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Comparative evaluation of the effectiveness of verbal and combined verbal and written post-operative instructions following some dental procedures

EB Dosumu[1], M Oyetade[1] and FE Igbinazaka[2]

Departments of Periodontology and Community Dentistry[1] Faculty of Dentistry, College of Medicine, University of Ibadan and Oral and Maxillofacial Surgery[2], University College Hospital, Ibadan, Nigeria.

Abstract

Aim: To determine recall ability of patients of post-operative instructions and to evaluate differences in compliance to verbal instructions and combined verbal and written instructions.

Method: Eight hundred and fifteen consecutive adult patients who consented to participate in the study were recruited from two units (Oral and maxillofacial surgery (407) and Periodontology (408) of the dental centre, University College Hospital, Ibadan, Nigeria over a period of three years. Institutional ethical approval was obtained. The patients were divided into two groups each by random sampling; verbal (''V") only and both verbal and written (''V and W") post-extraction and post- professional oral prophylaxis instructions. Questionnaires (self and interviewer administered) were used to evaluate patients' demography, postoperative clinical assessment and assessment of recall abilities. Data was analyzed using SPSS Version 20.0 and descriptive statistics was used to summarize the variables. Independent sample student t-test and Chi square were used to test association involving descriptive data and level of significance was set at P<0.05.

Result: Recall ability of ten elements of the post-extraction instructions were statistically significant between the ''V and W" group and the ''V" group (p values were 0.001, 0.014 and 0.001) while recall ability of the post-oral prophylaxis instruction of two elements between the two groups were not statistically significant (p values were 0.807 and 0.992) while one was statistically significant (p value was 0.036), p value was set at p< 0.05.

Conclusion: The ''V" and ''W" group was found to be more effective because it gave more significant differences in the recall abilities between the two groups especially in the post-extraction instructions in this study.

Keywords: *Verbal, written, instructions, dental procedures.*

Correspondence: Dr. Elizabeth B. Dosumu, Department of Periodontology and Community Dentistry, College of Medicine, University of Ibadan, Ibadan, Nigeria. Email:edosumu18jj@mail.com

Résumé

But: Déterminer la capacité de rappel des patients des instructions postopératoires et évaluer les différences de conformité aux instructions verbales et aux instructions combinées verbales et écrites.

Méthode: Huit cent quinze patients adultes consécutifs ayant accepté de participer à l'étude ont été recrutés dans deux unités (chirurgie buccale et maxillo-faciale (407) et parodontologie (408)) du centre dentaire de l' University College Hospital à Ibadan, au Nigéria, pendant une période donnée. de trois ans. L'approbation éthique institutionnelle a été obtenue. Les patients ont été divisés en deux groupes chacun par échantillonnage aléatoire; instructions verbales (" V ") et verbales et écrites (" V & W ") post-extraction et post-professionnelles de prophylaxie orale. Des questionnaires (auto-administrés et interrogés) ont été utilisés pour évaluer la démographie des patients, l'évaluation clinique postopératoire et l'évaluation des capacités de rappel. Les données ont été analysées à l'aide de SPSS version 20.0 et des statistiques descriptives ont été utilisées pour résumer les variables. Un test t d'élève et un chi carré indépendants ont été utilisés pour tester l'association impliquant des données descriptives et le niveau de signification a été fixé à p <0,05.

Résultat: La capacité de rappel de dix éléments des instructions post-extraction était statistiquement significative entre le groupe «V & W» et le groupe «V» (les valeurs p étaient de 0,001, 0,014 et 0,001), tandis que la capacité de rappel des Les instructions de prophylaxie de deux éléments entre les deux groupes n'étaient pas statistiquement significatives (les valeurs p étaient de 0,807 et 0,992), tandis que l'un était statistiquement significatif (la valeur p était de 0,036), la valeur p était fixée à p <0,05.

Conclusion: le groupe " V " et " W " s'est avéré plus efficace car il donnait des différences plus significatives dans les capacités de rappel entre les deux groupes, en particulier dans les instructions post-extraction de cette étude.

Mots - clés : *Verbale, écrite, instructions, procédures dentaires*

Pre-operative instructions can generally be enforced easily because non- compliance will lead to delay in the operation which the patient will want to avoid unlike post operative instructions which is very difficult to enforce because the patient has already had the operation [1]. The understanding and adherence to post operative care instructions are factors that aid the recuperation process after any surgical procedure [2]. Post operative period is influenced by patients understanding and subsequent implementation of the post operative instructions in order to minimize morbidity, complications and improve the quality of life [2]. Post operative care instructions reduce post operative morbidity and improve the quality of life during the recovery period [3-6]. Pre operative anxiety is also reported to represent an obstacle for the patients which limits their attention and compliance of any post operative instructions. [3,7-11].

Poor oral hygiene is associated with bacteremia and the clinical implication of the improvement in oral hygiene may reduce the risk of developing infective endocarditis from bacteremia [12[. The incidence of bacteremia following dental procedures such as tooth extraction, endodontic treatment, periodontal surgery and root scaling have been documented [13]. The emphasis in the prevention of infective endocarditis has now shifted from the use of antibiotics prior to dental procedures to the maintenance of good oral hygiene in patients at risk of developing infective endocarditis [14,15]. There are several mechanisms by which dental plaque bacteria may initiate or worsen atherosclerotic process such as activation of innate immunity, bacteria related to dental treatment and direct involvement of mediators activated by dental plaque and involvement of cytokines and heat shock proteins from dental plaque bacteria [16].

Post operative treatment with medication such as analgesics and antibiotics is documented in the literatures while less attention has been given to patient-surgeon relationships, the mode of transmission of post operative instructions from the surgeon to the patient and how the patient understands the instructions and applies them correctly [17]. Non compliance to post operative instructions by patients could be because the instructions given may be difficult to remember or comprehend [1].

The ability of the patients to remember instruction is decreased if verbal advice is not reinforced by written instructions [1]. Inability to remember or understand instructions may result in non compliance and compliance can therefore be improved by ensuring that patients comprehend the instructions [1]. Factors that may interfere with the extent and quality of information are reported to be how the information is presented, the need to provide additional information, level of preoperative anxiety, sociocultural level and age [2]. Compliance or non compliance to post operative instructions may be influenced by adherence to these instructions and the level of the patients pre operative anxiety [2]. The improper use of antibiotic medication by the patients is reported to be primarily due to popular beliefs and ignorance about the prescribed medication [18]. It is reported that patients prefer both verbal and written information about the medication that was prescribed to them [19]. Alvira Gonzalez and Gary –Escoda [2] reported no statistical differences between adherence to post operative guidelines or methods by which information was presented to the patient. Kasse [7] reported that patients forget 40% to 80% of the information given to them by professionals almost immediately depending on the socio-cultural level and age as influencing factors in comprehension and implementation of post operative instructions.

The aim of this study therefore was to assess the level of significance of recall abilities between participants that received verbal (V) instructions only and those that received both verbal and written (V and W) instructions and compliance of the participants to the postoperative instructions because these have been reported to aid the recuperation process after any surgical procedure [2]. .

Materials and methods

Eight hundred and fifteen (815) consecutive adult patients aged 18yers and above, who consented to participate in the study were recruited from two units (Oral and Maxillofacial surgery (407) and Periodontology (408) of the Dental Centre, University College Hospital, Ibadan, Nigeria over a period of three years. Institutional ethical approval was obtained. The participants were divided into two groups by simple random sampling each; participants were blinded on the group they will belong to by picking ''V" or ''V & W" from a ballot box and they were subsequently divided into corresponding group that they picked. An examiner from each of the units were calibrated and trained in the post-operative clinical assessments, administration of the questionnaire and assessment of the call abilities of the participants. The instructions were standard instructions that are usually given to patients after these procedures (extraction and oral prophylaxis); both the verbal and written instructions were

administered in English and Yoruba languages been the most common languages spoken in the location of this study. In order to be sure that the participants understood the instructions, they were asked questions that are related to the instructions given immediately the instructions were given. The interviewed questions to assess participants recall abilities post-oral prophylaxis were; "How soon were you instructed to start the WSMW (warm saline mouth wash)?"; ''How often were you instructed to use the WSMW?" and ''what else did you use in addition to the WSMW?". The interviewed questions to assess the participants recall abilities post-extraction were; ''How did you prepare the WSMW?"; When did you start the WSMW?" and How often did you do the WSMW?. Inclusion criteria were: patient consenting to participate; no underlying systemic conditions that may influence the postoperative clinical outcome and coherent; patient wouldn't have done scaling and polishing in the past one year and patient wouldn't have had tooth extraction done in the last one year.

The exclusion criteria were: patients with language limitations; patient must have had scaling and polishing or tooth extraction done in the past one year. Self and interviewer administered questionnaires (17 stem for post- extraction & 15 stem for post-professional oral prophylaxis) were used to evaluate patients' demography, postoperative clinical assessment and assessment of recall abilities of the two groups of patients to post-operative instruction differently for the two procedures. The number of items on the questionnaire for the post-extraction instructions were more than the post-oral prophylaxis because the extraction procedure is more invasive and deeper structures like the alveolar bone might be tampered which will affect the extraction socket healing. All the extraction patients were reassessed one week post-extraction clinically for socket cleanliness, infection, dryness, pain, bleeding, inflammation, necrosis and healing status and both the extraction while oral prophylaxis patients were also clinically reassessed post-operation for level of oral hygiene and gingival inflammation. Both the extraction and oral prophylaxis patients were assessed at this one week post-operative period for their recall abilities of the respective instructions through interview by the trained and calibrated examiners.

Data was analyzed using the Statistical Package for Social Sciences (SPSS) Version 20.0 and descriptive statistics was used to summarize the variables. The independent sample student t-test and Chi square were used to test association involving descriptive data and level of significance was set at $P<0.05$.

Results

Post professional oral prophylaxis instructions

Four hundred and eight participants were assessed. Two hundred and one (49.3%) were in the verbal instructions only while 207 (50.7%) were in the verbal and written instructions group. One hundred and sixty six (40.7%) were males while 242 (59.3%) were females. Three hundred and seventy-three (91.4%) had one level of education or the other, 23 (5.6%) had no education while we had no response on this question from 12 (2.9%). Three hundred and five (74.8%) are employed while 103 (25.3%) were housewives or students.

No statistical significant difference was found in the recall abilities of the ten options in the interviewed questions between the two groups (V; V and W); Tables 1A-C.

Post-extraction instructions

Table 1 A-C : Recall Abilities to Some Post- Oral Prophylaxis Instructions by the Participants.

Table 1A How soon were you instructed to start the WSMW	Group Verbal and Written	Verbal only	Total	Chi square	P-valve
As soon I get home	190	195	385		
	49.4%	50.6%	100.0%		
24hrs after	5	5	10		
	50.0%	50.0%	100.0%		
One week after	0	1	1		
	0.0%	100.0%	100.0%	0.977	0.807
Unable to Recall	6	6	12		
	50.0%	50.0%	100.0%		
Total	201	207	408		
	49.3%	50.7%	100.0%		

Four hundred and seven participants were assessed. Two hundred and twenty-one (54.3%) were in the verbal instruction group and 186 (45.7%) were in the combined verbal and written instructions group. One hundred and eighty-seven (46.6%) were males, 218 (53.6%) were females while we had no response from 2 (0.5%). Three hundred and fifty- three (86.7%) had one level of education or the other, 50(12.3%) had no formal education while there was no response from 4 (1%). Two hundred and sixty-three (64.6%) are employed, 93 (22.9%) were housewives or students while we had no response to this from 2 (0.5%).

Table 1B

What else did you use in addition to the WSMW?	Group verbal and written	Verbal only	Total	Chi square	P-value
Hydrogen peroxide	1	2	3		
	33.3%	66.7%	100.0%		
Others	0	5	5		
	0.0%	100.0%	100.0%	6.647	0.036
None	217	175	392		
	55.4%	44.6%	100.0%		
Total	218	182	400		
	54.5%	45.5%	100.0%		

Table 1C

How often were you instructed to use WSMW	Group Verbal and written	Verbal only	Total	Chi square	P-value
After each meal	86	89	175		
	49.1%	50.9%	100.0%		
Once daily	31	31	62		
	50.0%	50.0%	100.0%		
Twice daily	84	87	171		
	49.1%	50.9%	100.0%	0.016	=0.992
Total	201	207	408		
	49.3%	50.7%	100.0%		

Tables 2 A-C Recall Abilities to Some Post-Extraction Instructions by Participants.

Table 2A

How did you prepare your WSMW	Group verbal only	verbal and written	Total	Chi square	P-value
Half tea spoonfull of	87	104	191		
salt & warm water	45.5%	54.5%	100.0%		
Half tea spoonfull of	22	5	27		
salt & hot water	81.5%	18.5%	100.0%		
Half tea spoonfull of	0	4	4	22.208	<0.001
salt & warm tea	0.0%	100.0%	100.0%		
One tea spoonfull of	112	71	183		
salt & warm water	61.2%	38.8%	100.0%		
Total	221	184	405		
	54.6%	45.4%	100.0%		

The one week clinical assessment of extraction sockets healing status of "V & W" was satisfactory in 68.3% and unsatisfactory in 31.7% of the participants (Fig 1), 70.6% of the sockets were clean, 22.2% dirty and none of the sockets were dry nor bleeding (Fig 2).

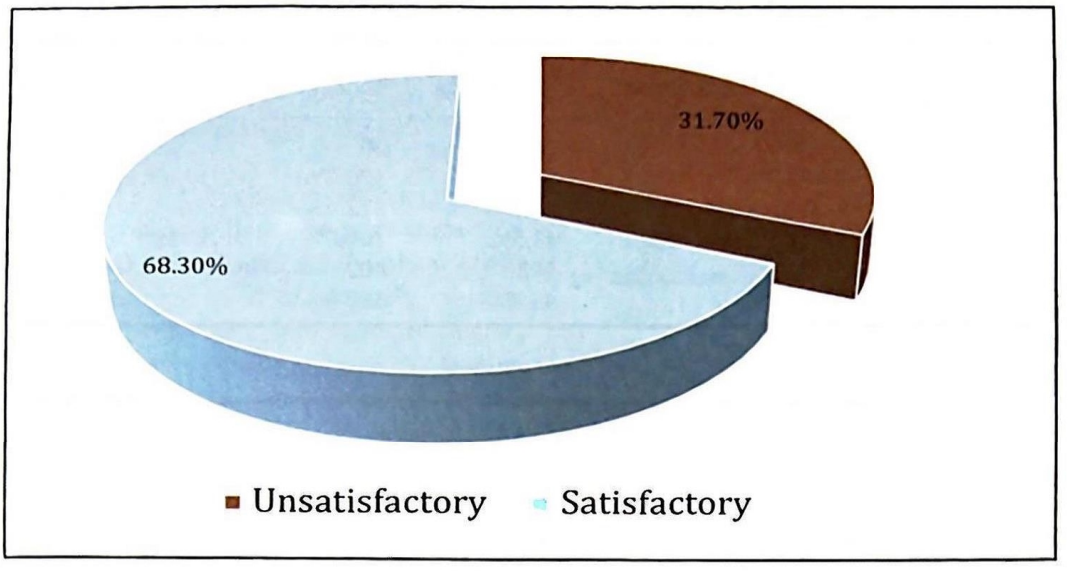

Fig. 1: Extraction Socket Healing Assessment In The ''V and W" Group

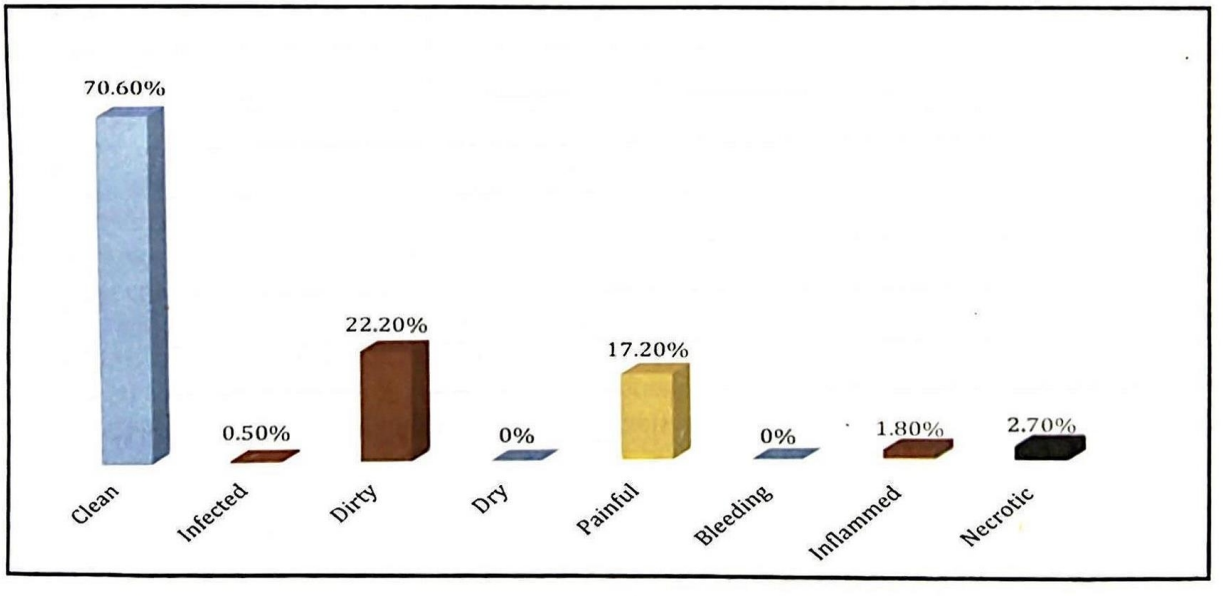

Fig. 2: Extraction Socket Clinical Features In ''V and W" group

The recall abilities of the participants of all the ten options related to the interviewed post-extraction instructions between the two groups (V; V and W) were statistically significant, tables 2A-C. In post-extraction instruction, 78.7% of the ''V and W" were able to correctly recall the instructions compared to 73.3% of the ''V" group, while 89.2% of the ''V and W" complied with the post-extraction instructions, 83.4% in the ''V" group. The actual proportions that recalled the instructions rightly were 52.3% and 52.4% in the ''V and W" group compared to 47.8% and 47.6% in the ''V" group for both post-extraction and post-oral prophylaxis instructions respectively.

Discussion

We found a significant difference between the recall abilities of the post-extraction instruction participants that received both the verbal and written (''V and W") and those that received the verbal

Table 2B

When did you start WSMW?	Group				
	Verbal and written	Verbal only	Total	Chi square	P-value
As soon as I got home	10	20	30		
	33.3%	66.7%	100.0%		
24hrs later	210	162	372		
	56.5%	43.5%	100.0%	5.988	0.014
Total	220	182	402		
	54.7%	45.3%	100.0%		

Table 2C

How often did you	Group				
do the WSMW?	verbal and written	Verbal only	Total	Chi Square	P-value
Once daily	21	0	21		
	100.0%	0.0%	100.0%		
3times daily	1	7	8		
	12.5%	87.5%	100.0%		
Before & after meals	196	160	356	33.682	<0.001
	55.1%	44.9%	100.0%		
Unable to Recall	3	15	18		
	16.7%	83.3%	100.0%		
Total	221	182	403		
	54.8%	45.2%	100.0%		

(''V'') instructions alone. This finding may be supported with the report of Blunder *et al* [17] in their study that recommended verbal and written post operative instructions and that verbal explanation alone are insufficient while written instruction is mandatory.

In this study, we also found that a higher percentage of the ''V and W'' (78.7%) participants were able to correctly recall the post-extraction instructions than 73.3% of the ''V'' participants and the corresponding compliance to these instructions by these groups were 89.2% and 83.4% respectively. This may agree with the findings of Adebayo and Dairo [20] who reported that provision of both written and verbal postoperative instructions to patients after minor oral surgery enhances compliance. Vallerrand *et al* [3] reported that providing post operative instructions both verbal and written improved post operative instruction compliance after third molar surgery. Recovery from the pre operative state, from a patients perspective signifies a return to normal function and they feel that they have recovered therefore they do not have to comply with the post operative instructions [3]. Lack of reinforcement of post operative instructions with written instruction could also be a factor for non compliance [17].

Compliance with post operative instructions can be improved by ensuring patients comprehension of advice and patient education on the dangers of non compliance [13]. While some authors [8,9] reported that verbal instructions alone were ineffective, we found both forms to be effective because of the high percentages of the correctness in the recall abilities and the level of compliance of both groups except that the ''V&W'' group showed a more significant result than the ''V'' group. Houts *et al* [21] also reported that patients in their study remembered only 14% of the information when given orally, this is however not the case in this study in which the correct recall abilities of the participants in both groups was between 73.3% and 78.7% for the ''V'' and ''V and W'' respectively which may be due to a better patient-professional relationship established during the interview administration of the questionnaires. The increased patient compliance in this study may also be as a result of possible reduction in their level of anxiety due to proper explanation of importance of complying with the post-operative instructions. This supports

Alexander's [22] suggestion that adapting the instructions to the needs of each patient or case (especially regarding limitations of understanding certain terms and language of ignorance) reduces patient anxiety and encourages adherence to the instructions.

Akpata *et al* [23] also reported significant association of non-compliance to post extraction regimen and incidence of localized alveolar osteitis. They emphasized the need to properly educate patients on the effect of compliance to various combination of post extraction regimen in reducing the incidence of localized alveolar osteitis. In this study 86.7% and 91.4% of the post-extraction instructions and post-professional oral prophylaxis participants respectively had one level of education or the other which could also be responsible for their comprehension of the instructions and afterward correctness in the recall ability and compliance to the instructions. This may corroborate Atchinson *et al* [8] suggestion that there is room for improvement in post operative instructions because of the gaps in the patient understanding of post operative care. We did not find any statistically significant differences in the correctness in recall ability and compliance levels between the two groups (''V and W" and ''V") in the post-professional oral prophylaxis instructions participants in this study. This is probably because the procedure is less invasive, the instructions are less voluminous and this procedure is frequently done by people. The participants also might have received less apprehensive post-operative reports from previous patients which might have led to less anxiety and subsequent compliance by participants in this study.

Conclusion

Both types of postoperative instructions (''V" and ''W") gave significant difference of recall abilities than the verbal (''V") instructions alone and the ''V and W" group had appreciable satisfactory post-extraction clinical features in this study. Recommendation: In order to have adequate recall ability and eventual compliance to postoperative instructions especially for more invasive procedures such as teeth extractions, a good level of patient-professional interaction should be established and both types of instructions (''V" and ''W") should be given.

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