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Factors associated with follow-up compliance among patients attending eye department in jinja regional referral hospital, in Jinja city. A cross-sectional study.

Priscillah Grace Mutesi*, Sylivia Takali, Micheal Kabasa, Isaac Obol Okot
Ophthalmic Clinical Officers Training School, Jinja.

Abstract

Background:
Follow-up compliance in eye care is crucial for preventing disease progression and ensuring treatment success. This study aims to determine the factors associated with follow-up compliance among patients attending the eye department in Jinja Regional Referral Hospital, in Jinja City.

Methodology:
A descriptive cross-sectional Study was conducted on a sample of 151 participants recommended for follow-up appointments; data were collected using a semi-structured questionnaire and analysed using Stata version 18.

Results:
54.9% were female and 45% male. Patients above 45 years old had the highest compliance (38%), while younger patients (10%) were more likely to miss appointments. Education level significantly influenced compliance, with higher-educated patients (76) showing better adherence. Employment status varied, with 40% unemployed, 16.5% self-employed, 26.5%wage employed, and 17% were students. Common barriers included transportation difficulties (42.2%), financial constraints (20%), and limited knowledge (18.6%). Distance from the eye clinic to their homes was also a major factor, with 60% of patients traveling over 10 km. The effectiveness of reminder systems was assessed, revealing that phone reminders achieved the highest compliance rate (85%), followed by written (75%) and SMS reminders (70%). The absence of reminders resulted in only 40% compliance.

Conclusions:
Demographic factors, common barriers, and lack of education greatly impact follow-up compliance among patients attending the eye clinic at JRRH.

Recommendations:
Counselling sessions for patients, awareness campaigns about eye health, and establishing a strong reminder system within the hospital.

Keywords: *Follow-Up Compliance, Eye Department, Jinja Regional Referral Hospital, Jinja City.*
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Corresponding Author: *Priscillah Grace Mutesi*
Email: priscimutesi69@gmail.com
Ophthalmic Clinical Officers Training School, Jinja.

Background of the study
Compliance is the practice of self-care behavior by following health recommendations that reflect willing collaboration between health professionals influenced by the characteristics of therapeutic regimens, communication of health advice, and patients' attitude towards professional recommendations, which lead to improved outcomes and quality of life, and lifestyle or behavior modification. (Saowaluk Thummak et al., 2023)
Follow-up refers to the timely surveillance of health status and guidance in a medicational regimen by various methods among patients who visited or were visited by medical staff. Haotian Lin, (2014). It is a global concern impacting the effective management of medical conditions, including eye diseases. Lack of compliance can lead to disease progression and increased healthcare costs.
Follow-up compliance among eye patients, therefore, is critical in the management of eye conditions. Successful longitudinal care requires adherence to ongoing patients' appointments and the ability to predictably identify those at risk of loss to follow-up. To establish evidence-based interest in improving follow-up adherence, it is necessary to first identify factors associated with it. A host of internal factors influence adherence behaviors and thus shape health outcomes in return. These can be organized into five major domains: socioeconomic factors, health system-related

factors, therapy-related factors, condition-related factors, and finally, patient-related factors. (Rem Aziz et al., 2022).
In Uganda, eye diseases are one of the top ten causes of morbidity and OPD attendance, with over 17 common or priority eye conditions, which include: cataracts, primary open-angle glaucoma, diabetic retinopathy, refractive errors, retinoblastoma, foreign body in eye, keratitis, conjunctivitis of the newborn, trachoma, and stye. Some of these conditions warrant regular follow-up checks to prevent adverse complications, which could lead to blindness. Therefore, this underscores the importance of understanding the barriers to follow-up compliance among patients with eye conditions, which would guide the development of targeted interventions for specific barriers to improve patients' adherence to follow-up appointments, hence improving overall satisfaction and health care delivery. This study aimed to determine the factors associated with follow-up compliance among patients attending the eye department in Jinja Regional Referral Hospital, in Jinja City.

Methodology

Study design

A descriptive cross-sectional study was used on patients attending the eye department at JRRH running from May to October 2024.

Study area.

The study was conducted in the eye department of JRRH. This hospital is located in the southeastern part of Uganda in the city of Jinja, near the source of the Nile, about 80Km east of the country's capital, Kampala. It is a 500-bed capacity general and teaching hospital providing a referral center for a catchment area of 11 districts and one city, serving a population of 4.5 million people. The hospital provides both inpatient and outpatient care involving specialized services, of which ophthalmology is one. Services offered at the eye department are both surgical and non-surgical, provided by ophthalmologists, OCO, ophthalmic nurses, and students. It has a very vibrant outpatient department run by the staff daily to handle follow-up and minor eye conditions.

Study population.

The study population consisted of all patients who attended the eye department at JRRH who were recommended for follow-up appointments during the study period. Patients who had reported for emergency eye care and those without appointments were excluded from the study.

Sample Size Determination

The sample size was determined using the method below;
n=(Z^2*p*(1-p))/E^2 Where,
n= required sample size
Z= 95% confidence interval
P= estimated proportion of population with characteristic of interest (50% for maximum variability)
E= error margin, which is 8.
Therefore; n= 151 respondents

Sampling Technique

The consecutive sampling method was used to select participants who were easily accessible and willing to participate.

Sampling procedure

Patients who had come for any clinic day at the eye clinic, attending eye care, were assessed for eligibility. Those who met the eligibility criteria were included in the study and were orally interviewed and also given questionnaires to find out if they had followed the schedule or not. Those who did not meet the eligibility criteria were excluded from the study.

Data collection method

Data was collected using oral interviews and questionnaires from patients, and also appointment treatment documents given to patients. Approval was sought from the institutional review board (IRB). Consent was obtained from patients using an interview, probably one-on-one. Created rapport, obtained consent, plus assured confidentiality.

Study Variables.

The independent variables were the social demographic factors (age, gender, education level, occupation, employment status), Clinical factors such as type of eye condition/diagnosis, presence of comorbidities, and duration since diagnosis.
Patient factors, such as the patient's knowledge about the condition and its management, and intervention variables, such as the use of reminder systems, the provision of educational materials, and counseling sessions on the importance of follow-up. The dependent variable was follow-up compliance.

Quality Control

Permission was obtained from the IRB to conduct research in the area of study. The researcher also obtained consent from the patient and ensured confidentiality, not including their name on any data collection tools. The study was pretested on 5% of the sample size to test the research protocol to adjust the research process to suit the setting. Training of research assistants on how to use the data collection tools during the pretest study (pilot) before the final study was conducted.

Data Analysis and Presentation.

Data was to be coded clean and entered into EpiData version 1 and analysed using Stata version 18. Continuous baseline

variable was reported as mean, standard deviation, or median, and compared using a t-test. Categorical variables will be summarized into frequency tables, percentages, proportions, and absolute counts (gender, education level).

Ethical Considerations.

Permission to carry out research was sought from the OCO School, Jinja. Ethical approval was sought from the IRB of OCO and also JRRH before commencement of the study. Informed consent was obtained from all the participants before any data collection, and no data was collected from patients who had declined to consent.

Results

Demographic factors influencing follow-up compliance.

Table 1: Shows the demographic data of respondents

Variables	Frequency (n=151)	Percentage (%)
Gender		
1. Male	68	45.0
2. Female	83	54.9
Age		
1. Below 18years	15	10.0
2. 18-30 years	31	21.0
3. 31-45 years	48	32.0
4. Above 45 years	57	38.0
Employment status		
1. Student	26	17.0
2. Unemployed	60	40.0
3. Self-employed	25	16.5
4. Wage employed	40	26.5
Education level		
1. Informal	22	15.0
2. Primary	8	5.0
3. Secondary	45	30.0
4. Tertiary	76	50.0

N = 151, Data source, Primary data (2024)

Table 1 showed that the majority of respondents were female, 83(54.9%), whereas the least were male, 58(45%). Most of the participants were above the age of 31 years (70.0%). A significant portion of participants were unemployed, 60(40.0%), while those with tertiary education comprised half of the sample, 76(50.0%), and primary, 8(5%), plus the informal education, 22(15%), were the least. This demographic distribution may influence follow-up compliance, as age, gender, and education level have been linked to patients' health-seeking behaviors.

Common barriers/challenges faced by patients in attending follow-up appointments among patients attending the eye clinic in JRRH.

Table 2: Shows the barriers to follow-up appointments among patients attending the eye clinic in JRRH.

Barriers/challenges	Frequency (n=151)	Percentage (%)
Lack of transportation	63	42.2
Limited knowledge	28	18.6
Financial constraints	30	20.0
Forgetfulness	8	5.0
Difficult getting time off work	22	14.3

N = 151, Data source, Primary data (2024)

The most prevalent barrier identified was a lack of transportation, reported by 63(42.2%) of participants, highlighting logistical challenges in accessing healthcare. Financial constraints were also significant, affecting 20.0%

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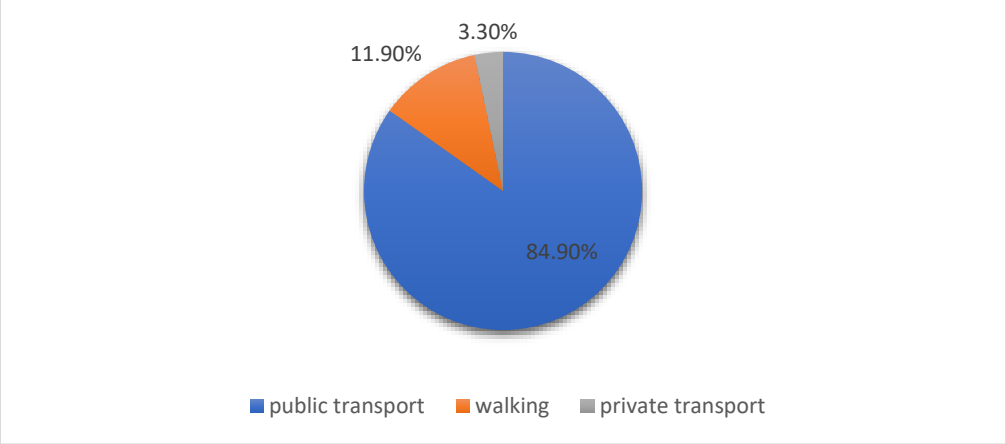
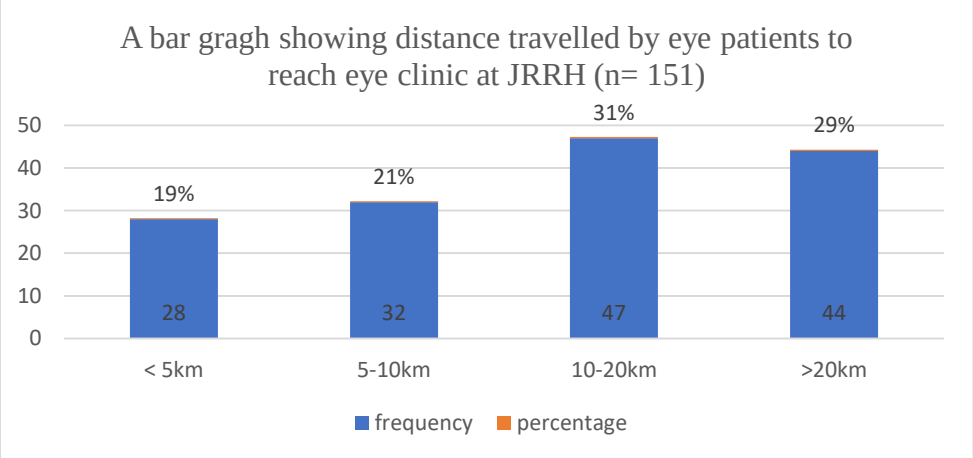
of respondents. Limited knowledge about the importance of follow-up 18.6% and forgetfulness 5% were less frequently cited, suggesting that while awareness is important, physical barriers like transportation and costs are more pressing in this situation.

Figure 1: A pie chart showing the mode of transport used by eye patients to JRRH



The majority of patients (84.9%) relied on public means of transport to reach the eye clinic at JRRH. A smaller percentage used private transport. A smaller percentage of used private transport. This indicates that only a minority have such flexibility, possibly limiting their ability to attend appointments on time. Additionally, 3.3% of patients walked to the eye clinic, which might imply that these individuals lived relatively close

Figure 2: Shows the distance travelled by eye patients to reach the eye clinic at JRRH



The graph shows the distance they travelled to reach the clinic, categorized into four groups as reflected above. The majority of patients, 60.0 %(n=47), travelled more than 10 km to reach the clinic, making this the largest group, with 29.0% traveling over 20 km. This notable distance may contribute to the reported barriers, particularly in terms of transportation.

Effectiveness of reminder systems in improving follow-up compliance among patients attending eye care in JRRH.

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Table 3: Shows the effectiveness of reminder systems in improving follow-up compliance among patients attending eye care at JRRH.

Reminder system type	Compliance rate (%)	Noncompliance rate (%)
No reminder	40	60
SMS reminder	70	30
Phone reminder	85	15
Written reminder	75	25

Phone reminder was most effective, with an 85% compliance rate. Written reminder was also effective, achieving a 75% compliance rate. This might indicate that written communication, such as hand-delivered notes, still has value in maintaining patient engagement, particularly for those without regular access to mobile devices. On the other hand, no reminder showed the lowest compliance rate, with only 40% of patients following through with their appointments.

Discussion

Demographic data factors that influence follow-up compliance among patients attending the eye clinic at JRRH

The demographic data revealed that patients above 45 years old had the highest follow-up compliance (38%), while those below 18 years had the lowest (10%). This agrees with the findings of Shah et al. (2014), who concluded that younger patients were at an increased risk of non-compliance due to factors like a lack of understanding of the disease's seriousness or competing priorities. Additionally, a higher percentage of females participated, reflecting a potential gender difference in health-seeking behavior.

Education level played a significant role, with 50% of respondents having a tertiary education. Those with higher education levels demonstrated better compliance. This study agrees with that of Hussein et al (2015), who found that a high level of education was associated with good compliance, likely due to better health literacy and understanding of medical instructions.

Employment status showed that unemployed individuals constituted the largest group (40%). Financial constraints were a significant barrier, as unemployed patients might lack the resources to attend follow-up appointments. This is consistent with Kizor et al. (2019), who cited cost as a reason for non-uptake of care.

Common barriers/challenges faced by patients in attending follow-up appointments among patients attending the eye clinic in JRRH.

Lack of transportation was the most reported barrier (42.2%). This contributed to delays in seeking treatment or follow-up care. Patients traveling long distances (>10 km constituted 60% of respondents and faced challenges in accessing the eye clinic. This suggests that the clinic serves a wide geographical area, which may indicate limited access to eye care services closer to the patients' locations. This is in agreement with the study by Gupta, which found that distance from the facility significantly affected follow-up adherence (Gupta et al., 2019).

Financial constraints (20%) and limited knowledge (18.6%) were also major barriers. Thompson et al. (2015) identified limited knowledge and difficulty getting time off work as factors influencing non-compliance. Similarly, Miller (2015) noted that lower income contributed to patients missing appointments. Therefore, the study findings agree with previous research.

The mode of transportation further emphasized these barriers, with many patients relying on public transport or traveling long distances, increasing the cost and time required to attend appointments.

Effectiveness of reminder systems in improving follow-up compliance among patients attending eye care in JRRH.

The data indicated that reminder systems significantly improved follow-up compliance. Phone reminders were the most effective (85% compliance) way to remind patients, potentially due to their personalized nature, followed by written reminders (75%) which could have been essential for patients who preferred tangible or printed communication, and later SMS reminders (70%) followed. Patients who received no reminders had the lowest compliance rate (40%). These findings are in agreement with Dong et al. (2023), who observed improved follow-up rates with interventions like written instructions, telephone calls, and mailed letters. Leiby (2021) also found that using patient navigators and social workers improved adherence rates. The effectiveness of phone reminders suggests that personalized communication may enhance patient engagement and commitment to follow-up appointments.

Conclusions

The study concludes that demographic factors such as age, education level, and employment status significantly influence follow-up compliance among patients attending the eye clinic at JRRH. Common barriers include lack of transportation, financial constraints, and limited knowledge about the importance of follow-up care. The implementation

of reminder systems, particularly phone calls, significantly improves compliance rates. Addressing these barriers through targeted interventions can enhance patient adherence to follow-up appointments, leading to better health outcomes and more effective management of eye conditions.

Recommendations

Counseling Sessions, health workers should provide one-on-one counseling to patients, especially those with limited education, to improve understanding of their conditions and improve compliance with appointments.
Patient education and awareness campaigns about eye health and the importance of follow-up care.
The hospital system should establish a system for staff to make personalized phone calls reminding patients of their appointments, and utilize SMS messages for those patients with access to mobile devices and appointment cards to supplement phone reminders for those without cellphones.

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List of Abbreviations

ED	Emergency Department
HBA1c.	HemoglobinA1c
IRB	Institution Review Board
JRRH	Jinja Regional Referral Hospital
Ms.	Miss
OCO	Ophthalmic Clinical Officers
OPD.	Outpatient Department
RCT.	Randomized Control Trial
SOPS.	Standard Operating Procedures
UAHEB	Uganda Allied Health Examination Board
WHO	World Health Organization

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The study received no funding or a grant.

Conflict of interest

The author declared no conflict.

Author contributions

Priscillah Grace Mutesi was the research investigator.
Sylvia Takali supervised the research project.
Isaac Obol Okot supervised the research project.
Michael Kabasa supervised the research project.

Data availability

Data is available upon request.

Informed consent

All the study participants consented to the study

Author Biography

Priscillah Grace Mutesi holds a diploma in Clinical Ophthalmology from the Ophthalmic Clinical Officer's Training School, Jinja.
Sylvia Takali is a tutor at the Ophthalmic Clinical Officer's Training School, Jinja.
Isaac Obol Okot is the Principal at the Ophthalmic Clinical Officer's Training School, Jinja
Michael Kabasa is the Chairman of the Research Committee at the Ophthalmic Clinical Officer's Training School, Jinja

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