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Comparative Clinical Analysis of two Different Approaches of Cinematically Presented Oral Health Education Among Patients Seeking Prosthetic Rehabilitation

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ABSTRACT

Statement of the problem: Health education of the patient about his treatment is an essential part of comprehensive care. Every treatment has related information that patient has to follow. Advances in multimedia, especially in digital cinematography could be a valuable tool for effective communication between the doctor and his patients.

Purpose:Toevaluate the effectiveness of a video assisted education health program on patients using two different clinical approaches, one in which a video would be shown at the end of the treatment and the other in which education through a video would be started at the beginning of the treatment. The study also would investigate the possible analysis of both approaches on less literate subjects.

Materials and methods: All patient related information would be cinematographed in the form of a twenty one minute video, following which sixty completely edentulous patients were treated with complete denture prosthesis. Subjects were divided into two groups namely group C (h) and group C (t) and also into literate and illiterate. All the subjects were asked to recall the information at two subsequent follow up visits.

Results: subjects belonging to group C (t) showed better recall of information for both males and female

patients at first (43% and 56%) and second appointments (43% and 56%) respectively. Illiterate subjects demonstrated almost equivalent results in both tested groups at both the appointments. Unpaired 't' test between two studied groups at both appointments showed significant values at $p<0.05$ whereas the Karl pearsons correlation coefficient between group C(h) and C(t) was significant for first appointment.

Conclusion:use of cinematography to educate patients is an effective means of delivering treatment related information especially when use of such mode is started during the treatment. With so many factors associated with effective communication further research is required in both means and approaches especially with the advent of social networking and satellite technology.

Key words: *multimedia, treatment needs, patient responsibility, effective communication.*

INTRODUCTION

Prosthetic rehabilitation of any organ of human body, be it a limb, ear, eye or the teeth constitute three common phases, namely phase of fabrication, phase of adaptation and phase of maintenance.Amongst the most common human organ rehabilitations, rehabilitation of entire lost natural dentition is challenging because the prosthesis needs to fulfill the functions of natural teeth in dynamic and ever changing environment over a period of fourth dimension which is time. The consumption of hot to cold, alkaline to acidic, soft to hard, smooth to rough and presence of humidity, saliva, microorganisms and their acidic product makes this rehabilitation as one of the toughest challenges. In the field of prosthetic rehabilitation like that of completely edentulous patients besides the clinician's skill and the quality of the prosthesis, the following patient – related dependant factors are very important to determine satisfaction with prosthesis: personality, attitude toward the prosthesis, prior experience (like in case of complete dentures) and motivation for wearing a denture which is a part of complex health education program. 1

The subject of motivation has evolved in the last decade to include patient education as well, presently the two being inseparable. Lack of patient education is conspicuous by its absence. This statement was made in a study after a careful examination and consultation with fifty completely edentulous patients who were classified as having prosthetic problems. 2 Most of the patients do not value their treatment prosthesis at the time of delivery; therefore it's the responsibility of practitioner to make his patients understand the value 3-8 of a particular treatment through education and motivation. 9, 10 Information associated with any treatment rehabilitation is always excessive, difficult to understand and /or interpret, time consuming exercises and in many cases difficult to remember. At the same time it is also difficult to decide on the content and quantity of information that patients require. 11 It has been shown that the more statements given to the patient, the greater

the proportion forgotten 12which does not mean that the information should be withheld. 13

Subsequently, studies have also revealed that patients undergoing medical procedures have not only a poor understanding of the disease/condition itself, but also about their intervention, complications and maintenance. 14-21Any prosthetist including a dentist needs to have appropriate skills to communicate with patients3 which are unfortunately not taught well in most undergraduate and postgraduate schools. 22 Research into communication in prosthetic dentistry is limited, in fact non-existent. Patients tend to be unhappy with the amount of information they receive from their dentist, and often the information given is misunderstood or forgotten. 23To sum up, to the above problems studies have also shown that patient's ability to retain medical information is poor, especially when the patient is old and their systemic condition is variable. 24-26

Advances in mass communication in the last two decades like mobile phones, satellite television, social networking and multimedia devices like audio disc players, high definition DVD and LCDs have tempted many researches to find its usefulness in medical field. One such source of multimedia is a video assisted education of the patient which has been shown through studies to improve behavioural adjustment, 27 decision making ability of the patient, 28decreases of pre hospitalization delays in patients, 29self-care and self-management, 30, 31 patient anxiety32 and satisfactory health information.33

For any prosthetic rehabilitation, complete denture being no exception, patients have to adjust to the prosthesis during the adaptation phase for which it is compulsory for patients to follow and practice specified instructions. This study was therefore undertaken to evaluate the efficiency of a video assisted education health program of completely edentulous patients using two different clinical approaches, one in which a video was given at the end of the treatment and the other in which video assisted education was started at the beginning of the treatment 7, 13, 17,34,35,36 the study also investigates the possible analysis of both approaches on less literate subjects. This research is based on the hypothesis that cinematic approach that promotes clinical discussion during treatment would yield better retention of information by the patients. Alternate hypothesis would be that cinematic approach to education of illiterate patients would be in force regardless of the level of education they possess in any population.

MATERIALS AND METHODS

The present study was initiated by obtaining the ethical approval in accordance with the ethical standards of the ethical Committee on Human Experimentation of Subharti University which falls in accordance with Helsinki declaration. Sixty completely edentulous subjects seeking rehabilitation for the first time, with no underlying systemic problems that would affect their learning abilities, having access to a multimedia player, were randomly selected from the outpatient department of the department of Prosthodontics,

Subharti University and their informed consent were taken. A total of seventy instructions mandatory for any patient seeking complete denture prosthesis were sought and then translated from English to local languages. The translated versionwas then translated back to English for consistency by senior educationists in the field of the respective language.

Cinematography

A short duration video movie (time duration of 21 minutes) in which all the information that the patients had to follow as part of a compulsory program to enhance effective adaptation, satisfaction and maintenance of the prosthesis was planned. The movie was directed by a multidisciplinary team that included three directors working in the mass communication, three senior prosthodontist, one clinical psychologist, two cameramen, one makeup artist and one cinematographer. The shooting of the video was done in a professional set up in multiple settings, which included the dental clinic, personal setting in a house and at various areas that included meeting places and markets. Participants in the video included a male and a female patient who was successfully rehabilitated in the past and needed little training. Editing of the video was done at the Studio with professionals working on the software, namelyEDIUS (Canopus EDIUS 5 Pro version).The final edited version that carried background audio in local languages was then converted into a portable DVD and VCD format.

Prosthesis fabrication: Clinical protocol both ethical and scientific was followed for the fabrication of the complete denture prosthesis of all the subjects. All of the prosthesis were fabricated by the post graduate students under the supervision of experienced prosthodontist. The study proceeded by dividing the total number of complete denture patients into 2 groups of 30 samples each namely group C (h) {cinematography at home} and group C (t) {cinematography during treatment}. For subjects in groupC (h), the educational material in the form of a video on a compact disk was given at denture insertion appointment without any verbal/written explanation. Patients were asked to watch the video at home, daily for a period of 7 days. Patients were asked to clear all their doubts and questions arising in their mind. In group C (t) information regarding post denture insertion instructions was given to the patients by playing the video before the commencement of each clinical step. All the patients were recalled at 7 day interval and after one month, during which patients were asked to recall the information they had learned from watching the video. Instructions considered as totally correct or near to being correct were only included in the data. Any instruction which was not close to that mentioned instruction was not considered to minimize error. At 1st follow up all the subjects were given a denture hygiene maintenance kit which included a denture box (NMS Nirmala Ltd), denture brush (Stim) and clinsodent denture cleansing powder (ICPA Health Products Ltd).

RESULTS

The study was conducted on 60 completely edentulous subjects seeking prosthetic rehabilitation for the first time with a mean age of 54 years. Twenty nine female and thirty one male subjects distributed randomly in Group C (h) {cinematography at home} and Group C (t){cinematography during treatment} (Graph 1)was analysed according to the education level of each individual(Graph 2). More than 80 percent of the subjects were not educated till eighth grade (middle pass).Five percent of the subjects were educated till graduation or above

Mean values were first calculated with their standard deviation at both recall visits (Table 1). Group C (h) shows mean values that range from 23 to 30 instructions between first and second recall visits whereas group C (t) shows mean values between 29 to 38 instructions at the same recall visits. Female subjects belonging to Group C(t) retained information better than Group C (h) (Graph 3).Subjects within both groups were also divided based on literacy and the results show that subjects who were termed as illiterate show better recall in both groups especially in group C (t) (Graph 4). Between first and second appointment significant improvement was found amongst female subjects of GroupC (h) (30% to 44%) whereas no significant improvement in other group indicating that the second method employed was effective even within seven days. The male subjects in both the groups retained more or less the same information between the first and the second appointment, however with the method employed in Group C (t) it shows better results at both the appointments (56% at both appointments).Table 2 shows probable values of unpaired t test between two groups showing $p<.05$ as significant between two groups after 7 days and one month interval. Values for both intervals were significant. Karl - Pearson's correlation co-efficient was applied to find the strength of association between Group C (h) and Group C (t) after 7 days and 1 month recall visits (Table 3). The test was significant for first visit (7th day) and non-significant for a second visit (1 month)

DISCUSSION

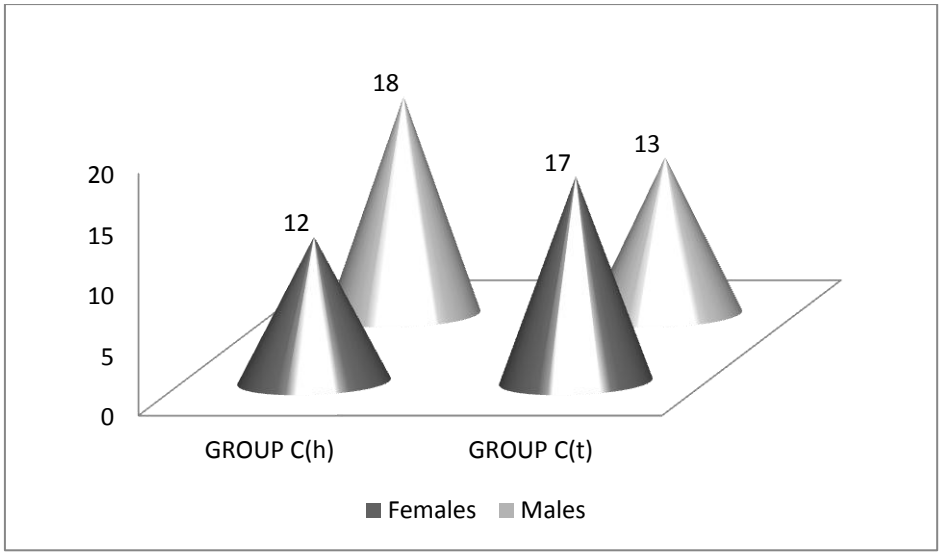
Communication in the twenty first century needs to be precise and effective clear as it is not just "telling" the patient about important health related information or handing him or caregiver a brochure and expecting that it would be read, understood and followed. While planning of any educational material, we should be aware that many of patients won't be having any reading or learning skills. Patients who may be reading some section of the newspapers in the local languages daily may not understand the information given to them that is a medical /dental or any health related. Research shows that individuals with limited reading skills come from all walks of life and that illiteracy is not always a function of education level, although it can be related. One should therefore not expect that the patient will have a good understanding of their disease, their intervention, and its complications. 14 Diseases

like cancer need more communicative concerns from a doctor or rehabilitationists. 37, 38

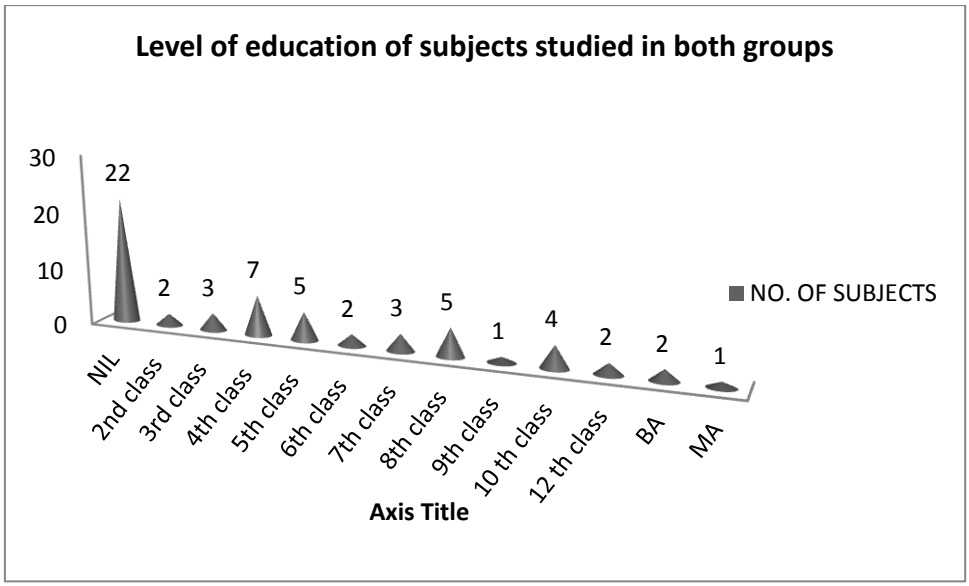
Different approaches with many modes have been studied in the scientific literature to enhance communication. In dentistry, these include the form of printed message, 39 like pamphlets, pictures, 25,26,35,40,41,42verbal conversations, 25,26,35 use of visual aid like resin models, 43 casts, 25,40audio visual aids like slides, 40-42 video, computer assisted strategy, 41-42 group based education and internet. 42in the field of medical sciences patients education using audio visual methods has been successful 44, 45that has included video, 46-48 computer 49-53 and even the internet. 54

Results from this study show that male subjects were able to recall more number of instructions at first appointment in both the studied groups, but the improvement at the second appointment was better observed in female subjects (Graph 3). According to Steffenino G 47 when using video assisted information there was an increase in percentage of patient recall from 39% to 77% with a reductionin 'don't know' answers from 53% to 10% before percutaneous cardiac interventions. The quantities of information as well as the degree of difficulty to remember the information are factors which influence the patient's ability to retain. Video assisted education is an effective method if one wants his patients to retain more amount of information as soon as possible. This has more clinical significance for prosthetic rehabilitations where one needs to adapt to the prosthesis as soon as possible. Both sexes show an increase in retention of information from first to second appointment(30% to 45%) especially the female subjects in Group C (h). Reason for this finding in this study was their ability to watch video more and regularly as most of them did not work.

The results of the study also show that illiterate subjects in Group C (h) recalled 32 % in first appointment and 42% in second appointment approximately which was just 2 % less than the literate individuals in the same Group, whereas in group C (t) 44% of the information was recalled by illiterate individuals as compared to 47% by literate subjects of the same group at first appointment. In this study illiterate individuals were only those who had never gone to school, though subjects who have studied till second classes may not have the capability of a literate individual. Clinically it was observed that subjects belonging to the group C (t) would often discuss the video that was shown to them beforethe clinical procedure would start. Many patients were enthusiastic to learn more indicating initiation of a two way communication taking place rather than one way. Witt and Bartsch (1993) haveshown in their study that on average, just over 30 per cent of single information units were recalled correctly by the patients after 10 days. Though the quantity of information comparatively in the present study is much more than his study, it can be concluded that cinematic presentation of patient education is highly effective, especially if the method employed followed is same as that used in group C (t).

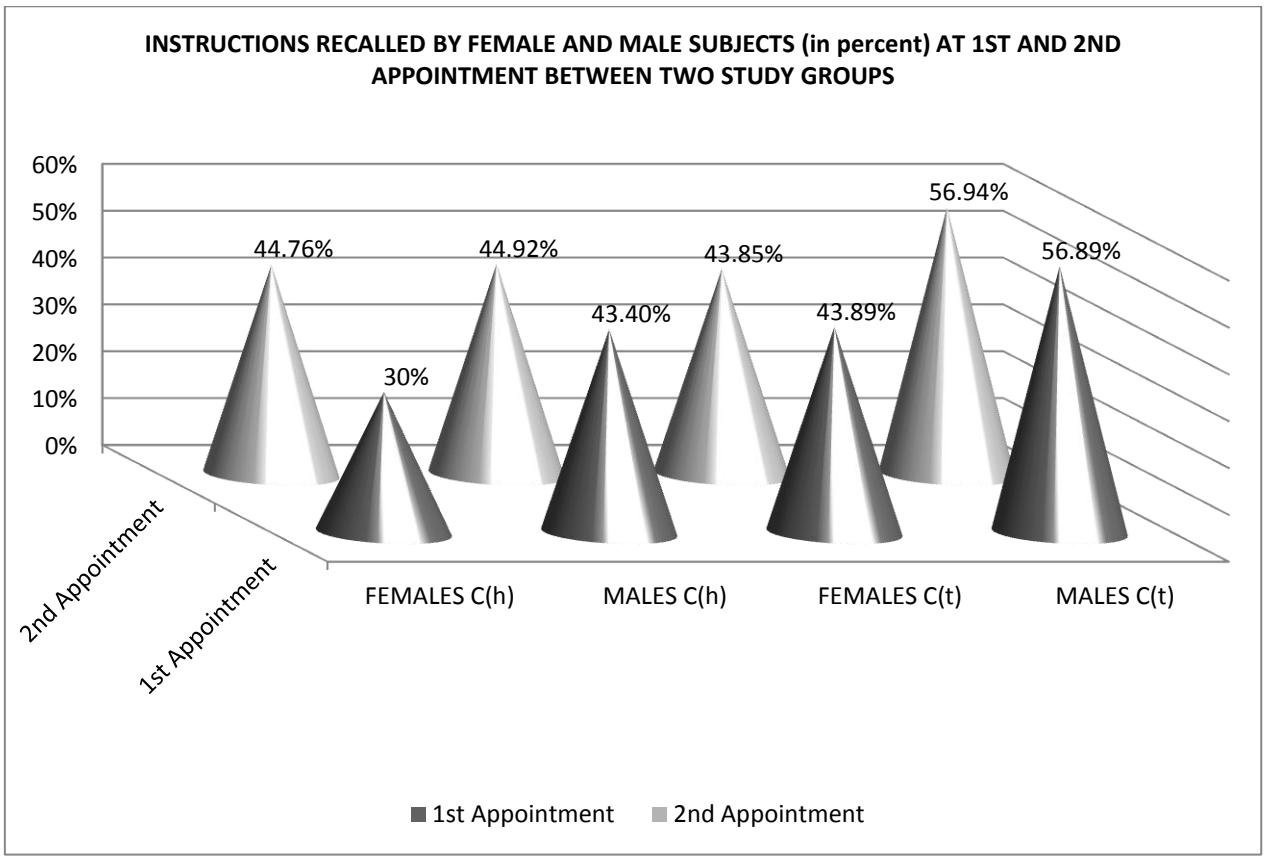


Graph 1: Distrubution of subjects according to sex in group C(h){cinematography at home} and group C(t){cinematography during treatment}.

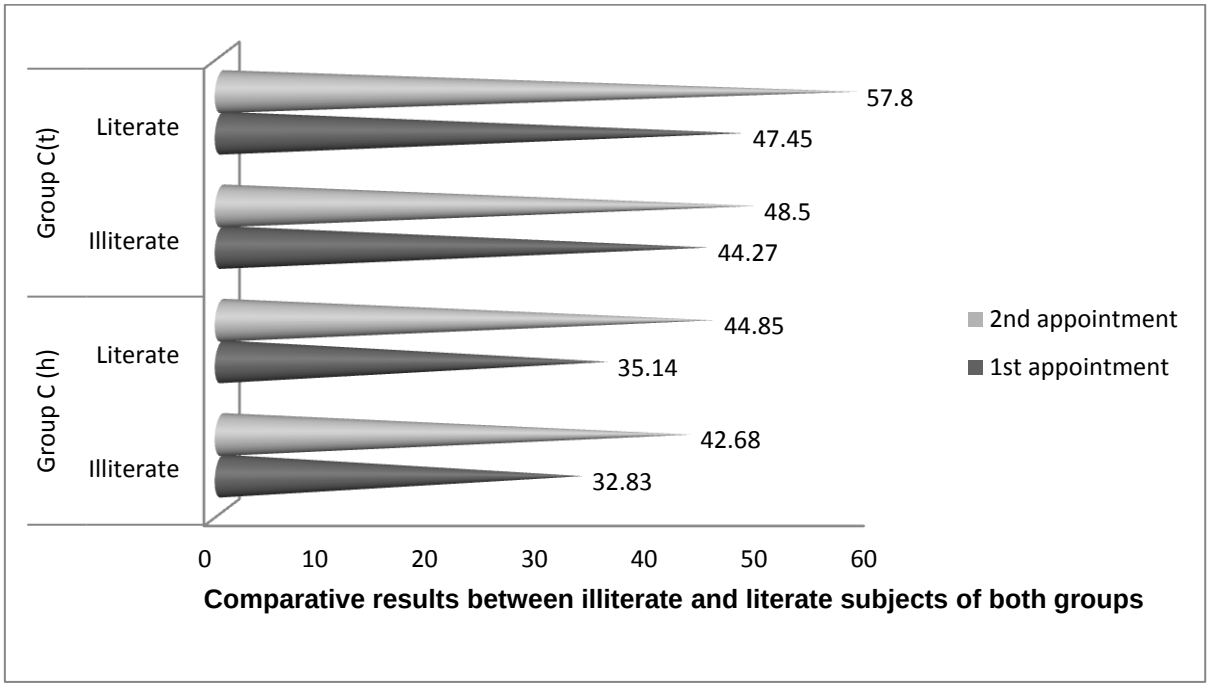


Graph 2: Distribution of subjects according to educational status in both groups

Table 1 - Mean and Standard Deviation for total number of instructions recalled between Group C(h) and Group C(t) at two recall visits					
S.NO.	TOTAL NUMBER OF INSTRUCTIONS	GROUP C(h) (MEAN±S.D)		GROUP C(t) (MEAN±S.D)	
		AFTER 7 DAY	AFTER 1 MONTH	AFTER 7 DAY	AFTER 1 MONTH
1	70	23.36667 ± 4.31903	30.3 ± 4.735413	29.4 ± 3.529189	38.13333 ± 4.368645



Graph 3: Comparative evaluation between male and female subjects in terms of ability to recall in both groups.



Graph 4: Results obtained based on educational status

Table: - 2 Probable values of Unpaired "t' test between two studied groups after 7 days and one month

S.NO.	Total number of instructions	After 7 days	After 1 month
		The probability of unpaired "t" test between group C(h) and C(t)	The probability of unpaired "t" test between group C(h) and C(t)
1.	70	0.000*	0.0000*
*p<0.05 is significant			

Table: - 3 Karl – Piersons correlation coefficients and its significance (by using t- test) betweenstudying groups after 7 days and after 1 month

S.NO.	Total number of instructions	After 7 days		After 1 month	
		Karl- Pearsons correlation coefficient between group C(h) and C(t)		Karl- Pearsons correlation coefficient between group C(h) and C(t)	
1.	70	0.00670	P<. 05 (sig.)	0.231359	P>.05 (N.S.)
*p<0.05 is significant					

SUMMARY AND CONCLUSION

According to Richard E Mayer's cognitive theory of multimedia learning, multimedia provide separate channels of working memory process auditory and visual information. Consequently, a learner can use more cognitive processing capacities to study materials that combine auditory, visual and graphical information than to process materials that combine printing text information. In other words the multi modal materials reduce the cognitive load imposed on working memory. 44 Education assisted by video is an effective method for both illiterate and literate patients, especially if education is started right from the beginning and continued during the entire treatment. However, further studies need to be conducted comparing different types of video assisted education with verbal, written or combination of methods as well as the use of various technological advances like reinforced education through the use of mobiles, internet and social networking.

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