Journal of Community Medicine and Primary Health Care. June 2005; 17(1): 38-44

JOURNAL OF
COMMUNITY MEDICINE
& PRIMARY HEALTH CARE

# Patients` compliance with instructions after oral surgery in Nigeria

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KEY WORDS:

Oral surgery

Verbal and written instruction

Dental compliance

## Abstract

**Objective:** To prospectively study the behaviour of oral surgery patients given verbal and written instructions, verbal instructions alone and written instructions alone after minor surgical procedures to return for review visits, remember correctly form of instruction given, compliance and level of satisfaction with treatment.

**Method**: Patients for minor oral surgery were given one of the following: verbal and written (group A), verbal only (group B) and written only (group C) instructions 30 minutes to one hour after the procedure. Patients in groups A and B were consecutively recruited to have 150 patients in group A and 50 in group B. Group C was made up of 25 patients who all claimed to have had at least six years of formal education in the English language. One week postoperatively, information was sought, through questionnaire administration, from all study patients who came for review on remembrance of form of postoperative instructions given, compliance, expectations from procedure and level of satisfaction with treatment.

**Results**: Patients' return rate was 93, 54 and 64% for groups A, B and C respectively. Remembrance of correct form in which instructions were given was not significantly different among the various groups (p=0.5). There was significantly better compliance among group B patients to the instruction on the use of warm saline mouthwash (warm saline) than groups A and C, (p=0.04). Non compliance with antibiotic therapy was significantly more among group A than other patients (p=0.03) but no significant difference was observed in analgesic non compliance (p=0.9). Postoperative expectations were not significantly different among the three groups of patients. Patients in group A showed a higher level of satisfaction with treatment (76%) than other patients (63-67%) though the difference was not statistically significant.

**Conclusion**: The study showed that provision of both written and verbal postoperative instructions to patients after minor oral surgery enhances compliance.

## Introduction

Adequate patient education given after oral surgical procedures has been demonstrated to improve patient satisfaction and decrease postoperative morbidity. [1, 2] Such education includes forecast of postoperative events, medication instructions and advise on home care of surgical wounds. Postoperative instructions can be given in verbal and or written forms. Generally, verbal instructions are neither understood nor retained well after surgery. [3] Alexander, found that available written post-surgical instructions in dentistry are replete with poor phrasing, excessive jargon and bad terminology.[4] They are often presented at an intellectual level too high for the average patient to understand or comply with. To elicit compliance, it is necessary for postoperative instructions to be comprehensible for the patient including those not functionally literate in the English language. Suggestions on means of improving the presentation of post-surgical instructions have been made [3] and were utilized in the Israeli study by Blinder *et al*.[1]

While the relative benefits of verbal or written instructions have not been clearly established [1, 3], several workers believe that to increase patient understanding, compliance and improve treatment outcomes, verbal reinforced with written instructions are necessary. The delivery of postoperative instructions may, in addition, reduce risk of litigation after surgical procedures. [1,2,5,6,7,8]

Previous comparison of the relative efficacy of the various forms of postoperative instruction is relatively common in the medical, pharmaceutical and nursing literature, but dental reports are rare. This study aims to test the hypothesis that following minor oral surgical procedures in an out patient setting, patients who receive verbal and written, verbal only and written only forms of instruction show no differences in presentation for review, ability to

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correctly remember the form of instruction given, compliance to instructions, postoperative expectations and satisfaction with treatment.

## Methodology

### Study design and procedures

The Military Hospital, Port Harcourt, located in the capital city of Rivers State, in the Niger Delta area in Nigeria was the location of the study. The patients attending this secondary health care facility are personnel of the Nigerian Armed forces, police, paramilitary organizations, their families and civilian members of the public. Majority of the patients seen in the Department of Dental Surgery of the hospital belong to the low and middle socio-economic strata of the Nigerian society.

The study was an intervention study, specifically, a clinical trial in design. The study population consisted of consecutive patients that underwent minor oral surgical procedures such as dental extractions, biopsies and enucleations at the outpatient clinic of the Department of Dental Surgery, Military Hospital, Port Harcourt, Nigeria between 1st November 2002 and 31st October 2003. All procedures were performed after administration of local anaesthesia (2% lidocaine with 1: 100,000 adrenalin, maximum dosage 4x1.8 mls). Three qualified dental surgeons performed the procedures.

Postoperative analgesics (novalgin or paracetamol two tablets 8hourly for 3 days) were prescribed for all patients while all but six patients were prescribed antibiotics (ampiclox capsules 500mg 6hourly for 5 days) due to the consistently poor oral hygiene found in patients from this area. [9] All patients seen during the study period were consecutively assigned to group A or group B Group A patients were given verbal, then written instructions postoperatively while group B patients were given only verbal instructions. Consecutive recruitment of the study subjects continued until group A had 150 study subjects while group B had 50. After this aspect of the study, a sample of 25 patients who claimed to have had at least six years of formal education in the English language were recruited into a third arm of the study, group C. This group was given only written instructions. The verbal instructions were a direct rendition of the written form presented in Table 1 read to the patient by a dental surgery assistant in English language or if necessary in their native languages through an interpreter.

All forms of instructions were given 30 minutes to one hour after the oral surgical procedure and patients were advised either in the verbal instruction or the written form to call back after one week for postoperative review.

### Data collection

At review, all patients were given a questionnaire to fill recording socio-demographic characteristics, ability to correctly remember form of postoperative instructions received, compliance with instruction, postoperative expectations and satisfaction with treatment. Compliance with postoperative instructions was assessed based on questions on type of next meal after oral surgery; day patient commenced warm saline mouthwash; how saliva in the mouth was disposed off within 24 hours of surgery; smoking on day of surgery and compliance with analgesic and antibiotic prescriptions. Postoperative expectations such as jaw swelling, pain, oral bleeding and others were also ascertained while patient satisfaction was determined as yes or no.

Data collected were analysed statistically to test the study hypothesis by coding the data into SPSS v8 software with chi-square analysis to compare the three groups of patients with significance set at p is less than or equal to 0.05.

## Results

### Presentation for review

A total of 184 patients out of 225 representing 82 % presented for review one week after receiving either of the three forms of post-operative instructions. Of these, 140 patients were in group A giving a compliance to come for follow-up rate of 93%, as compared to 78 (52%) in group B and 16 (64%) in group C (Table 1)

### Socio-demographic profile

The age range of group A patients was 13-75 years with a mean of 31.3 years (SD ±14.6), while that of group B was 12 to 65 years with a mean of 36.2years (SD±17.7) and group C was 28-73 years with a mean of 41.1years (SD±14.1). Mean ages of patients in the various groups were not compared because those in group C had been pre-selected on the claim of at least six years of formal education in the English language. More patients between 10 and 19 years old were in group A than other groups ($x^2$ =18, df =10, p=0.05). There were only slightly more females than males in the overall study sample with male to female ratio of 1:1.1 but this was not statistically significant ($x^2$=0.8, df=2, p=0.8). There was a markedly significant difference in the patients attending dental clinic for the first time in group A than the other study groups ($x^2$=11.5,df=4, p=0.02). Since all group C patients enrolled on the basis of previous formal education the significance of 0.04 in educational status of patients in Table 2 can be discountenanced.

**Table 1 Instructions after oral surgical procedures**

**Immediately after surgery**

a. Bite on gauze for 20 mins, until bleeding stops. Swallow your saliva even if it is stained with blood to keep the gauze dry and effective.
b. Do not drink or eat anything for next 2 hours after this operation.
c. Hold an ice pack or cold bandage over the site of operation every 15 mins for 2 to 3 hours in order to reduce postoperative swelling.

**During the next 24 hours**

a. Avoid hot drinks and hard food; eat only cold and soft food.
b. Avoid smoking.
c. Avoid rinsing your mouth and brushing your teeth in the operated area. Bleeding for some hours may occur and your saliva may appear bloody. This should be swallowed.
d. In case of severe bleeding, remove blood clot with the aid of a sponge or gauze place a new dry gauze pad on the bleeding site. Close your mouth firmly on the pad and keep swallowing your saliva. Maintain these for 30 mins.
e. If bleeding continues after this, report back to this hospital immediately.

**Swelling**

Your face may swell up slightly after this procedure, increasing up to 2 or 3 days. It may also be associated with some discoloration but these will disappear without treatment.

**Drugs**

Take pain relief tablets and antibiotics when prescribed as recommended.

**On day after surgery**

Rinse your mouth with warm salt water solution (warm saline solution) six times a day (half a spoon of salt in a glass of warm water). Brush your teeth as usual.

Postoperative pain may continue for several days. This will usually reduce with time but if pain increases after this time, contact your surgeon.

Remember to call back at the surgery one week after the procedure for review.

### Remembrance of postoperative instructions

No significant difference was observed among the three groups of patients for correct remembrance of form in which postoperative instructions were given ($x^2 = 1.4$, df = 2, p=0.5).

### Compliance

There was significantly better compliance among group B patients with instructions on commencement of use of warm saline mouthwash than in group A or C ($x^2 = 6.6$, df = 2, p = 0.04). Antibiotic non-compliance was quite significantly more in group A than in the rest patients ($x^2 = 7.2$, df = 2, p = 0.03).

### Postoperative expectations

Postoperative expectation was mostly of pain (66% in group A, 64% in group B and 62% in group C) followed by swelling (17-25%) and bleeding (11-25%) from this study population. However, the differences were not statistically significant (Table 3).

### Level of satisfaction with treatment

Patients in group A had a greater level of satisfaction with

### Level of satisfaction with treatment

Patients in group A had a greater level of satisfaction with treatment (76%) than those in group B (67%) and group C (63%) though the difference was not significant ($x^2$=2.5, df=2, p=0.3).

### Discussion

Some studies in the medical, pharmaceutical and nursing literature show that non-compliance or poor compliance is one of the greatest problems in health care resulting in waste of resources and funds. [10, 11] According to Bunzel and Lederach-Hofmann, , compliance is the generally accepted term for patient co-operation with clinical prescriptions, which is vital for therapeutic success.[10] In dentistry, studies of patient compliance are quite few and fraught with design problems. Alexander complained about the paucity of reports on the effectiveness of postoperative instructions in dental practice.[4] In a later work, he showed that most such materials available in the United States of America were written at greater than the recommended level of understanding by most patients, contained multiple grammatical errors and had excessive jargon; consequently, they were difficult to read and understand by the ordinary patient. [5]

**Table 2: Socio-demographic profiles of 184 Nigerians one week after receiving three forms of post-surgical instructions**

| Characteristics | Group A | Group B | Group C | p |
|---|---|---|---|---|
| Number of respondents | 140 | 28 | 16 | |
| Sex (% of total) | | | | |
| Males | 68 (49) | 12 (43) | 8 (50) | 0.8 |
| Females | 72 (51) | 16 (57) | 8 (50) | |
| Age range (years) | 13 -75 | 12-65 | 28-73 | |
| Mean age (years) | 31.3 | 36.2 | 41.1 | |
| Age groups in years | | | | |
| 10-19 | 24 (17) | 2 (7) | 0 | 0.05 |
| 20-29 | 48 (34) | 10 (36) | 2 (12.5) | |
| 30-39 | 30 (21) | 4 (14) | 4 (25) | |
| 40-49 | 22 (16) | 4 (14) | 4 (25) | |
| 50-59 | 8 (6) | 4 (14) | 2 (12.5) | |
| 60 years and above | 8 (6) | 4 (14) | 4 (25) | |
| Number of previous dental visits (% of total respondents) | | | | |
| Once | 64 (46) | 10 (36) | 6 (37.5) | 0.02 |
| Twice | 40 (28) | 16 (57) | 4 (25) | |
| Thrice | 36 (26) | 2 (7) | 6 (37.5) | |
| Educational status of patients (% of total) | | | | |
| No formal education | 4 (3) | 4 (14) | 0 | |
| Had primary school education | 16(11) | 6 (21) | 4 (25) | 0.04 |
| Had secondary school education | 66(47) | 6 (21) | 6 (37.5) | |
| Had post-secondary education | 57(39) | 12 (43) | 6 (37.5) | |
| Occupation (% of total) | | | | |
| Formal employment | 36(26) | 8(29) | 6 (38) | 0.05 |
| Self-employed | 44 (31) | 8(29) | 6 (37.5) | |
| Others * | 60 (43) | 12 (43) | 4 (25) | |

Group A patients were given both verbal and written instructions.
Group B patients received only verbal instructions.
Group C patients were given written instructions alone.
Others* were mostly students of educational institutions and the unemployed.
P value. Significance set at less than or equal to 0.05

In this urban center-based study, three groups of patients were surveyed; the group that received both oral and written postoperative instructions had a significantly higher follow-up return rate compared to group B that had only verbal instructions and group C that had only written instructions. Apparently, the delivery of both verbal and written forms of post-surgical instructions elicited a greater response on the need and attendance for postoperative review than either form of instruction alone. In an Israeli study, 180 patients were evaluated by Blinder *et al*. [1], one week after receiving both verbal and written post-operative instructions in an oral surgical practice; it is not clear if their reported figure represents those available for review as the rate of abscondment was not given. Hence, our rates of patient response could not be compared. An important limitation of our study was that data was not collected on patients who did not present for review.

In the Israeli study where all patients received both verbal and written postoperative instructions, corresponding to group A in this study, 60% accurately recalled the form in which instructions were given as compared to 70% for the same group of patients in our study. This study showed that, more of group B patients who were given only verbal instructions correctly recalled the form of instructions

Given than groups A or C, though the difference was not significant. This is intriguing in view of the general belief in the dental literature that patients poorly recall verbal instructions. [1, 4] While all group C patients in our study claimed at least six years of formal education, their educational status was not positively related to their ability to recall correct form of postoperative instructions given. However, since this study did not objectively verify their claims (English literacy tests are not routine in dental practice), some patients may have lied about their educational attainments.

**Table 3 : Compliance of Nigerian patients to instructions one week after oral surgery**

| | Group A | Group B | Group C | P |
|---|---|---|---|---|
| Number of respondents | 140 | 28 | 16 | |
| Remembered instructions as given (%)* | 98 (70) | 22 (77) | 10 (62) | 0.5 |
| Did not comply with dietary advice | 20 (14) | 2 (7) | 4 (25) | 0.3 |
| Did not swallow saliva as instructed | 42 (30) | 4 (14) | 2 (12.5) | 0.1 |
| Commenced warm salt water mouthwash a s directed | 116 (83) | 28 (100) | 12 (75) | 0.04 |
| Smoked on day of operation | 8 (4) | 0 | 0 | n.s |
| Did not comply with analgesic prescription | 52(37) | 12 (43 ) | 6 (37.5) | 0.8 |
| Did not comply with antibiotic prescription + | 68(50) | 6 (23) | 6 (37.5) | 0.03 |
| Post -operative expectation of & | | | | |
| Swelling | 24 (17) | 4 (14) | 4 (25) | 0.6 |
| Pain | 92 (66) | 18(64) | 10 (62) | 0.9 |
| Bleeding | 16 (11) | 4 (14) | 4 (25) | 0.3 |
| Nothing | 18 (13) | 4 (14) | 4 (25) | 0.4 |
| Others # | 2 (1) | 0 | 2 (12.5) | n.s |
| Patients satisfied with treatment | 106(76) | 18 (67) | 10(63) | 0.3 |

* (%) Percentage of respondents at review visit
+ Four patients in group A and 2 patients in group B were not prescribed antibiotics
& Some patients had more than one expectation from the procedure
# Others include pus discharge
n.s. Not significant.
Significance le vel set at less than or equal to 0.05

Weiner and Lovett found that while there is a positive correlation between educational level and intelligence, a difference of only 10 IQ points existed between the least and most educated in terms of comprehension.[3] They suggested that the number of years at school was a poor predictor of the ability to learn and understand medical instructions in a formal setting such as schools and surgical practice. Some workers have supported this view.[1, 4, 12] Alexander commented that non-literate patients refused to seek help in the interpretation of written medical information.[4]

Parikh *et al.*, found that low literacy being a tremendous source of shame and difficulty in reading complicates the task of health care professionals who need to recognize and respond to the needs of such patients to ensure compliance.[13] The higher quality of remembrance in those given only verbal instructions (group B) may be due to the personal touch involved in the delivery and the fact that in some patients, verbal instructions were also delivered in their native tongues. Also, it was possible that the instructor paid less attention to the verbal instructions in group A patients relying on the fact that they will also receive written instructions. This emphasizes the importance of operator patient personal interaction coupled with use of translators if necessary with less reliance on written instructions, as some patients may neither read nor understand them. While the actual degree of retention of dental instructions given at verbal counseling is as yet not studied [4], a larger sample size would further elucidate the relative benefits of the various forms of instruction.

There is, reportedly a consistently better compliance with analgesic than to antibiotic therapy. The study found that non-compliance to analgesic prescription among the groups was not significant while non-compliance with antibiotics was. Significantly more patients in group A did not comply with antibiotic prescriptions than those who received verbal only and written only instructions. Of the 180 Israeli patients studied by Blinder *et al.*, 67% did not comply with the antibiotic prescription while the response with analgesic regimen was excellent, apparently because of severity of postoperative symptoms.[1] It is possible that compliance to analgesics is better because of the fear of pain while the higher cost and more frequent dosing of the prescribed antibiotic (ampiclox 500mg 6hourly for five days) discourage patients.

According to Steiner and Prochazka patients are more

likely to comply with drug prescriptions if there are fewer doses daily and the refill compliance from the pharmacy is inconsistently associated with the total number of drugs prescribed.[14] They believe that better explanation to patients on the need for antibiotic treatment would decrease cases of antibiotic self-prescription and poor compliance. Arnet *et al*. in a study on the relationship between conviction and patient compliance with prescribed chemotherapy, found that compliance appears to have its roots mainly in the conviction level of each patient.[15] We believe that conviction would be improved by a combination of detailed verbal followed by written instructions on drug therapeutic benefit and dosing.

According to Root, serious limitations in studies of compliance are the multifactorial and complex nature of the interaction between the health care provider and the recipient.[16] Also, the absence of validated instruments for use in assessing patient compliance after oral surgery meant that this study utilized measures which may be subjective. An example is the difficulty in comparison of ages in the current study due to the pre-selection of group C patients on the basis of previous formal education. This is because the group C subjects, by selection, are older than those in the other groups.

Vallerand *et al*., [2], and Blinder *et al*. [1], have positive comments on the reduction of stress in the postoperative period when detailed explanations of the post-treatment events are given. It is believed that comments on the possibility of swelling and pain would diminish the anxiety associated with these post-surgical sequelae. Our written instruction as contained in Table 1 was presented to fulfill the criteria espoused by Alexander [4, 5], taking cognizance of our local factors. In the Israeli report, mild bleeding, pain and swelling were the most significant postoperative events found in 75% of 180. Among the 184 subjects who came for review in this study, the expectation of postoperative events such as pain, bleeding, swelling were not significantly more among the three groups of patients. The level of satisfaction was greatest in group A and least in Group C It seems that patients with greater expectation of adverse postoperative events are to some extent less likely to be satisfied with their treatment.

## Conclusion

Despite some limitations in the design of this study, the goal of improved patient satisfaction with dental surgery practice would entail scrupulous use of both behavioural techniques and pharmacological agents to alleviate preoperative stress, abolish intra-operative pain, control infection when present and motivate patients to be partners in their post-surgical care. Improved delivery of verbal instructions in a stress-free unhurried manner coupled with written re-enforcement could assist in achieving these goals. Further studies on the relative benefits of the various forms of operator-patient interaction are necessary to improve the level of satisfaction of our patients and to ascertain relative benefits on various methods of instruction.

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