Factors Influencing Patient Compliance to Recall

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Abstract: *This study investigated factors influencing dental patient recall rates among patients at the Adventist University of the Philippines, College of Dentistry Clinic. Utilizing a descriptive correlational design and a self-constructed survey questionnaire, data was collected from 154 participants. The study focused on patient experience (dentist, workspace, patient satisfaction, communication, and personal factors) and demographic variables (age, gender, family income, educational attainment). Key findings revealed that gender, educational attainment, patient satisfaction, and communication significantly impacted patient compliance. Male patients and those with higher educational attainment showed increased compliance. Similarly, higher patient satisfaction and effective communication between the dental clinician and patient were strongly associated with greater adherence to recall appointments. Conversely, factors such as age (though marginally significant), financial income, the specific dental procedure, the dentist's characteristics, and the clinic's workspace did not significantly predict recall compliance in this study. The results underscore the importance of patient-centered care, emphasizing clear communication and patient satisfaction as crucial elements for improving recall rates and ultimately achieving better oral health outcomes.*

Keywords: *patient recall, compliance, patient satisfaction, patient experience*

I. INTRODUCTION

A patient recall or dental recall, akin to an annual medical check-up, is a regular visit to the dentist to check on your oral health. Regular dental appointments are essential for maintaining oral health as it provides the individual access to comprehensive healthcare services which in turn equate to better health overall (Pakpour, 2014). Patient recalls also help dentists and other oral health providers to monitor the progress of the treatment provided and help maintain their oral health (NICE, 2004) as well as help prevent progression of dental diseases through regular maintenance assessments and preventive procedures (Patel, et. al., 2010). The frequency of recalls is dependent on patient's needs, which is determined through clinical assessment. The National Institute for Health and Care Excellence (NICE) Clinical Guidelines (CG 19) published in 2004 recommends recall intervals between 3-24 months subject to patient's risk profiles. Patients coming back for their recall appointments contribute to the success of the treatment outcomes and oral health (Fee, et. al., 2020; Patel, et. al., 2010; NICE, 2018)

Therefore, patients coming back to the dental clinic for their recall appointments is vital for achieving good treatment (Albarakati, 2009). A study done by Haukka showed that those who adhered to their follow-up appointments experienced less caries, had less prevalence of oral diseases such as periodontitis (Haukka et. al., 2023). Other studies also showed that those that adhered to recall appointments have better functioning teeth, required fewer emergency treatments (Thomson, et. al., 2010), had lower DMFT scores (Aldossary, et. al., 2015) and a healthier periodontium (Karimalakuzhiyil et. al., 2016). Kaprio et. al., in 2016 also concluded in their study that adherence to dental recall contributed to a better overall quality of life.

Statement of the Problem

The persistent challenge of patient noncompliance and disregard for recommended dental recall appointments significantly hinders the effective maintenance of oral health and the prevention of disease progression. This shortfall contributes directly to adverse patient outcomes and an escalating burden on healthcare resources.

This study seeks to identify the impact of a patient's experience in the dental setting on the recall rates of the patient. It is important to understand the factors that will affect the positive recall rate of patients, especially in the dental setting where the recall of a patient is crucial to overall healthcare. By conducting an assessment on the patients' perceived experience in the dental setting, this study aims to provide insightful information on the factors that influence patient recall rates. The following research questions are the focus of this study:

1. What are the factors that affect compliance to dental patient recall?
2. Are there differences in the factors that affect recall rates when respondents are grouped according to certain demographics:
   a. Age
   b. Gender
   c. Family income
   d. Educational Attainment

Scope and Limitations

This study is conducted at Adventist University of the Philippines, College of Dentistry Clinic. The scope of the study are the patients of AUP COD clinics who require a recall appointment in their treatment plan. Patients who require only one appointment for their proposed treatment and/or who had started their multi-appointment treatment prior to the conduction of this study will be excluded. The study will limit the number of participants to those who will be consented to be part of the study. The study will rely on the patient's truthfulness in their questionnaire responses, which will potentially be subject to inaccuracies due to inherent biases. The selection of respondents will also be done through random sampling without accounting for demographic variables such as gender, age, financial income and educational attainment.

II. LITERATURE REVIEW

The understanding of the factors that influence dental patient recall rates is imperative in increasing patient compliance in order to provide optimal oral health care. This chapter reviews the existing literature and past studies, to provide a comprehensive understanding of patient recall rates, both internationally and locally in the Philippines. The current literature related to patient recall and the factors that influence patients' behavior and adherence to scheduled dental

appointments will be discussed in order to optimize recall adherence and ultimately provide better oral health outcomes for dental patients.

The Importance of Patient Recall

Patient recall is an integral part of the oral health care system. It serves in facilitating regular dental check-ups, preventive treatments, and timely interventions in order to prevent the progression of oral diseases and maintaining oral health (Kirby, et. al., 2019). Patient recall provides an avenue for early diagnosis of oral diseases, aids in long term management of dental disorders, and establishes a good rapport between the patients and oral healthcare provider (Chariatte, et. al., 2008).

With the importance that patient recall entails to the success of the dental treatment, it is paramount that patients are compliant with their appointments. As treatments tend to require multiple appointments, missed recalls can affect the outcome of the treatment, as well as endanger the health of the patient (Lapidos, et al., 2016). In addition to affecting the treatment outcome of the individual patient, missed dental recall appointments also impact other patients and the dental setting. With the disruption that a missed appointment causes, it affects the continuity of care and workflow of the healthcare facility (Desai, et. al., 2018; Ismail, et. al., 2011).

On a broader scale, a study done by Gomes in 2019, concluded that missed appointments have an impact economically and socially. The study also determined that the effects of missed appointments also have ramifications that radiate on the administrative and management of the local public health services.

Missed Recall Rates:

Missed patient recall appointments is a global issue. A study done by Anagha, 2024 in India concluded that 8.4% of patients have had missed dental appointments. 56% of patients were female and 44% male. Another study done in Bangalore City, India found the postponed dental appointment rate was at 22.7% (Desai, et. al., 2018). A study done on pediatric cases in Brazil by Gomes, 2019, found the prevalence of missed dental appointments to be higher at 28.3%. In the UK, the prevalence rate is lower, with a study done by Kirby in 2019 concluded that the rate of missed appointments among children and young people was at 10.8%. In the Middle East, the prevalence rate is similar to the study done in Brazil, as 24.8% of patients reported to have missed their dental appointment (Alsadhan, 2013).

III. MATERIALS AND METHODS

Research Design

This study utilized a descriptive modifying design which aims to investigate the variables that affect patient recall and explore the relationship between them without any manipulation. This design allows us to explore the inherent connections among the variables of interest, yielding valuable insight on patient non-compliance to recall appointments. Through the analysis of these multiple variables obtained through systematic collection of data, we can discern patterns, trends, and potentially links to the likelihood of patients adhering to their recall appointment. Through the descriptive correlation design, significant associations will be discovered, and contributing factors will be known. This will aid clinicians in making evidence-based decisions to increase patient recall rates.

Population and Sampling Techniques

The population of the study were the dental patients of AUP-COD dental clinic with convenience sampling being the technique utilized.

The criteria for participants of this study were limited to patients who are prescribed recall appointment(s) in their treatment. All patients of different departments, periodontics, prosthodontics, surgical, endodontics, and restorative, were candidates for the population sample, regardless of the procedure needed.

In this study, the total number of respondents was 154. The profile of respondents in this study were as follows: 88 females and 66 males, respondents ages ranged from 12-65 years old, monthly financial income ranged from <12,000 - >50,000, and educational attainment ranged from primary to tertiary education with majority (69.5%) having tertiary education.

Instrumentation

In this research, the instrumentation of choice was a self-constructed survey questionnaire. The components of the survey questionnaire cover five subcategories which include, the patient's experience and personal factors, the workspace of the dental clinic, the communication between the dentist and the patient, the satisfaction of the patient on the procedure, and the dental clinician themselves. The questionnaire has been reviewed by experts and research consultants to determine its validity. The instrument also has been subjected to reliability testing through conducting a pilot study.

Pilot Study

A pilot study was conducted in order to test the reliability of the self-constructed questionnaire. The participants of the pilot study were patients of the College of Dentistry Dental Clinic at the Adventist University of the Philippines that require a recall appointment in their treatment plan. The questionnaire was given to the patients to fill up upon their initial appointment and their status was updated on whether they attended or delayed, cancelled, or did not show for their follow-up appointment. A sample size of 30 participants was gathered for the pilot study.

Data Gathering Procedure

The procedure of data gathering first required formal permission from AUP-COD clinics for allowance to gather data from incoming patients. A formal request would be written to the Chief of Clinics requesting permission to conduct our study with the incoming patients of COD clinics as our participants.

The researchers would use the designed survey questionnaire to gather data from the patients. The questionnaire would be multi-lingual, both in English and Filipino so as to maximize the number of participants. The questionnaires would be distributed to the clinicians who are opening new patient cases which require a recall. Included in the questionnaire is a consent form which explains the purpose of the study. The participants are required to read, understand and then sign. Respondents who were under the age of 18 years had a parent or a legal guardian to sign. The survey questionnaire was then given to the patient by the clinician after the procedure of their initial appointment is done. Once filled up by the patient, the survey was returned to the clinician to be collected by the researchers.

A follow-up was then done with the clinician to find out whether the patient fulfilled their required recall appointment, postponed the appointment, cancelled, or did not show (DNS). The reasons for postponing or cancellation will also be recorded.

Ethical Considerations

An informed consent form will be attached at the beginning of each questionnaire to help participants understand the study, as well as giving them an option to choose to participate in the study. The data collected in this study will be confidential. Participants will be assured that the researchers will maintain the recorded data confidentially and will only be used for the purposes of this study. This will be done by protecting their identities and maintaining their personal and medical information privately.

Analysis of Data

The statistical tool SPSS will be utilized for quantitative data analysis. Descriptive statistics such as mean, median and standard deviation will be computed to provide an overview of recall frequencies and patterns. Inferential statistics tests such as t-tests and ANOVA will also be utilized to compare recall rates across different demographic groups.

IV. RESULTS AND DISCUSSION

Patient Compliance to Recall

The tables below show the compliance profile of the respondents.

Table 11. *Frequencies of Compliance*

Compliance	Counts	% of Total
Complied	121	78.6 %
Did Not Comply	33	21.4 %

Table 11 shows that out of 154 respondents 121 (78.6%) respondents complied to patient recall while 33 respondents (21.4%) did not comply. The percentages of non-compliance were comparative to studies from other parts of the world such as India (22.7%) (Desai, et al., 2018) and the Middle East (24.8%) (Alsadhan, 2013) while a study from the United Kingdom had a lower rate at (10.8%) (Kirby, 2019) and a study from Brazil had a higher rate at Brazil (28.3%) (Gomes, 2019).

Table 12 shows the results to the research question, "*Do sex, age, income, educational attainment, the dentist, the workspace, patient satisfaction, communication and personal factors influence the compliance of patients towards recall?"*

Table 12. *Model Coefficients – Compliance*

Predictor	Estimate	SE	Z	p
Intercept	9.3799	4.0119	2.33800	0.019
Age	0.0393	0.0227	1.73389	0.083
Sex:				
Male – Female	-1.1225	0.5711	-1.96555	0.049
Financial Income:				

13, 000 - 24, 000 – 8, 000 -12, 000	0.6938	0.5775	1.20148	0.230
25, 000 - 50, 000 – 8, 000 -12, 000	-1.1807	1.3149	-0.89788	0.369
51, 000 - 100, 000 – 8, 000 -12, 000	20.0802	3956.1804	0.00508	0.996
Educational Attainment:				
Secondary – Primary	-1.8439	1.0575	-1.74366	0.081
Tertiary – Primary	-2.2790	1.0380	-2.19569	0.028
Procedure Done:				
Extraction – Scaling and Polishing	0.2667	0.5030	0.53023	0.596
Endodontics – Scaling and Polishing	-36.4612	5594.8839	-0.00652	0.995
Prosthodontics – Scaling and Polishing	-17.7949	1555.1643	-0.01144	0.991
The Dentist	-0.3065	1.0332	-0.29667	0.767
The Workspace	0.3245	0.7845	0.41361	0.679
Patient Satisfaction	-0.5567	0.2576	-2.16079	0.031
Communication	-1.7717	0.6676	-2.65365	0.008

From table 12 we can identify that four categorical factors have significant p-values (< 0.05). These factors are Sex (0.049), Educational Attainment (0.028), Patient Satisfaction (0.031) and Communication (0.008). In terms of sex, the data shows that males are more likely to comply to patient recall than females. This suggests an association between the male sex and a higher likelihood of compliance. The results of the data were in coherence with another study done Omorogbe et. al. (2022) which showed that male patients were more respondent to dental recall visits compared to female patients. However, there are some studies that suggest that there was no difference in adherence to dental recall in terms of gender (AlSadhan, 2013; Alqahtani and Alawaji, 2023).

The results for educational attainment show that individuals with higher education levels are more likely to comply with patient recall. This is especially significant when comparing tertiary education with primary education. A higher educational attainment is associated with higher likelihood of compliance. A study done in 2022 by Arabi et al., showed that women with higher educational attainment had better dental visit attendance and better compliance. Another study done by Schultz, et. al., 2015 showed that patients with higher education attainment were more likely to report to a dental visit than patients with a lower educational attainment. These results show the role of education in shaping compliance behavior. However, a study done by Chou et. Al., (2022) during the height of the COVID-19 pandemic, yielded results that contrasted Schulz and Arabi, showing that patients of a higher education level had lower dental compliance.

Furthermore, the data on patient satisfaction also yielded significant results, showing that a high level of satisfaction of the patient increases the likelihood of compliance to patient recall. These results were in line with other studies which showed that when a patient is comfortable,

contented and satisfied, it not only affects the prognosis of the treatment in a positive way, but impacts patient management and compliance to recall. (Riley, et al., 2012)

The results were the same with communication where better communication between the dental clinician and the patient was linked with a greater likelihood of compliance as well. These findings are in accordance with the studies done by Stien et al. (2018), Kwame (2021), Gabay (2022) and Srinivas (2023) which showed that clear explanations, active listening and personalized communication towards dental patients improved compliance to recall. These findings emphasize the importance of a patient-centered approach, where improved communication and patient satisfaction can contribute to improved compliance in patients.

Additional results from factors such as age ($p=0.083$) indicate that with an increase in age, the likelihood of non-compliance also increases. However, the relationship between these 2 variables is only marginally significant as the p-value only slightly exceeds the threshold of $p = 0.05$. Consequently, there is only weak evidence that the age of a patient influences patient compliance. This suggests that further research needs to be conducted to substantiate this relationship. Other factors such as Financial Income, the type of dental procedure rendered, the Dentist ($p = 0.767$) and the Workspace ($p = 0.679$) yielded results that showed that there was no significant effect on patients' compliance. These results show that these factors do not appear to be predicting factors when it comes to compliance and as such, are not critical determinants on whether the patient will comply to dental recall.

V. CONCLUSION

Based on the results of the study, sex and educational attainment were significant determinants of patient's compliance while patient satisfaction and communication were factors that significantly affect patient's compliance. The findings of this study highlight the critical role of patient centered care. Having attributes such as effective communication between the dental clinician and the patient and making sure the patient understands the instructions given is crucial in the patient's adherence to recall. This is also true in patient's satisfaction. When patients are satisfied with the level of care they are receiving, it encourages them to give importance to their oral health, and in turn, they become more willing to comply with their treatment plan. Patient satisfaction can promote better compliance to dental recall which results in better treatment outcomes.

In terms of financial income, type of dental procedure, the dentist and the workspace, the results showed no significant relationship in relation to compliance within this study. This implies that the financial income of the patient, or the dental procedure that they will be going through has no influence on the compliance of the patient to recall. The data also suggests that the dental clinician and the workspace of the clinician did not have an effect on the recall compliance of the patient. While there was little evidence that age may be a determinant on patient compliance, it was not significant, and therefore further studies on this relationship is required.

AUTHOR'S CONTRIBUTION

This section details the individual contributions of each author to this research and its manuscript, ensuring transparency and appropriate attribution. M. Uwase drafted the introduction, while A. Agasaro developed the methodology. Everyone jointly contributed to the literature gathering. The interpretation of results and discussion, as well as the formulation of conclusions and recommendations, were collaborative efforts undertaken by all authors. T. Tean and S. Amirthan edited the format and layout of the paper. H. Subido, M. Resontoc and G. Mercado evaluated and examined the manuscript, provided feedback and suggested for necessary revisions. K. Erot edited and finalized the paper for submission. All authors made significant academic contributions to this work and approved the final version of the manuscript.

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