



## Relationship between distance and transportation with attendance of dental appointments in MNGHA and KSAU-HS

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### General Note

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## ABSTRACT

The aim of this study is to know is distance to the KSAU-HS dental clinic and MNG-HA dental clinics a barrier to attend follow-up appointments. Also, to see what the other barriers are to affect the attendance of the patients like cost of transportation and the time of the appointments, morning or afternoon. The sample size was 550 participants in the KSAU-HS and MNG-HA waiting areas, in Riyadh, Saudi Arabia. A questionnaire made with the course instructors trying to fulfill the aim and to see the other barriers. Albarakati et al. found that women are more affected to miss appointment, and the holy Ramadan is a major effect of not attending, due to fasting. The main variable is do you think that the availability of transportation will affect the attendance of follow-up appointments. Using SPSS, we do most of the analysis with those who answer the main variable with "No". Surprisingly, the patients whom lived in areas not that near are better to attend than those who in nearby areas with a p-value of 0.035. And the cost of transportation is not a barrier to attend follow-up appointments. Recommendations to the next researchers to include more question about barriers of attending appointments, to shorten the questionnaire, and lastly to reduce "Neutral" options as it is the first choice for the patients to consider. The importance of attending follow-up appointments is not a part of our culture which is getting less day by day.

**Keywords:** dental clinic, fasting, transportation, questionnaire

## 1. INTRODUCTION

Follow-up appointments are necessary for some conditions to ensure the condition is effectively treated. Studies have shown that distance can be a barrier to attending follow-up appointments which might be necessary for these conditions. For example, breast cancer treatment requires follow-up care, and can place a significant travel burden on patients (Ambroggi, et al., 2015). A review of the literature found that increasing travel requirements for follow-up visits were associated with having a more advanced disease at the time of diagnosis, inappropriate treatment being rendered, a less positive prognosis, and worse quality of life (Ambroggi et al., 2015). Type II diabetes is another example of a condition that requires monitoring and follow-up appointments to improve prognosis (Zgibor J et al., 2011). One study found that the further patients had to drive for clinical care, the less likely their diabetes was under control (Zgibor J et al., 2011). In a study of veterans in the United States (US) who were accessing mental health aftercare following inpatient substance abuse treatment, only 40% of patients who lived more than 25 miles from the nearest facility for aftercare actually obtained any services, and lack of geographic access was the main barrier to outpatient care (Schmitt S. et al., 2003). In dentistry, patients being treated for periodontitis must be compliant with prolonged therapy in order to ensure a positive prognosis. Periodontal treatment includes active periodontal therapy (APT) as well as supportive periodontal therapy (SPT) (Lee, C. et al., 2015). During the SPT phase, periodontal diseases are monitored clinically, and etiologic factors are reduced or eliminated (Lee, C. et al., 2015). If the patient does not receive appropriate SPT at the correct time intervals, periodontal disease can progress despite treatment (Lee, C. et al., 2015).

Lack of compliance in periodontal treatment has been shown to negatively impact periodontal health. In one study, compliance with periodontal therapy was associated with significantly lower risk of tooth loss (Lee, C. et al., 2015). Another study found that regular SPT was associated with lower tooth-loss rates, and infrequent SPT was a strong negative prognostic factor for long-term periodontal treatment (Saminsky, M, et al., 2015). Distance has been found to be a barrier to compliance in prolonged dental care that requires follow-up appointments. An Australian study found that travel costs and family life were major drivers restricting access to dental services for people living in remote areas (Curtis, B et al., 2007). A study in South Africa found that travel costs and distance served as a barrier to elders in retirement villages accessing dental care (Moleté, M. P. 2013, April 5).

Saudi Arabia has an extensive health system with a strong public component that offers all levels of care in all sectors of the healthcare system, including dentistry, at low or no cost to residents (Almalki, M, et al., 2011). However, these services are centralized in large cities, and this can create access barriers for those in more remote areas (Almalki, M, et al., 2011). Therefore, distance to healthcare services has been studied as a potential access barrier. One study looked at missed appointments among female patients at a dental school clinic in Riyadh city in Saudi Arabia (Albarakati, S. F., 2009). A survey was conducted among 200 patients who failed to keep their appointments to identify the reasons for missing the appointment (Albarakati, S. F., 2009). The number one reason was fasting during the Holy Month of Ramadan (79.1%), but the second most common reason was transportation difficulty (76.2%) (Albarakati, S. F., 2009). In another study in Saudi Arabia, access to primary health care services (PHCS) was evaluated in

both urban and rural areas (Alfaqeeh, G, et al., 2017). The study found that there were core barriers for rural patients to access PHCS due to distance (Alfaqeeh, G, et al., 2017).

King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) has several dental clinics within its teaching oral care center in Riyadh which serves the community and students. The National Guard for Health Affairs (NGHA) has a specialist dental clinic also in Riyadh that serves the military and their families. As they are both located in the urban setting of Eastern Riyadh; this positioning makes travel to the clinics particularly difficult from the west side of Riyadh. Also, anyone traveling from outside of Riyadh will have a significant travel burden, but currently, the level of travel burden experienced by patients at these clinics is unknown. The objective of this study is to study the relationship between the distance and the transportation in relation to the attendance to the dental follow-up appointments among NGHA dental center and KSAU-HS College of dentistry patients.

## 2. MATERIAL AND METHODS

The present study comprised a cross-sectional observational analytical study of the relationship between distance and transportation with attendance of dental appointments in the Dental Center in King Abdulaziz Medical City and Dental Clinics of King Saud's bin Abdulaziz University for Health Sciences College of Dentistry.

Participants were asked to sign consent forms before the questionnaire distribution and data gathering. The informed consent was reviewed by the ethical approval committee at COD, KSAU-HS. The informed consent form involved the following, we asked for their permission, an explanation of the objective of the research were provided, they were given the right to refuse answering the form and it will not affect their current or future medical care. The responses will be kept anonymous. The risk to their physical, emotional, social, professional or financial well-beings are considered to be confidential. Moreover, participants were provided with the institutional review board contact details for any inquiries they have.

The questionnaire was distributed in the Dental Center in King Abdulaziz Medical City and College of Dentistry Clinics of King Saud's bin Abdulaziz University for Health Sciences College of Dentistry. Only hard copy was distributed, and 550 samples were gathered after taking their Informed consent. The period of recruitment and data collection was between September and December of 2018. All patients and their companions who attended the appointment in that period were eligible to be part of the study. Exclusion criteria included people who were under the age of 18 years. The sample size was calculated by power analysis. The required sample size is 550 participants for both genders to represent the 12,000 patient of the KADC and COD, KSAU-HS.

The study was conducted using questionnaires and was made specifically to address the main inquires, and it is validated by a biostatistician. Questionnaires were prepared to include the following sections: A) Sociodemographic data, including age, gender, education, occupation, income, and residence. B) Transportation issues: Availability, minutes taken and distance in kilometers. C) Barrier to access, including: Likert-type scale, my friend's advice, sever condition, traffic let me skip, private clinic preference, easier afternoon appointment, obligation prevent me, driving myself, available public transportation, easier in the morning, avoiding traffic, importance of follow-up appointments, coming from work is easier, oral health is priority, need child care, pressing priority, having driver and cost. The questionnaire was tested using a pilot sample of 20 dental students to answer questions and to provide us with their comments. Adding, removing and rephrasing of some questions were done accordingly.

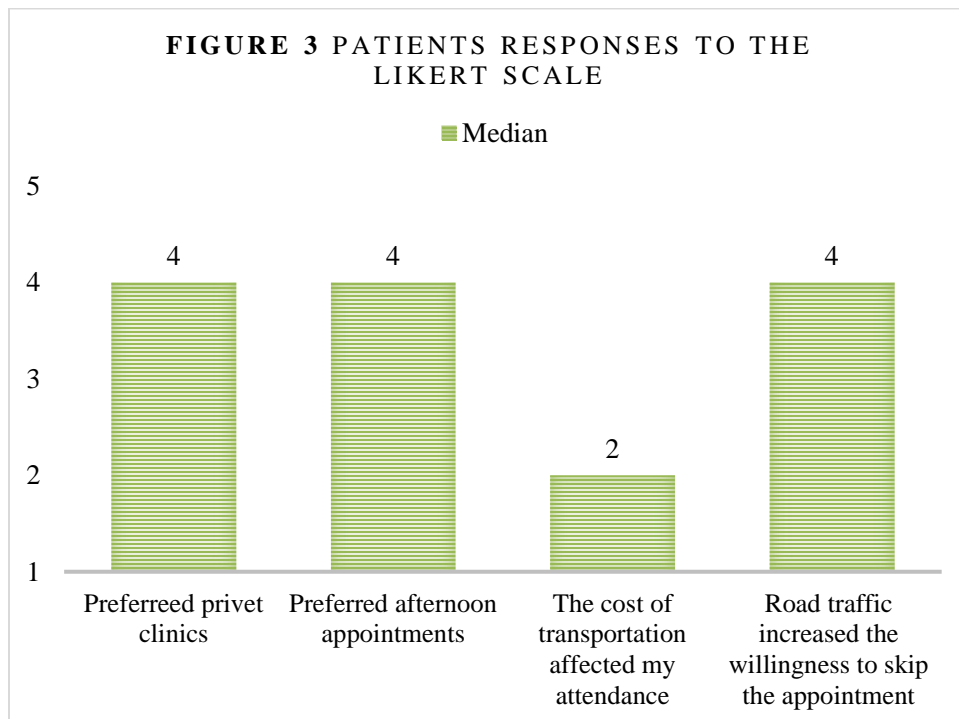
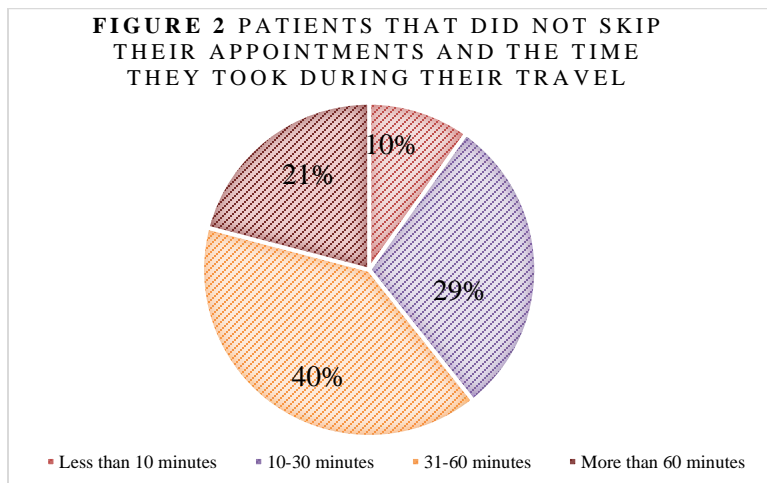
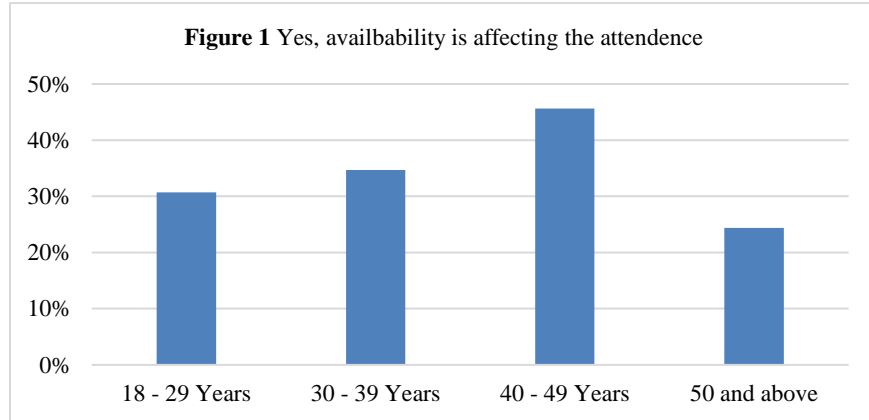
## 3. RESULTS

Sample of 550 questionnaire with a main variable (Do you feel that the availability of transportation affects your attendance to dental appointments) were cross tabbed with other questions. The majority whom were affected with the availability of transportation were the age group of 40-49 years (45.6%) with a ( $p$ -value $<0.05$ ) they said that they skip dental appointments because of they do not have access to transportation (fig. 1).

Surprisingly, patients who took 10 minutes driving to the dental clinic, were the most group who was affected by the availability of transportation with a ( $p$ -value $<0.05$ ). The group of patients that needed 31-60 minutes was also the most group to attend their dental appointments and the least to be affected by the availability of transportation (figure 2).

Moreover, patients who lived within 5 km from the dental clinic were also the most group affected by the availability of transportation with a ( $p$ -value $<0.05$ ). In the other hand, patients who lived in a distance between 16-30 km were the most group to attend their dental appointments and the least group of patients to be affected by the availability of transportation.

The majority of the patients disagreed when asked if the cost of transportation was causing them a barrier to attend dental appointments (figure 3). However, most of them agreed that they preferred to go to a nearby private dental clinic due to the easier access. And attending afternoon dental appointment rather than going to their dental appointments at morning times. Plus, the patients also agreed on that they would skip their dental appointment due to traffic jams on the way (figure 3).



## 4. DISCUSSION

This study is about the relationship between distance and transportation acting as a barrier to attending dental appointments in NGHHA and KSAU-HS. Our title was made to match our aim. Due to the high percentage of patient's skipping their dental appointments we wanted to further investigate the causes, so we included secondary objectives, such as the effect socioeconomic status of the patients, are they depending on others to get them to their appointments, the effect of both the severity of their oral health condition, and the education level.

In comparison to other studies the aim of our study was similar to other studies. Ambroggi et al. in 2015, discussed if distance is a barrier to attend appointment for cancer patients. Toivakka et al. in 2018 discussed if the area of residence and distance as a barrier for type 2 diabetic patients to attend their appointments (Toivakka et al., 2018). However, no studies have been investigating barriers for dental patients in relation to their attendance in Saudi Arabia. In our questionnaire we included Likert Statements scales to evaluate the degree of agreement or the disagreement for certain statements. We selected a large sample size, 550 patients, so we can have an accurate estimation of barriers. We included dental patients in NGHHA dental center, and patients in KSAU-HS College of dentistry. We excluded patients in their first visit, and patients in the emergency clinics, because they did not attend a follow up appointment. In previous study done by Toivakka et al. in 2018, socio-economic status was determined by the postal code not with the monthly income. Moreover, neither the method of transporting nor the cost of the transportation was included in the study (Toivakka et al., 2018). Another study done by Ambroggi et al., 2015, only considered researches that exploring the role of travel burden, not including the level of education and the socioeconomic status. In Mc Grath C and Bedi R, 2001, they used interviews to collect their data; we used hard copy questionnaires to gather our data.

Our results were not as anticipated to be, we thought that as distance increases the chance of patients not attending the appointment would be higher. Moreover, not only the results of the distance were opposite to what we thought it would turn to be, also patients taking less time to arrive were more likely to skip the appointment than others.

## 5. CONCLUSION

In regard to our method we used a questionnaire that was handed to the patients in dental clinic at KSAU-HS and NGHHA dental center as hard copy. The main variable used in IBM's SPSS program for analysis is if the patients feel that availability of transportation would affect the attendance to the appointments. The results revealed that people living between 16 to 30 Kilometers from the clinics were the most group to attend the appointments. Also, skipping dental appointments due to traffic was the most to be agreed on for attending the appointments. The cost of transportation did not affect attendance of the patients to the clinic. For future studies we recommend including more questions about barriers of attending appointments, to shorten the questionnaire and lastly to reduce "Neutral" options as it is the first choice for the patients to consider.

### Abbreviations

COD, KSAU-HS: College of Dentistry, King Saud bin Abdulaziz University for Health Sciences.

MNG-HA: Ministry of National Guard-Health Affairs.

KADC: King Abdulaziz Dental Center.

KAMC: King Abdulaziz Medical city.

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### Conflicts of Interest:

The authors declare no conflict of interest.

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