Comprehensive Analysis to Uncover Determinants of Patient Appointment Compliance in Ophthalmology at the Kresge Eye Institute

Alisha Khambati  
Wayne State University School of Medicine, alisha.khambati@med.wayne.edu

Lauren Dowell  
Wayne State University School of Medicine, ldowell@med.wayne.edu

Jahan Tajran  
Wayne State University School of Medicine, jahan.tajran@med.wayne.edu

Daniel Juzych  
Cranbrook Kingswood High School

Sarah Syeda MD  
Kresge Eye Institute

See next page for additional authors

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Recommended Citation

Khambati, Alisha; Dowell, Lauren; Tajran, Jahan; Juzych, Daniel; Syeda, Sarah MD; Wilson, M. Roy MD; Juzych, Mark MD; and Kumar, Ashok PhD, "Comprehensive Analysis to Uncover Determinants of Patient Appointment Compliance in Ophthalmology at the Kresge Eye Institute" (2021). Medical Student Research Symposium. 76.  
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Authors
Alisha Khambati, Lauren Dowell, Jahan Tajran, Daniel Juzych, Sarah Syeda MD, M. Roy Wilson MD, Mark Juzych MD, and Ashok Kumar PhD

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INTRODUCTION

• The patient-physician relationship is an essential component of effective healthcare.1

• Several studies have researched the importance of appointment compliance (AC) in addressing health care interventions and reducing mortality risk. One study found AC to be 58% and highlighted effective strategies such as mailed or telephoned reminders in better patient arrival.2 Another research paper compared appointment non-adherence in AA with severe, uncontrolled hypertension3.

• Our retrospective study, which is focused on patients who sought care at Kresge Eye Institute (KEI) in Detroit, Michigan, is aimed at elaborating on factors impacting AC and continuity of care. The Detroit metropolitan area has a diverse population, with a wide range of demographics, and stratified income brackets.4 This provided the necessary framework needed to properly assess patient appointment compliance.

• The demographic data utilized in this study included: KEI clinic locations and specialties, the chronological rank of appointments within a patient’s appointment history, age, race, insurance, zip code, appointment month, and gender.

• This data provided by KEI offers insight into the factors contributing to appointment compliance and continuity of care.

METHODS

• The Institutional Review Board of Wayne State University approved the study protocol (IRB-20-04-2048).

• Retrospective analysis was performed across all appointments scheduled from 01/2014-12/2018 at any of KEI’s 24-out-patient Michigan locations.

• Patient arrival to appointment, denoted as initial (I), and cancellation/no-show to appointment, classified as non-compliant (NC), across KEI clinic sites.

• Chi-square test was performed to compare categorical and binary characteristics between CO and NC groups for patient gender, race, and insurance type, scheduling location, appointment month, provider, and physician specialty.

• Mann-Whitney U test assessed relative distribution of continuous characteristics (including patient age and appointment rank) across CO and NC appointments.

• The appointment rank was used as an indicator of the patient’s relationship length with KEI at each appointment relative to all the appointments in a patient’s appointment history.

• Logistic regression, in regards to AC, was performed to control for covariates.

• Receiver operating characteristic (ROC) curves with area under curve (AUC) values and Hosmer-Lemeshow goodness of fit tests were generated from logistic regression analyses to demonstrate the predictive accuracy and fit of our model.

• A geographical map of the entire population of appointments scheduled at KEI was generated using Microsoft® Excel Version 15.11.2, showing relative frequency of appointments accorded to each associated patient’s residential zip code.

RESULTS

Table 1. Distribution of Demographic, Administrative, and Appointment Characteristics among compliant and non-compliant appointments at KEI

Table 2. Summary of Continuous Appointment Characteristics

Figure 1. Procedure for Sample Selection

Figure 2. Frequency of Appointments per Ophthalmic Specialty (SCO) and subspecialties across all appointments.

Figure 3. Frequency of Appointments per racial category.

Figure 4. Appointment frequency across each zip code.

Figure 5. Receiver operating characteristic curve and associated AUC for logistic regressions (Table 3) across all appointments.

Figure 6. Subspecialties seen at the KEI clinic.

Table 3. Comprehensive multiple logistic regression across initial appointments.

CONCLUSIONS

• This investigation found the distribution of AC, defined by the CO and NC groups, to be significantly different across patient gender, race, age at appointment, clinic location, and appointment month, and physician specialty.

• In future analyses, additional metrics, such as driving distance, access to transportation, and patient satisfaction, could increase the predictive accuracy of our model.

• A follow-up study can be performed to overcome this limitation and analyze subsets and more patient-specific characteristics (employment status, education, household income, history of mental illness, non-ophthalmological comorbidities and primary method of transportation) that could, perhaps, contribute to non-compliance.

• Hence, the comprehensive dataset reveals potential factors that affect AC and can be used to improve the quality of patient care. This study has applicability to other institutions, allowing for the assessment of patient care and overall satisfaction.

References:


