9% were unrealistic; while in patients of 60 years & above, 63.2% were realistic & 36.8% were unrealistic (Table II). The above relationship is statistically upheld as the calculated chi-square value, 3.93 is significant at 5 per cent level (3.93 is greater than 3.84, the table value for 1 degrees of freedom at 5% level). Mann-Whitney 'U' Test was done to find out comparison between the groups below 60 years and 60 years and above shows that the rank sum of below 60 years age group was more than that of above 60 years age groups and the difference between the rank sum was highly significant at 5 per cent level. That is, one can be 95 per cent confident that the classification of patients into realistic and unrealistic differs significantly between two age groups (Table III).

Table IV shows the influence of sex on Blum's classification. Among the study group, 77.5% of males and 80% of females were realistic while 22.5% of males and 20% of females were unrealistic. The calculated Chi-square value of 0.029 was not significant (Table IV). Mann-Whitney 'U' Test was applied to find out comparison between males and females, which showed that there was no significant difference in classification of realistic and unrealistic between males and females. The rank sum for male groups was more than that of female groups but the difference was insignificant. That is, probability of getting realistic and unrealistic level would be nearly equal between male and female patients (Table V).

Table I: Classification of subjects according to clinical experience.

Expectation	Number of patients
Realistic	39
Unrealistic	11
Total	50

Table II: Influence of Age (Below 60 years, 60 years and above 60 years) on Blum's classification

Classification	Age		All Sample
	< 60 Years	≥ 60 Years	
Observed frequency (clinical experience)			
Realistic	27 (87.1%)	12 (63.2%)	39 (78.0%)
Unrealistic	4 (12.9%)	7 (36.8%)	11 (22.0%)
Expected frequency (graph analysis)			
Realistic	24 (77.42%)	15 (78.94%)	39 (78.0%)
Unrealistic	7 (22.68%)	4 (21.06%)	11 (22.01%)
Calculated χ^2 Value		3.93	
Degrees of freedom		1	
Result	Significant at 5 % level		

Chi-square table value for 1 degrees of freedom @ 5% = 3.84 and @ 10% = 2.70

Table III: Results of Mann-Whitney 'U' Test (Below 60 years,60 years and above 60 years)

Age	N	Rank Sum	Mann-Whitney 'U' Value	'Z' Value	Results
< 60 years	31	720	224	1.96	Significant at 5% level
≥60 years	19	555			

Discussion:

Silverman et al (1976) stated that the emotional level would assist the dentist in anticipating the frequency and intensity of problems and concluded that a warm, sympathetic and understanding approach to the patient could serve to reduce time, effort and mental anguish, thereby permitting better dental service for the patient. Zeng et al (1999) stressed that the prosthodontists not only need improving technological quality of prostheses but also need to pay attention to patient's psychological characteristics as these personality factors affect the denture satisfaction in every aspect of the denture. Grieder (1973) concluded from a research that, to understand patients, sound knowledge of some foundations of human behaviour is essential along with emphasis on man's accumulation of stress, and its effect upon him orally in relation to prosthodontics.

Graphology is a self-validating science (River, 2003). This means the credibility of the method can be proven immediately by the feedback obtained from the graphologist. Validation of handwriting analysis has also come from the scientific community itself. Various comparisons have been made between psychological tests and graphology with the same caliber of information revealed by both. In many cases, in fact,

Table IV: Influence of sex on Blum's Classification.

Classification	Sex		All Sample
	Male	Female	
Observed frequency (clinical experience)			
Realistic	31 (77.5%)	8 (80.0%)	39 (78.0%)
Unrealistic	9 (22.5%)	2 (20.0%)	11 (22.0%)
Expected frequency (graph analysis)			
Realistic	31 (77.5%)	8 (80.0%)	39 (78.0%)
Unrealistic	9 (22.5%)	2 (20.0%)	11 (22.0%)
Calculated χ^2 Value		0.029	
Degrees of freedom		1	
Result		Not significant	

Chi-square table value for 1 degrees of freedom @ 5% = 3.84 and @ 10% = 2.70

Table V: Results of Mann-Whitney 'U' Test (Influence of sex)

Sex	N	Rank Sum	Mann-Whitney 'U' Value	'Z' Value	Results
Male	40	1025	195	0.169	Not Significant
Female	10	250			

handwriting analysis proved to be more thorough and effective in assessing behavioral patterns than standard psychological tests (River,2003).

In the present study, fifty complete denture patients were selected as subjects and observations were subjected for statistical analysis. This was not in conformity with Crumbaugh & Stockholm (1977), who stated that subjectivity of graphoanalysis makes statistical analysis difficult.

The selection of patients was random without any preformed idea about them, which is not in conformity with a study done by Potgeiter & Carey (1983), wherein three patients taken as subjects in their study were referred by other practitioners because they were difficult patients.

Patients were asked to write their expectations to classify them as realistic and unrealistic. Subjects who could write in both English and Tamil were chosen and were asked to write in their own handwriting on the white papers provided by us. The idea behind providing paper was to maintain uniformity. They were asked to write with the pen which they were comfortable with, to avoid any change in their handwriting because of the change in pen. They were asked to write three pages of matter so that at some point they will not be conscious in writing and would write in their usual manner. They were asked to write their expectations from the treatment in one page so that they could be categorised according to Blum's classification (realistic/ unrealistic).

The handwriting sample of all the fifty patients was sent for graphoanalysis. The analyst was not given any information about the subjects thus avoiding any bias in the results and they were classified according to Blum's classification based on their handwriting as realistic and unrealistic with the help of classification sent by us. The patients were also categorised according to Blum's classification based on clinical experience during treatment. This is in conformity with the study done by Potgeiter & Carey (1983) who evaluated three patients by graphoanalysis and compared it with their expectations, attitudes and reactions during course of treatment.

The subjects were classified according to Blum's classification (Sharry,1974) based on the clinical experience during treatment, their expectations which they wrote and also taking their age and sex into concern, as realistic or unrealistic. The observations were tabulated and subjected for statistical analysis. The fifty subjects chosen for study included 40 males and 10 females. Both the sexes were included in the study to avoid any bias and also to find the influence of sex on the observations. It was found that with regards to sex, the probability of being realistic or unrealistic was found to be nearly equal between male and female patients. This is in conformity with a study of Langer et al, (1961) which showed that statistical evaluation of satisfaction and dissatisfaction showed no significant differences between men and women, indicating that both sexes reacted similarly towards their complete dentures.

The age range of subjects varied from 38 to 84 years. The observations were categorized as those below 60 years and 60 years and above, were subjected for statistical analysis. It was found that age had a significant influence on a patient being realistic or unrealistic. It was found that incidence of unrealistic cases were more in subjects above 60 years.

Thus, it was found that graphoanalysis is an useful tool for identification of patient being realistic or unrealistic. Classification or categorization of patients by graphoanalysis and by clinical experience of patients differs significantly and graphoanalysis when coupled with clinical experience is more helpful in identification of difficult patients than merely by clinical experience alone. Age unlike sex, has a significant influence on a patient being realistic or unrealistic.

Although, graphology does pinpoint behavioural traits, it cannot be used to deduce information regarding age, sex, race or nationality and even the writing of

handicapped individuals who may use their teeth or toe to communicate (River, 2003).

Conclusion:

By evaluating subjects by graphoanalysis, clinical experience and statistical analysis, it was concluded that Graphoanalysis is a useful tool in ascertaining difficult patients and when coupled with clinical experience it is more helpful in identifying patients than merely from clinical experience alone. It was found that age has a significant influence on a patient being realistic or unrealistic, as patients 60 years and above 60 years were found to be more unrealistic than patients below 60 years. Sex does not seem to have significant influence on patients being realistic/ unrealistic and probability of getting realistic and unrealistic would be nearly equal for both male and female patients.

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