

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

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Abstract To compare and evaluate House classification and graphoanalysis for the assessment of emotional status of complete denture patients. Fifty complete denture patients were included in the study. These patients were classified according to House classification as philosophical, exacting, indifferent and hysterical based on their behaviour during the course of the complete denture fabrication. Handwriting samples of these patients were obtained independently and the patient's emotional status was again classified by graphoanalysis. Statistical analyses like Chi-square, Spearman rank correlation, and Mann-Whitney *U* test were used to assess the expediency of both the methods in classifying complete denture patients. A significant correlation was found between results of graphoanalysis and those of clinical experience. Chances of observing highly difficult patients like hysterical were more from graphoanalysis than by clinical experience. Graphoanalysis is a useful tool for identification of difficult patients. 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

Keywords Graphoanalysis · Handwriting analysis · Evaluation of complete denture patients · Patient assessment · Evaluation of patients

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Introduction

Successful treatment of the prosthodontic patient is often based on proper patient evaluation which may be complicated by the attitudes and expectations of the patient. Psychosomatic problems create difficulties with dental patients which could cause clinical difficulties, impeding good dental service [1]. Knowledge about the emotional level would assist the dentist in anticipating the frequency and intensity of problems and 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 [2]. As a correlation exists between emotional problems and denture problems, therefore a distinct need exists for the dentist to be able to evaluate and identify patients behaviour before actually beginning the treatment [3]. The prosthodontists not only need improving technological quality of prostheses but also need paying attention to patient's psychological characteristics as these personality factors affect the denture satisfaction in every aspect of the denture [4].

Among the time tested methods for evaluating complete denture patients are interview, questionnaires, CMI (Cornell Medical Index), psychologic tests, denture adjustment inventory, diagnostic denture, a generalized classification by M.M House, graphoanalysis [5–7]. Crumbaugh and Stockholm [8] advocated that graphoanalysis is more valid than other projective expressive techniques of personality assessment, since it is less prone to subjectivity (projective techniques are those techniques whereby personality is revealed through subjects response to relatively unstructured, ambiguous or vague stimuli, e.g. structured interviews or self-report inventories).

Potgieter and Carey [9] found that graphoanalysis which is neither intricate nor time consuming to carry out, was found to be a useful adjunct in the assessment of difficult

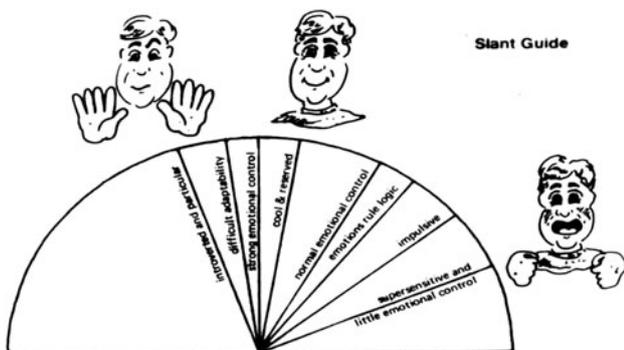


Fig. 1 Emotional gauge

denture patients. Personalities like fingerprints are unique and so are handwritings. However, our writing can and does change to reflect our current personality and outlook on life. Yet the singularity of penmanship is always retained [10]. Given adequate samples, time, expertise, and purpose, there is very little that a writer can disguise from an expertly trained graphologist [11].

With this background a clinical study was designed to evaluate the effectiveness of graphoanalysis in identifying patients, especially the difficult patients and to identify the problems in these patients during prosthodontic treatment.

Materials and Methods

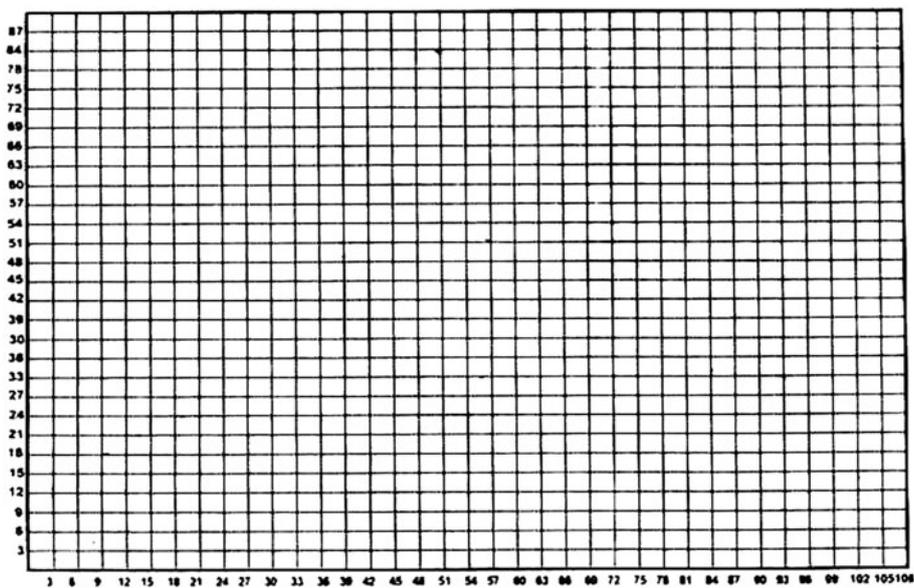
Part. I

After obtaining research and ethics committee approval, fifty complete denture patients attending the Postgraduate

Department of Prosthodontics, Mahatma Gandhi Post-graduate Institute of Dental Sciences, Pondicherry during November 2004–2006 were considered as subjects. The 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 in a plain white paper and some other matter of their own choice in few pages in their handwriting. Subjects were told to write in their language as the strokes are same in all languages. Routine case history was taken and treatment procedures were completed as required for all the patients. Simultaneously patients were evaluated and categorized based on clinical experience during treatment according to classification by M.M. House [12, 13] who divided patients into four psychological types as follows:

- i. Philosophic patients have an ideal attitude for successful treatment as they accept their oral situation and are willing to accept the judgement of their dentists
- ii. Indifferent patients have little concern for their teeth or oral health. They will give up easily if problems are encountered with their new teeth. Indifferent patients will require more time for their instruction on the value and use of dentures.
- iii. Exacting patients are those who find fault with everything that is done for them. They will have many complaints and they will bring with them a collection of dentures made by a number of different dentists and will tell their new dentist exactly what is wrong with each one. They have high expectations.
- iv. Hysterical patients are emotionally unstable and may be excessively apprehensive about having dental treatment. Many of them are convinced that they will never

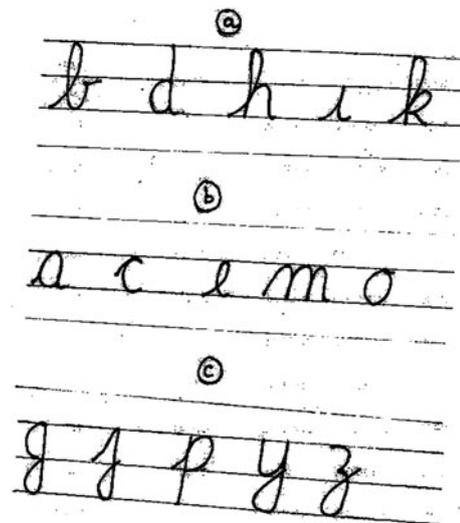
Fig. 2 Grid



3mm Grid

Table 1 Importance of diverse elements of handwriting

Elements of handwriting	Importance
t-bars (Fig. 3a)	Goal orientation, enthusiasm level etc
i-dots (Fig. 3b)	Ability to pay attention
Loops (Fig. 3c)	Upper loops—capacity for abstract thought Lower loops—capacity for creativity and imagination, selectivity in friendship
Retracing (Fig. 3d)	Repressed thoughts, feeling or emotions
Wedges present (Fig. 3e)	Good at research and enjoy searching for answers, ability and potential to investigate issues
End strokes (Fig. 3f)	Social attitude, real nature
Hooks (Fig. 3g)	Initial hooks—desire to acquire things Final hooks—tenacity
Pressure (Fig. 3h)	Energy level, response to surrounding and stress level
Zones (Fig. 4a-c)	Upper zone—intellectual or abstract Middle zone—daily action or tangible Lower zone—desire, drives or biological
Size of wedges	Ability and potential to investigate issues
Slant	Emotional responsiveness
Rhythm	Fluid thought, mental discipline
Margins and spaces	Extravagance—much space left Frugality—page filled up

**Fig. 3** (a, b, c) t-bars, i-dots, loops; (d, e, f) retracing, wedge, ending strokes; (g, h) hooks, pressure**Fig. 4** a Upper zone, b Middle zone, c Lower zone

be able to wear prosthesis (denture). They cannot accept any responsibility for any of their dental problems.

Part. II

The handwriting samples were submitted for graphoanalysis. The graphoanalyst was not given any details (name, age, sex, occupation etc.) about the subjects. Graphoanalyst made use of magnifying glasses, emotional gauge/slant gauge (Fig. 1) and grid (Fig. 2) etc. for analyzing the samples. Handwriting comprises of many diverse elements and few of their importance are enlisted in Table 1. A detailed study of these elements helps in revealing any and all aspects of personality (Figs. 3a-h, 4a-c) [14, 15] Observations made in the study were tabulated and subjected to statistical analysis like Chi-square, Spearman rank correlation, Mann-Whitney *U* test appropriately.

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. The subjects were categorized according to House classification based on graphoanalysis report and clinical experience.

When results were analyzed, maximum patients were philosophical and minimum subjects were hysterical and identification of exacting and hysterical patients was more from graphoanalysis than from clinical experience. It was found that the number of philosophic patients observed from graphoanalysis were less than expected (19 against expected 26) whereas from clinical experience the number

Table 2 Classification of subjects based on graphoanalysis report and clinical experience

Classification	Graphoanalysis report	Clinical experience
Observed frequency		
Philosophic	19 (38.0) ^a	32 (64.0) ^a
Indifferent	16 (32.0) ^a	10 (20.0) ^a
Exacting	11 (22.0) ^a	7 (14.0) ^a
Hysterical	4 (8.0) ^a	1 (2.0) ^a
All	50 (100.0) ^a	50 (100.0) ^a
Expected frequency		
Philosophic	26	26
Indifferent	13	13
Exacting	9	9
Hysterical	2	2
All	26	26
Calculated χ^2 value	7.38 ^b	
Degrees of freedom	3	
Result	Significant at 10 % level	

^a Figures in brackets shows percentages to column total

^b Chi-square table value for 3 degrees of freedom @ 5 % = 7.81 and @ 10 % = 6.25

Table 3 Results of Spearman rank correlation

Type of study	N	Spearman R	t Value	Results
Graphoanalysis	50	0.4798	3.78	Significant at 1 % level results
Clinical experience	50			

Table 4 Results of Mann–Whitney *U* test

Type of study	N	Rank sum	Mann–Whitney <i>U</i> value	Z value	Results
Graphoanalysis	50	2869.5	905.5	2.37	Significant at 1 % level experience
Clinical experience	50	2180.5			

of philosophic patients observed were more than expected (32 against expected 26). However with regard to indifferent, exacting and hysterical patients the number of patients observed from graphoanalysis were more than that from clinical experience (16 against 13, 11 against 9, 4 against 2 respectively). On doing statistical analysis the calculated Chi-square value of 7.38 was greater than 6.25 (Table 2) which indicated that the graphoanalysis significantly helps in identifying the difficult patients.

Further Spearman rank correlation and Mann–Whitney *U* test were performed. Results of Spearman rank correlation (Table 3) were significant, thus proving that a correlation exists between graphoanalysis results and clinical experience which helps in classification of patients. Results of Mann–Whitney *U* test (Table 4) showed the rank sum of Graphoanalysis result (2869.5) was more than that of Clinical experience (2180.5) and the difference between the rank sum was highly significant at 1 % level that is, identification of patients by graphoanalysis and clinical experience differs significantly and thus graphoanalysis helps in identifying highly difficult patients.

The results were tabulated (Table 5) to find out relationship between graphoanalysis and clinical experience. It was observed that the number of results coinciding for philosophic subjects were more, whereas it was in decreasing order for indifferent, exacting and hysterical patients. This showed that the chances of finding highly difficult patients were more from graphoanalysis than by clinical experience. This was statistically reaffirmed as the Chi-square value of 9.51, which was significant at 5 per cent level, was more than 7.81 which shows that identification of patients by graphoanalysis and clinical experience does differ significantly and chances of finding highly difficult patients were more from graphoanalysis than by clinical experience alone.

Discussion

Graphoanalysis is a self-validating science that is, the credibility of the method can be proven immediately by the feedback obtained from the graphoanalyst. Validation of graphoanalysis has also come from the scientific community itself. In a study conducted by Nassif [16] he classified patients mental attitude according to M.M. House, which was also employed in our study. However the study by Nassif differed from our study in that primarily he employed a questionnaire whereas we utilized clinical experience with the patients as the basis for classification of complete denture patient’s behaviour. Moreover our study utilized graphoanalysis as an additional tool in assessing patient mental attitude, which Nassif did not use. Moreover a through literature search failed to reveal any similar study, employing graphoanalysis in complete denture patients evaluation except that of Potgieter [9]. However a study by Arcari [17] applied graphoanalysis for grading satisfaction for dental analgesia, unlike our study where we classified patients behaviour using graphoanalysis and compared the same with clinical experience.

In our study, 50 complete denture patients were selected as subjects. A sample of 50 was chosen so that it could be subjected for statistical analysis. This was not in

Table 5 Relationship between graphoanalysis and clinical experience

Classification	Coinciding	Non-coinciding	All
Observed frequency			
Philosophic	17 (89.5)	2 (10.5)	19 (100)
Indifferent	6 (37.5)	10 (62.5)	16 (100)
Exacting	5 (45.5)	6 (54.5)	11 (100)
Hysterical	1 (25.0)	3 (75.0)	4 (100)
All	29 (58.0)	21 (42.0)	50 (100.0)
Expected frequency			
Philosophic	11	8	19
Indifferent	9	7	16
Exacting	6	5	11
Hysterical	2	2	4
All	29	21	50
Calculated χ^2 Value	9.51**		
Degrees of freedom	3		
Result	Significant at 5 % level		

** Signifies chi-square table value for 3 degree of freedom @ 5 % = 7.81 and @ 10 % = 6.25

Figures in brackets shows percentages to column total

conformity with Crumbaugh and Stockholm [8] 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 and Carey [9] wherein three patients taken as subjects in their study were referred by other practitioners because they were already found to be difficult patients. Potgeiter and Carey [9] evaluated three difficult patients by graphoanalysis and compared it with their expectations, attitudes and reactions during course of treatment. In our study there was no prior knowledge about the behaviour of patients. The behaviour was assessed during the course of treatment. House classification was chosen, as it is excellent general classification of psychological state of patients and also because it is impossible to analyze all patients or to formulate a criterion that is applicable to all, however, it can be generalized [13].

In our study, the observations were tabulated and subjected for statistical analysis and it was found that, there was a clear use of graphoanalysis in ascertaining difficult patients as it was seen that, identification of difficult patients like exacting and hysterical was more by graphoanalysis than from clinical experience. It was also found that a significant correlation exists between results of graphoanalysis and those of clinical experience. However classification of subjects by graphoanalysis and clinical experience differs significantly as identification of difficult patients was more from graphoanalysis. The results were

also analyzed to find out the number of coinciding cases observed between graphoanalysis and clinical experience. It was found that coincidence of less difficult patients like philosophical were more whereas coincidence of highly difficult patients like hysterical were less from both. This shows that, chances of observing highly difficult patients like hysterical was more from graphoanalysis than by clinical experience. However graphoanalysis does have some limitations like its inability to foretell the future, the exact age, the gender, religion, national origin, caste and it cannot discern writing of the writer. Also it may not be applicable to illiterate patients.

Conclusion

By evaluating subjects by graphoanalysis and clinical experience, it was found that graphoanalysis is a useful tool in ascertaining difficult patients. Further there is a significant difference between graphoanalysis and clinical evaluation in categorization of patients, but the two methods used in tandem are more helpful in identification of difficult patients than clinical evaluation alone.

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