

Comparative Clinical Evaluation of Elder Abuse Impact Upon Prosthesis Maintenance In Geriatric Patients

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ABSTRACT

Objective: To assess the prevalence of complete edentulous patients suffering from elder abuse and analyze the relative impact of elder abuse upon complete denture prosthesis maintenance.

Methods: The study was conducted in the postgraduate section of the department of prosthodontics at Subharti University. Sixty four elderly subjects, living with financially independent children were randomly selected and distributed into two groups depending upon the existence of elder abuse. The complete denture prosthesis was fabricated for all patients and was provided with a maintenance kit. Patients were recalled for routine follow ups (n=3) evaluations during which denture maintenance was assessed and scored, using a Dental Plaque Index (DPI). Parameters related to elder abuse were assessed in term of their frequency. Differences in the maintenance grades between the two groups were assessed using a Fisher exact test while differences in the mean of denture plaque index between two groups were assessed by using an unpaired 'T' test with a level of significance at $p < 0.001$. The correlation between the existence of elder abuse and denture plaque index was done using a Karl Pearson test.

Result: About 31% of the total screened patients were suffering from one or more forms of the elder abuse. 55 % of the subjects experienced more than one type of abuse while psychological abuse and neglect were most common (35%). Abusers were mostly son and daughter in law (54.5%). DPI scores between the two groups were statistically significant while the differences in the means of the denture plaque index between the two groups were also statistically significant. No correlation was found between the existence of elder abuse and poor denture hygiene maintenance.

Conclusion: Elderly patients that report to a prosthodontist suffer from some form of elder abuse. Subjects suffering from elder abuse demonstrate poor denture maintenance than those who do not suffer from abuse. Further studies are required to establish the causal relation.

INTRODUCTION

Medical advances have increased human life expectancy which in turn has resulted in a drastic surge in the problems that are associated with old age. Global human population above the age of 60 years is expected to increase from 12 % to 22 % by the year 2050, according to the World health organization [1]. Geriatric abuse has

the potential of being a significant challenge of the near future. Geriatric abuse in its various forms is a universal problem with pandemic distribution. Scientific recognition of existence of elder maltreatment dates back to eighties [2] and by the year 2000, nearly half million cases of elder maltreatment were being reported annually in United States alone [3]. Among various forms, [4,5] geriatric neglect by caretakers or caregivers is most common and involves acts like failure to meet the needs required for older persons' well-being" [6]. Significance of awareness among primary health workers has been considered and recommended by WHO, American medical association and multiple authors as a crucial step in prevention and management of geriatric abuse [7-9]. Awareness and identification of existing elder abuse among patients has two major implications namely the social responsibility of the practitioner to report to the authorities and the adverse effect of elder abuse on patient compliance to the ongoing treatment. Dentists in particular can play an important role in the identification and reporting of elder abuse [10] Despite, dentists being one of the commonest treatments that geriatric patients demand on a regular basis, the studies by dentists on elder abuse are scarce in medical literature. Medical and dental treatment, especially oral prosthetic rehabilitation requires patients to follow treatment related home instructions, if successful rehabilitation is desired by both. This clinical study was therefore conducted to identify existence of elder neglect among prosthodontic patients and its relative impact on the complete denture maintenance (denture hygiene). We hypothesized that patients influenced naturally by some form of elder abuse would tend to demonstrate poor denture maintenance as compared to those who had no such influence.

MATERIAL AND METHODS

This clinical study was conducted in the postgraduate section of the Department of prosthodontics, Subharti University. The ethical clearance of the study was obtained from the ethical committee of the university which conducts studies on human subjects following the ethical standards as per Helsinki declaration [11]. A total of 112 completely edentulous subjects seeking complete denture prosthesis for the first time were randomly chosen for the study. Elderly subjects above the age

of 65 years living with their financially independent blood-related children, having no underlying systemic medical problem, first time denture wearers, no history of poor patient-doctor compliance were included in the study. All subjects were then screened for identification of suffering from some form of elder abuse with the help of a questionnaire [6]. Recommendations while identifying elder abuse victims were followed and indicators like subject's personal hygiene, clothing and personal presentation were noted. Informed consent was obtained from all the subjects following which they were divided into two groups, namely Group A (abused) and Group B (not abused) with 34 subjects in each group. Complete dentures for subjects in both groups were fabricated by the randomly selected postgraduate students of the department under the supervision of experienced staff. Complete denture prosthesis when fabricated were evaluated and rated by another team of experienced prosthodontist who scored the quality of the prosthesis from a scale of 1 to 10. Subjects whose complete dentures were scored below 7 were re-fabricated till they did not meet the standards set for the study. A denture maintenance kit that comprised of denture box (NMS Nirmla), denture brush (Stim) and Clinsodent denture cleansing powder (ICPA Health Products Ltd) was given to all the patients while demonstrating their respective use in the maintenance of the prosthesis. Verbal and written instructions were given at the time of the denture insertion. Patients were recalled at a period of seven days, one month and three months respectively after denture delivery. At each recall appointment, evaluation of denture maintenance was done by recording the denture plaque index. The denture plaque index was used as an indicator to evaluate the patient's motivation and compliance regarding denture maintenance and adaptation. Denture plaque levels were indicated by using the Erythrosine Red 3 dye disclosing agents. The plaque index was used to determine the amount of plaque on the artificial teeth and the polished surface of each denture. The disclosed denture plaque on the denture was scored as shown in (Table 1) [12].

Table 1: Plaque Scoring Index

Score	Grade	Amount of disclosed plaque
0	Excellent	No plaque
1	Good	Light Plaque (25% Of The Fitting Surface And Tooth Surface Was Covered)
2	Average	Moderate Plaque (25% To 50% Of The Fitting Surface And Tooth Surface Was Covered)
3	Poor	Heavy Plaque (51% To 75% Of The Fitting Surface And Tooth Surface Was Covered)
4	Very Poor	Very Heavy Plaque (76% To 100% Of The Fitting Surface And Tooth Surface Was Covered)

RESULTS

The results show that about 31% of the elderly subjects randomly selected suffered from one or more forms of elder abuse. Various parameters associated with elder abuse are shown in (Table 2). Among various types of elder abuse, the category of combination (psychological + financial + neglect) (40%) was more prevalent while sexual (0%) and physical (0%) abuse was not reported at all. Financial with psychological abuse (43%) was observed to be more prevalent within the combined type of elder abuse. More than 55% of the subjects claimed to have been abused by more than one abuser at different times. Among individuals, son (20%) was mostly found as perpetrator followed by spouse (10%) and daughter in law (10%). The Denture Plaque Index scores were recorded and based on the grades the number of subjects were distributed. Subjects in group A (Abused) showed

more than 67% below average score as compared to none in group B (not abused). Only 1 subject showed a score rated as good as compared to 22 subjects in group B. Within group B, the subjects who demonstrated below average scores of denture plaque index included 12 (35.2%) subjects rated as very poor, 11 (32.35%) subjects rated as poor and 10 (29.41%) rated as average. The differences in the grades scored in denture hygiene index between the two groups were statistically significant following the application of Fisher exact test (Table 3). Differences in denture plaque index between subjects of group A (abused) (Mean = 2.7 ± 0.864) and subjects in group B (non- abused) demonstrated statistical significance at $p < 0.001$ (Table 4). However, no significant correlation was found between the existence of elder abuse and denture hygiene maintenance ($r = 0.1036$).

Table 2: Percent distribution of various parameters in subjects suffering from elder abuse

Type of abuse		Abuse combination types	
Psychological (Psy)	30 %	Psy + Neg	35 %
Financial (Fin)	10 %	Fin + Psy	43 %
Physical (Phy)	0 %	Psy+Neg + Fin	22 %
Sexual (Sex)	0 %		
Neglect (Neg)	20 %		
Combined (Psy+Fin+Neg)	40 %		
Abuser type		Abuser combination types	
Son	20 %	Son + Daughter In Law	54.54 %
Daughter In Law	10 %	Son + Spouse	9.09 %
Spouse	10 %	Spouse + Daughter In Law	18.18 %
Brother	5 %	Brother + Daughter In Law	9.2 %
Combined	55 %	Brother + Son In Law	9.11 %

Table 3: Distribution of Subjects according To Denture Plaque Index (DPI) in both study Groups

	Grades	No of Subjects (%)	Fisher Exact Test
Group A (N=34) (Abused)	Very Poor	12 (35.2%)	Probability Of Fisher Exact Test = .0000
	Poor	11 (32.35%)	
	Average	10 (29.41%)	
	Good	1 (2.94%)	
Group B (N=34) (Not Abused)	Poor	0	
	Very Poor	0	
	Average	12 (35.29%)	
	Good	22 (64.7%)	

Note : The value of $p < .001$ or below was considered to be statistically significant

Table 4: Mean and standard deviation for Denture Hygiene parameter for Group A (abused) and Group B (non-abused)					
S.No.	Parameter	Group A (abused) (n=34)	Group B (non-abused) (n=34)	P value of "T" (Unpaired)	Correlation coefficient (Karl pearson)
		Mean \pm SD	Mean \pm SD	P value	R value
1	Denture plaque index (DPI)	2.7 \pm 0.864	1.3 \pm 0.470	0.0000	0.1036
Probability value $p < 0.001$ was considered as statistically significant Karl Pearson correlation coefficient between two groups was considered statistically significant at $r < 0.05$					

DISCUSSION

Elder abuse is a global problem, to which the attitude of the society varies from culture to culture. Grossly, conservative cultures consider such issues as extremely sensitive and deny its occurrence thus limiting its reporting. Countries in the South-East Asian region have a similar attitude towards such issues which is why there are very less studies conducted over such issues. Medical professionals who conduct their treatment over a long period of time with frequent appointments are in a better position to develop trust of the patient which is extremely important to discover such underlying issues in a patient [13]. This study is in agreement with earlier studies who reported development of trust between the patient and the health care worker as essential component to enable patient to disclose such underlying problems [14,15]. We also found that majority of our patients reveal sensitive personal information between fourth to fifth visits during the fabrication of the complete denture prosthesis. Since we anticipated such limitation the study was designed accordingly. Out of 112 patients found to fulfill the criteria for the present study, 31% of the subjects were found to be suffering from elder abuse. However, since the sample size is small the frequency of prevalence of elder abuse cannot be accepted conclusively. Among different reasons for being abused, we found that financial dependence of the elderly on his abuser and social pressures make them more vulnerable to abuse. The present study shows that among different types of abuse combination of different types of abuse was more prevalent (40%) followed by psychological abuse (30%), neglect (20%) and financial (10%). The results are in agreement with studies done earlier, [16,17] which found about 3 and 14% of physical abuse, 13 and 40% of psychological abuse, 40 and 25% of neglect, 6-28% of financial and 37 % from verbal abuse in their respective studies. Minor differences in percentage establish the fact that

elder abuse varies both intra and inter regionally. Within the combination group psychological abuse was a contributing component to almost all groups (Table 2). It was also found that 55% of the subjects were abused by more than one person in the family, 20% were abused by their son, 10% by daughter in laws and spouse each and 5% by brothers (Table 2). According to PTI 2011, [18] daughters in law (63.4%) and son (44%) were found to be the common abusers in lower socioeconomic strata. In the combination group son and daughter in law accounted for 54.54%. In the present study, the score of DPI observed in group A subjects showed that denture hygiene (maintenance program) grading was either poor or very poor in 67% subjects and average at 29%. Only one case of elder abuse patient showed a good DPI score. 70% of subjects had good DPI scores in group B (Table 3). Though the cost of the denture maintenance kit which was provided free rules out financial reasons, one can only justify that patients suffering from elder abuse lead a life of poor quality which affects their self-caring ability. Depression and sadness are often a result of elder abuse in victims [19-23]. Most of the subjects felt that they were not disturbed by the fact that what they expected from their family members was not given to them but what they never expected was being delivered to them. In such a state of mind any treatment is not going to yield good results. It was evident by the frequency of poor grade maintenance by the subjects of group A and the difference between the two groups was statistically significant ($p < .001$). Denture plaque index values between the two groups were also significant statistically, however, no correlation was found between the two groups as elder abuse being the cause of poor denture maintenance.

The etiology of elder abuse has been only theorized since it is a complex phenomenon and develops over a period of time.

While different theories cannot be discussed within the framework of this article, it is worth mentioning that parents who neglect their child in his early childhood could be related to the child neglecting his parents when they grow old. Parental neglect of children has been found significantly associated with childhood and adulthood disorders like obesity [24]. The relation between the two has never been investigated and is a topic worth investigating for future research in geriatric abuse.

CONCLUSION

Within the limitations that this study imposes it can be concluded that patients who seek complete denture prosthesis do suffer from some form of elder abuse which is revealed slowly after a period of certain appointments. It can also be concluded that those who suffer from elder abuse show poor denture maintenance. Since many confounding factors are associated when one wants to conclude that poor denture maintenance can be caused by the elder abuse, this study does not provide a reliable answer for which further experimental studies need to be conducted.

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Disclosure

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