

Original Article

ASSESSMENT OF THE COMPLIANCE OF DENTAL PATIENTS PRESENTING AT A SECONDARY HEALTHCARE FACILITY IN SOUTHERN NIGERIA WITH POST-EXTRACTION INSTRUCTIONS.

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Abstract

Background: Compliance with post-extraction instructions and adequate patient education given after oral surgical procedures can improve patient satisfaction and decrease post-operative morbidity.

Objective: To assess the compliance with post-extraction instructions among dental patients presenting at a secondary healthcare facility in southern Nigeria

Materials and Methods: A prospective study of dental patients who presented at the Dental department, Central Hospital Oleh, Delta State was done. Descriptive data were expressed as frequencies and percentages. The mean difference between post-extraction instruction routes was also tested using an independent sample t-test for the verbal and written, and verbal only instruction routes. The level of significance α was set at 0.05.

Results: A total of 52 participants were recruited for this study. Participants comprised 21 males and 31 females, from which $n = 32$ received verbal instructions only, and $n = 20$ received verbal and written instructions. The overall mean percentage compliance of the respondents was 72.8%, respondents who received instructions from both routes (75.3%) were more compliant to post-extraction instructions than their counterparts who received verbal instructions alone (71.3%), there was, however, no statistically significant difference between the instruction routes ($t = 1.16, p > 0.254$).

Conclusion: This study showed good compliance with post-extraction instructions; percentage compliance was greater among respondents placed on both verbal and written instructions than verbal instructions alone.

Keywords: Assessment, Compliance, Dental patients, Post-extraction instructions, Verbal and Written instructions, Verbal instructions.

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INTRODUCTION

Extraction is the commonest procedure in oral surgery and dentistry.¹ Compliance with post-extraction instructions and adequate patient education given after oral surgical procedures can improve patient satisfaction and decrease post-operative morbidity. In dentistry, written post-surgical instructions are presented at an intellectual level too high for the average patient to understand or comply.² To elicit compliance, post-extraction instructions must be comprehensible for the

patient, including those not functionally literate in the English language. This is important since giving patients adequate instructions after oral surgical procedures have been demonstrated to improve patient satisfaction and decrease post-operative morbidity.³ Such instructions include a forecast of post-operative events, medication instructions, and advice on home care of surgical wounds. Post-operative instructions can be given in verbal and/or written form.³

A randomised clinical trial by Gheisari et al.⁴ to ascertain if different modes of delivering post-operative instructions to patients help in reducing the side effects of tooth extraction, found out that patients who received verbal instructions reported the most intense pain and least satisfaction, while patients who received verbal and written instructions were the most satisfied. Akpata, et al.⁵ reported that there was better compliance among patients placed on verbal instructions than those placed on written instructions on the use of warm saline mouthwash after oral surgical procedures. However, the use of verbal and written post-surgical instruction was reported to enhance compliance.

The understanding and subsequent execution of post-operative guidelines are factors that affect the recovery from any surgical procedure⁶ hence; the need for proper post-extraction instructions for adequate patients' compliance and reduced post-operative complications cannot be over-emphasised.

This study aims to assess compliance with post-extraction instructions among dental patients presenting at a secondary healthcare facility in Southern Nigeria.

MATERIALS AND METHODS

This was a prospective study of adult dental patients presenting at the Dental department, Central Hospital Oleh, Delta State. The study was conducted between September 2019 and June 2020. The sample size for the study was calculated using the formula;⁷

$$n = \frac{Z^2 pq}{d^2}$$

Where n = minimum sample size

Z = Standard normal deviation = 1.96 (at 95% confidence value)

p = prevalence = 6.6%⁵

q = 1.0 - p = 1 - 0.066 = 0.934

d = degree of accuracy = 0.05

$$n = \frac{Z^2 pq}{d^2}$$

$$n = \frac{(1.96)^2 \times 0.066 \times 0.934}{(0.050)^2}$$

$$n = 94.72$$

Approximately = 95 (to the nearest whole number).

Participants who presented at the Dental department, Central Hospital Oleh, whose treatment plan warranted a dental extraction and were healthy or had a mild systemic disease without functional limitations, and consented to participate in the study, were selected for the study. Respondents for this study were offered a particular type of post-extraction instructions (verbal instructions only or verbal and written instructions) by a simple randomisation process.

This study's protocol was reviewed and approved by the ethical committee of the Delta State Hospitals Management Board. Written informed consent and verbal assent were sought and gotten from the participants.

The data collection instrument was an interviewer-administered questionnaire that consisted of three sections. The first section sought information on socio-demographics and biodata of the participants, the second section assessed information on questions concerning post-extraction instructions and compliance, and the third clinically assessed the extraction socket with the aid of a dental mirror, blunt-tipped dental probe and a bright light source by the principal investigator (Osadolor AJ). The principal investigator administered the questionnaire, with the first section being administered at the point of a respondent's selection into the study, and the second and third sections during the respondent's recall visit, two weeks later. Respondents were discharged about one hour after the extraction procedure (after haemostasis have been achieved and relevant post-extraction instructions given) and were required to make only one recall visit two weeks later. Respondents were enlightened on the importance of adherence to post-extraction instructions to prevent post-extraction complications resulting from non-compliance.

Scores were given for the first nine questions in the second section of the questionnaire. A score of 1 was given for non-compliance and 3 for compliance. For the next two questions, a scoring scale of 1 – 5 was used, one being for the worst compliance and a score of 5 for best compliance. Percentage compliance was estimated by adding the respondent's cumulative scores for each question, dividing it by the total score possible, gotten from adding the maximum score possible for each question, and multiplying by a hundred (100).

Data generated from this study were analysed using the IBM® SPSS® Statistics version 25 software. Descriptive data were expressed as frequencies and percentages. The mean difference between the post-extraction instruction routes was also tested using an independent sample t-test for the two post-extraction instruction routes (verbal and written, and verbal only). The level of significance α was set at 0.05.

RESULTS

A total of $n = 52$ patients out of $n = 95$ presented at the review appointment date giving a response rate of 54.7%. The ages of patients ranged from 18 – 76 with a mean and median age of 39.42 ± 17.02 and 38.00, respectively. A majority of respondents were females, married, from the Isoko ethnic group, and were affiliated with the Christian religious institution [Table 1].

Table 1: Socio-demographic characteristics of respondents.

Variable	Frequency (%)
Age group	
18 – 29	21 (40.4)
30 – 39	5 (9.6)
40 – 49	11 (21.2)
50 – 59	8 (15.4)
≥ 60	7 (13.5)
Mean age (years)	39.42 ± 17.02
Median age (years)	38.00
Total	52 (100)
Sex	
Male	21 (40.4)
Female	31 (59.6)
Total	52 (100)
Marital status	
Single	21 (40.4)
Married	30 (57.7)
Widowed	1 (1.9)
Total	52 (100)
Ethnicity	
Isoko	45 (86.5)
Urhobo	2 (3.8)
Hausa	1 (1.9)
Igbo	2 (3.8)
Ndokwa	1 (1.9)
Yoruba	1 (1.9)
Total	52 (100)
Religion	
Christianity	51 (98.1)
Jehovah’s witness	1 (1.9)
Total	52 (100)

Almost all respondents $n = 51$ (98.1%) complied with the recommendations of biting on gauze for the next thirty

minutes after the operation, not taking alcohol or carbonated drinks for the next 24 hours and analgesic medication prescription. Meanwhile, all respondents complied with the antibiotic medication prescription and the recommendation of maintaining a soft temperature diet 24 hours after the extraction procedure [Table 2].

Table 2: Respondents’ compliance with post-extraction instructions

Variable	Frequency (%)
Did you strictly follow the analgesic medication prescribed?	
Yes	51 (98.1)
No, I only took it for two days.	1 (1.9)
Total	52 (100)
Did you strictly follow the antibiotic medication prescribed?	
Yes	52 (100.0)
Total	52 (100.0)
Did you strictly follow the recommendation to bite on gauze for 30 mins, until bleeding stops and swallow your saliva even if it is stained with blood?	
Yes	51 (98.1)
No	1 (1.9)
Total	52 (100.0)
Did you strictly follow the recommendation of not drinking or eating anything for the next 2 hours after the operation?	
Yes	49 (94.2)
No	3 (5.8)
Total	52 (100.0)
Did you strictly follow the recommendation of not sucking on the site of the operation with your tongue or making contact with it using your finger or any object?	
Yes	48 (92.3)
No	4 (7.7)
Total	52 (100.0)
Did you strictly follow the recommendation of maintaining a soft-temperate diet for the first 24 hours after the operation?	
Yes	52 (100.0)
Total	52 (100.0)
Did you strictly follow the recommendation of not rinsing, spitting, and brushing the operated area for the first 24 hours after surgery?	
Yes	50 (96.2)
No	2 (3.8)
Total	52 (100.0)
Did you strictly follow the recommendation of not taking alcohol or carbonated drinks for the first 24 hours after surgery?	
Yes	51 (98.1)

No	1 (1.9)
Total	52 (100.0)
If applicable; Did you strictly follow the recommendation of not smoking for the first 24 hours after the operation?	
Non-applicable	51 (98.1)
Yes	0 (0.0)
No	1 (1.9)
Total	52 (100.0)
When did you commence warm water and salt (warm saline mouth-bath)?	
On the day of the procedure	8 (15.4)
24 hours after the procedure	44 (84.6)
Total	52 (100.0)
How many times did you perform warm water and salt (warm saline mouth-bath) per day?	
Once	1 (1.9)
Twice	4 (7.7)
Three times	10 (19.2)
Four times	7 (13.5)
Five times	4 (7.7)
Six times	15 (28.8)
Seven times	2 (3.8)
Eight times	9 (17.3)
Total	52 (100.0)
For how many days did you perform warm water and salt (warm saline mouth-bath)?	
Three days	4 (7.7)
Four days	3 (5.8)
Five days	1 (1.9)
Six days	1 (1.9)
Seven days	3 (5.8)
Eleven days	1 (1.9)
Fourteen days	39 (75.0)
Total	52 (100.0)

The mean percentage compliance of the respondents was 72.8%, respondents who received both verbal and written instructions (75.3%) were more compliant to post-extraction instructions than their counterparts who received verbal only (71.3%), there was, however, no statistically significant difference between the two routes of post-extraction instructions ($t = -1.16, p > 0.254$) [Table 3]. A majority of respondents had good compliance $n = 37$ (71.2%) while, $n = 11$ (21.2%) and $n = 4$ (7.7%) had fair and poor compliance respectively [Table 3]. According to complications, $n = 29$ females and $n = 20$ males had satisfactory socket healing, two weeks post-extraction; $n = 1$ female, had poor socket healing post-extraction, while $n = 1$ male and female each had dry socket; giving an overall alveolar osteitis incidence of 3.8% [Table 3] [Figure 1].

A majority of respondents, $n = 49$ (94.2%), were satisfied with the treatment received [Table 3]. Furthermore, all respondents who received verbal and written instructions were satisfied with the treatment received. Conversely, 90.6% of respondents who received only verbal instructions reported satisfaction with the treatment received.

The principal reason given for non-compliance to post-operative instructions was the failure to remember instructions correctly (47%), other notable reasons were; I was busy (26%), the instructions don't matter (9%), couldn't understand the instructions (6%), I became tired of the routine (6%), the routine was stressful (3%), and I felt fine without doing the routine (3%). The failure to remember instructions properly was more among respondents placed on verbal instructions alone than those placed on both verbal and written instructions (38%), all the respondents that couldn't comprehend the instructions given were placed on verbal instructions only.

Table 3: Percentage distribution among respondents on compliance, satisfaction, complications and post-operative expectations.

Mean percentage compliance with post-extraction instructions	
Overall	72.8%
Among respondents placed on verbal instructions only*	71.3%
Among respondents placed on both verbal and written instructions*	75.3%
Categories of compliance among respondents	
Good	37 (71.2%)
Fair	11 (21.2%)
Poor	4 (7.7%)
Total	52 (100%)
Satisfaction to treatment received among respondents	
Satisfied	49 (94.2%)
Not satisfied	3 (5.8%)
Total	52 (100%)
Complications to treatment received among respondents	
Nil complication	49 (94.2)
Poor healing of extraction socket	1 (1.9%)
Alveolar osteitis or dry socket	2 (3.8%)
Total	52 (100%)
Post-operative expectations among respondents.	
Pain	26 (50.0%)

Nil expectations	18 (34.6%)
Jaw swelling	3 (5.8%)
Bleeding	3 (5.8%)
Pain and swelling	1 (1.9%)
Pain in other tooth/teeth	1 (1.9%)
Total	52 (100%)

* $t = -1.16, p > 0.254$

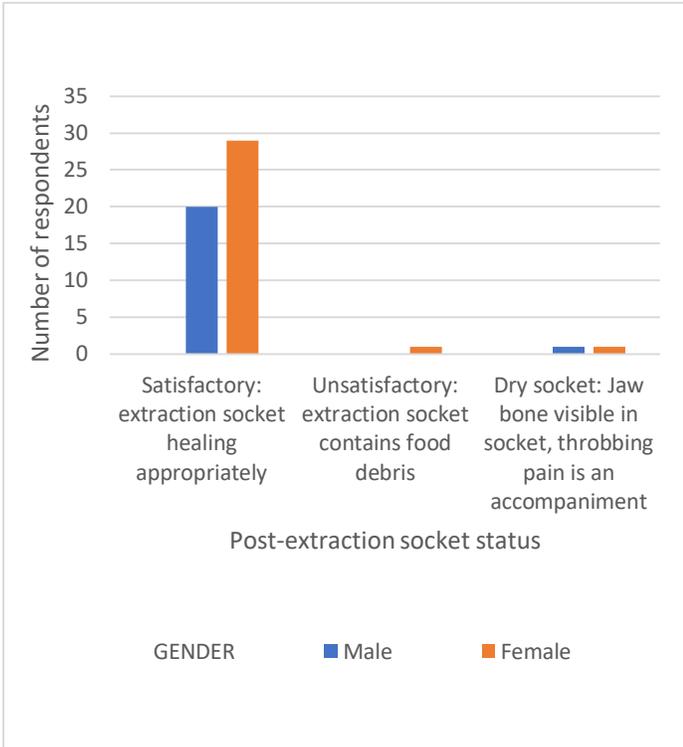


Figure 1: Distribution of post-extraction socket status among the respondents.

Poor socket healing was restricted to respondents in the 50 – 59 and ≥ 60 age groups. Both cases of alveolar osteitis were on the maxillary jaw, permanent first molar and permanent second premolar, and they had good and fair compliance to post-extraction instructions, respectively. According to respondents’ post-operative expectations, $n = 26$ (50%) of respondents expected pain, $n = 18$ (34.6%) had nil expectations, $n = 3$ (5.8%) each expected jaw swelling and bleeding, while, $n = 1$ (1.9%) each expected pain and/or jaw swelling and pain in other teeth respectively.

A total of $n = 34$ (54.8%) teeth were extracted from the maxillary jaw compared to $n = 28$ (45.2%) from the mandibular jaw. The first molars were significantly the most extracted teeth $n = 26$ (41.9%), followed by the second and third molars with $n = 11$ (17.7%) each [Table 4].

Table 4: Distribution of route of post-extraction instructions, jaw and tooth type among respondents.

Variable	Frequency (%)
Route of post-extraction instructions	
Verbal	32 (61.5)
Verbal and written	20 (38.5)
Total	52 (100)
Jaw type	
Maxilla [∞]	34 (54.8)
Mandible	28 (45.2)
Total	62 (100)
Tooth type	
Central incisors	4 (6.5)
Lateral incisors	2 (3.2)
Canines	1 (1.6)
First premolars	3 (4.8)
Second premolars	4 (6.5)
First molars**	26 (42.0)
Second molars	11 (17.7)
Third molars	11 (17.7)
Total	62 (100)

[∞]F = 32.5 $p < 0.001$ ** F = 4.3 $p < 0.019$

DISCUSSION

The understanding and the subsequent implementation of post-operative instructions influence the recovery from any surgical procedure.⁸ Some authors state that instructing patients about post-operative care reduces post-operative morbidity and improves the quality of life during the recovery period.⁸ Poor compliance of the patients is considered the main problem which causes post-operative complications⁵. Several variables may interfere with the extent and quality of instructions, how the instructions are presented, has a role in compliance among respondents. Compliance has been reported to increase with age.⁹ This study found the follow-up response rate of respondents who received verbal instructions only to be higher than those who received verbal and written instructions; this finding was in contrast to a previous report,³ and may be due to the differences between the study populations.

This study showed acceptable compliance with post-extraction instructions, which agrees with some previous reports,^{3,5} and disagrees with another previous study.⁹ Mean percentage compliance was higher among the respondents who received verbal and written instructions than verbal instructions alone, a finding that contradicts that of a previous study³ and may be due to the synergistic effect of both routes of information in aiding remembrance of instructions by respondents. Failure to

remember instructions properly was the primary reason adduced by respondents for non-compliance; this finding may be attributed to either the route of information delivery or the respondents' education level. Post-operative pain was the predominant post-operative expectation of respondents, a finding that may be as a result of anxiety developed due to interactions with family, friends, and the public who may not be dentally aware. Respondents who received verbal and written instructions had a better satisfaction with the treatment received than those given verbal instructions alone, this finding was in tandem with that of a previous study,³ and could be ascribed to the higher possibility of remembering post-extraction instructions, which aids better extraction socket healing, bolstering respondents' wellbeing.

There was a higher tendency for poor socket healing among females than males and respondents at the 5th and 6th decade of life in this study. This finding may be due to females having a higher oestrogen level, especially those on oral contraceptives, leading to an elevated plasma fibrinolytic activity, which affects the clot's stability after dental extraction¹⁰. Also, more inadequate oral care during the post-operative period among older respondents when compared to their younger counterparts, and the tendency of older patients in the rural locality where the studied hospital is located, to use tobacco products (snuff) that may complicate socket healing, can be considered as tangible reasons for these findings. Nicotine, the active constituent in tobacco, is absorbed through the oral mucosa. This drug increases platelet aggregation, thereby increasing the risk of microvascular thrombosis and peripheral ischemia.¹¹

Furthermore, a relatively low incidence of localised alveolar osteitis was found among patients who had non-compliance with the post-extraction instructions. Overall, a relatively low incidence of localised alveolar osteitis was observed in this study, with a high predilection of the lesion for the maxillary jaw and equal representation between sexes, a finding that is in contrast to some previous studies^{5,9,12,13} and maybe accorded to differences between the populations these studies were carried on.

An essential limitation of this study was that data was not collected on patients who did not present for review.

CONCLUSION

This study showed good compliance with post-extraction instructions; percentage compliance was greater among respondents placed on both verbal and written instructions than verbal instructions alone. A low incidence of localised alveolar osteitis was recorded with a predilection for the maxillary jaw and equal representation between sexes.

RECOMMENDATION

This work is highly relevant to the contemporary practice of evidence-based dentistry in the study locality. There is a need to make adjustments as observed to reduce inaccuracies and ease understanding of the concepts the investigator seeks to project.

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