American Journal of Biology and Natural Sciences
https://biojournals.us/index.php/AJBNS
ISSN: 2997-7185

An Investigation into Patients' Knowledge, Attitude, and Compliance with the Appointment System in the Outpatient Department of University College Hospital, Ibadan

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Received: 2024, 14, May
Accepted: 2025, 15, Jun
Published: 2025, 16, Jul

Abstract: Missed appointments and poor adherence to scheduled clinic visits remain significant barriers to efficient healthcare delivery in outpatient settings. Appointment systems are designed to optimize patient flow, minimize wait times, and improve patient satisfaction, but their effectiveness is often undermined by patients' knowledge and attitudes. This is particularly relevant in tertiary health institutions where patient load is high and resource planning is critical. This study assessed the level of compliance with the appointment system among patients attending outpatient clinics at the University College Hospital (UCH), Ibadan. It also examined the relationship between respondents' knowledge of the appointment

system and their attitudes, and explored factors influencing appointment adherence. A descriptive cross-sectional study was conducted among 160 outpatients selected using a systematic sampling technique. Data were collected through a structured questionnaire and analyzed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics such as frequencies and percentages summarized the data, while Chi-square tests were used to determine the association between knowledge levels and patients' attitudes. Statistical significance was set at $p<0.05$. Most respondents (95%) adhered to their scheduled appointments, and 87.5% reported arriving before their scheduled time. Despite this, 37.5% admitted to occasionally visiting outside their appointment dates, citing complaints and emergencies as major reasons. Rescheduling was experienced by 39.4% of patients, largely due to public holidays and health worker strikes. Statistically significant associations were found between good knowledge of the appointment system and positive attitudinal indicators, such as arriving early ($p=0.008$), remembering appointment dates ($p=0.022$), and not missing appointments due to social ($p=0.002$) or religious ($p=0.010$) obligations. The findings underscore the critical role of patient knowledge in promoting adherence to outpatient appointment systems. Although compliance is high at UCH, Ibadan, there is a need for targeted educational interventions and institutional improvements to address systemic challenges and sustain patient engagement.

Enhancing knowledge and refining scheduling processes could significantly improve healthcare efficiency and patient satisfaction.

Keywords: Appointment system, outpatient care, patient compliance, health service utilization, University College Hospital Ibadan, patient knowledge, scheduling adherence

Background

Healthcare delivery systems worldwide are under increasing pressure to optimize the quality of service while ensuring efficiency and cost-effectiveness. In recent years, the rise in patient access to healthcare facilities, particularly in outpatient departments, has posed challenges related to patient flow management, resource allocation, and overall service delivery (Kruse et al., 2020). Among the several approaches adopted to manage this increasing demand, the use of appointment systems stands out as a critical component in enhancing healthcare efficiency and patient satisfaction. An appointment system facilitates structured scheduling of clinical consultations, thereby serving as a vital tool for reducing congestion, managing clinical workload, and improving access to care (Gupta & Denton, 2021).

Traditionally, appointment systems were designed with a bias toward minimizing physician idle time, often at the expense of patients' waiting time. However, in today's patient-centered healthcare environment, this approach has been reconsidered due to the growing emphasis on consumer satisfaction, equitable access, and service quality. Studies have shown that prolonged waiting times remain a major source of dissatisfaction among patients and may negatively influence their perception of care, willingness to return, and overall compliance with treatment (Ozcan et al., 2019). As such, modern healthcare systems now prioritize the development of appointment models that strike a balance between provider efficiency and patient convenience (Liu et al., 2020). The implementation of effective outpatient appointment systems is particularly critical in developing countries, where health facilities frequently contend with high patient volumes, insufficient workforce, and systemic inefficiencies. In Nigeria, for example, the lack of optimized appointment scheduling has contributed to overcrowded outpatient departments, inefficient resource use, and extended patient waiting times (Afolabi et al., 2022). These inefficiencies are often exacerbated by operational challenges such as poor health information management, inadequate technological support, inconsistent patient behavior, and infrastructural limitations (Ibrahim et al., 2023). Despite attempts at digital transformation and service decentralization in tertiary institutions like the University College Hospital (UCH), Ibadan, waiting time and poor appointment compliance continue to hinder healthcare delivery and patient satisfaction.

Moreover, the success of any appointment system is strongly influenced by patients' knowledge, attitude, and practice regarding the system. Studies indicate that patients who understand the value of appointment scheduling are more likely to comply, arrive on time, and engage constructively with hospital processes (Abdulkareem et al., 2021). Conversely, lack of awareness, low health literacy, or negative perceptions of healthcare systems can result in missed appointments, delayed services, and strained provider-patient relationships (Oladipo et al., 2022). Therefore,

understanding patient behavior within the framework of the appointment system is essential for healthcare administrators seeking to enhance outpatient service delivery.

In light of these dynamics, the need to examine the effectiveness of appointment systems and patients' compliance in tertiary health institutions becomes imperative. Assessing patients' knowledge, attitude, and practice towards these systems offers valuable insights into service gaps and can inform strategic interventions to improve healthcare delivery. At a critical institution such as UCH Ibadan, which serves as a referral and training center, these findings have the potential to influence policy decisions and optimize operational workflows that align with global standards in outpatient care.

Materials and Methods

Research Design

A descriptive cross-sectional design was employed to assess patients' knowledge, attitude, and compliance with the outpatient appointment system at the University College Hospital (UCH), Ibadan. This design is suitable for obtaining a snapshot of variables at a specific point in time and is appropriate for describing existing phenomena within a population.

Study Area

The study was conducted at the University College Hospital (UCH), Ibadan**,** which is located in Ibadan North Local Government Area, Oyo State, in the southwestern region of Nigeria. UCH is Nigeria's premier tertiary health institution and serves as a referral center for primary and secondary health facilities in Oyo State and neighboring states. It is affiliated with the University of Ibadan and plays a central role in the training of medical and allied health professionals across Nigeria and West Africa.

Ibadan, the capital city of Oyo State, is one of the largest cities in sub-Saharan Africa by landmass and population. It is a major urban center with a diverse population that includes individuals from various ethnic, educational, and socioeconomic backgrounds. The city is served by multiple public and private health facilities, but UCH remains the most comprehensive in terms of scope of services and specialty care. Within the hospital, the study focused on selected outpatient departments which provide ambulatory care services to patients not requiring admission. These included the General Outpatient Department (GOPD)**,** Medical Outpatient Department (MOP)**,** Surgical Outpatient Department (SOP)**,** and the Ear, Nose, Throat and Eye Clinics (ENT & Eye)**.** These clinics operate on specific days and serve a wide range of patients presenting with chronic and acute health conditions. The outpatient clinics are often the first point of contact for patients and are crucial for early diagnosis, continuity of care, and management of both communicable and non-communicable diseases. The choice of UCH Ibadan as the study site is justified by its large and diverse patient population, structured appointment system, and its representation of outpatient service delivery in a tertiary health facility setting in Nigeria.

Study Population

The study population comprised patients attending outpatient clinics at UCH, Ibadan. Clinics included in the study were the Medical Outpatient Clinic (MOP), Surgical Outpatient Clinic (SOP), Ear, Nose and Throat and Eye Clinic (ENT & Eye), and the General Outpatient Department (GOPD).

Sample Size and Sampling Technique

A total of 160 respondents, comprising both male and female patients, participated in the study. A multi-stage sampling technique was employed to select participants. In the first stage, four outpatient departments were purposively selected: the General Outpatient Department (GOPD), Medical Outpatient (MOP), Surgical Outpatient (SOP), and Ear, Nose, and Throat & Eye (ENT & Eye) clinics. In the second stage, specific clinic days within each department were also purposively chosen. For the GOPD, the general clinic was selected; for the MOP, dermatology

and cardiology clinics were included; for the SOP, gastrointestinal and fracture clinics were chosen; and for the ENT & Eye department, glaucoma and retina clinics were selected. In the final stage, convenience sampling was used to recruit patients within each selected clinic. Forty patients were selected from each department, resulting in a total of 160 participants for the study.

Instrument for Data Collection

Data were collected using a structured questionnaire comprising both open- and closed-ended questions. The instrument was designed to capture relevant information across four key areas. The first section focused on the socio-demographic characteristics of the respondents. The second section assessed their knowledge of the outpatient appointment system. The third section explored their attitudes towards the appointment system, while the fourth section evaluated their level of compliance with scheduled appointments. Content validity was ensured through expert review and approval by the study supervisor. The instrument was also pre-tested to identify ambiguities and ensure clarity. Reliability was confirmed using the Statistical Package for Social Sciences (SPSS), where internal consistency checks were conducted. The final version of the questionnaire was refined based on feedback received.

Method of Data Analysis

Collected data were coded, cleaned, and analyzed using SPSS version 20.0. Descriptive statistics such as frequencies, percentages, and charts were used to present socio-demographic characteristics and response distributions. Knowledge was scored by assigning:2 points for each correct response; 0 points for incorrect responses Knowledge scores ranged from 0–14, with scores of 0–6 classified as *poor knowledge*, and scores of 7–14 classified as *good knowledge*. Inferential statistics, particularly Chi-square tests, were employed to assess associations between socio-demographic characteristics and knowledge, attitude, and compliance levels.

Ethical Considerations

Ethical approval for this study was obtained from the management of the University College Hospital, Ibadan. The research was conducted in compliance with ethical standards involving human participants. Informed consent was obtained from all participants, and confidentiality was assured. Respondents were informed of their right to decline or withdraw from the study at any point without repercussions. Data collected were used solely for academic purposes and handled with strict confidentiality.

Results

Table 1: Socio-Demographic Characteristics of Respondents

Variable	Category	Frequency (N = 160)	Percentage (%)
Age Group (years)	15–19	12	7.5
	20–24	26	16.3
	25–29	21	13.1
	30–34	19	11.9
	35 and above	82	51.2
Sex	Male	68	42.5
	Female	92	57.5
Marital Status	Single	50	31.3
	Married	102	63.8
	Widowed/Divorced	8	5.0
Religion	Christianity	114	71.3
	Islam	46	28.7
Educational Level	No Formal Education	7	4.4

	Primary	11	6.9
	Secondary (SSCE)	21	13.1
	Tertiary	121	75.6
Ethnic Group	Yoruba	137	85.6
	Igbo	14	8.7
	Hausa	5	3.1
	Others	4	2.5
Employment Status	Employed (Public/Private)	82	51.3
	Self-employed	41	25.6
	Unemployed	22	13.8
	Student	15	9.3
Area of Residence	Urban	108	67.5
	Semi-Urban	37	23.1
	Rural	15	9.4

The socio-demographic characteristics of the 160 respondents revealed a diverse distribution across age, sex, marital status, religion, education, ethnicity, employment status, and area of residence. The age distribution showed that the majority of respondents (51.2%) were aged 35 years and above, followed by those aged 20–24 years (16.3%), 25–29 years (13.1%), 30–34 years (11.9%), and 15–19 years (7.5%). In terms of sex, 57.5% were female, while 42.5% were male. Most respondents were married, accounting for 63.8% of the total, while 31.3% were single, and 5.0% were widowed or divorced. With regard to religion, Christianity was the predominant religion (71.3%), followed by Islam (28.7%). Educational attainment among respondents indicated that a large proportion (75.6%) had tertiary education, 13.1% had completed secondary school, 6.9% had primary education, and 4.4% had no formal education. The ethnic composition was predominantly Yoruba (85.6%), with Igbo (8.7%), Hausa (3.1%), and other ethnic groups (2.5%) making up the remainder. Concerning employment status, 51.3% of the respondents were employed in either the public or private sector, 25.6% were self-employed, 13.8% were unemployed, and 9.3% were students. Finally, the majority of respondents (67.5%) resided in urban areas, while 23.1% lived in semi-urban areas and 9.4% in rural communities.

Table 2: Knowledge of Patients on Appointment System

Knowledge-Related Variable	Category	Frequency (N = 160)	Percentage (%)
Awareness of the appointment system	Yes	122	76.3
	No	28	17.5
	Not sure	10	6.2
Source of information about appointment system	Hospital staff	102	63.8
	Radio	8	5.0
	Internet	3	1.9
	Television	1	0.6
	Friends/Family	6	3.7
	No response	40	25.0
Correct understanding of appointment system	Yes – Booking a specific time with a doctor	128	80.0
	No – Booking only during weekends	8	5.0

	No – Booking within two-year interval	3	1.9
	No – Booking on public holidays	1	0.6
	No idea	20	12.5
Belief that appointment system increases hospital attendance	Yes	85	53.1
	No	39	24.4
	Not sure	36	22.5
Belief that appointment system allows patients to come at any time	Yes	42	26.3
	No	92	57.5
	Not sure	26	16.2
Perception that appointment system increases waiting time	Yes	70	43.8
	No	65	40.6
	Not sure	25	15.6
Perception that appointment system enhances orderliness	Yes	128	80.0
	No	12	7.5
	Not sure	20	12.5
Belief that ‘African time’ is acceptable in appointment keeping	Yes	38	23.8
	No	98	61.3
	Not sure	24	15.0
Knowledge that patients are responsible for recording their next appointment	Yes	112	70.0
	No	15	9.4
	Not sure	33	20.6
Knowledge of where to find next appointment details	Appointment card	132	82.5
	Nurse's station or registry	12	7.5
	Unaware	16	10.0
Knowledge of consequences of missing appointments	Yes – Delayed care or rescheduling	104	65.0
	No	32	20.0
	Not sure	24	15.0

Out of the 160 respondents, a significant majority (76.3%) reported awareness of the outpatient appointment system, while 17.5% indicated they had no knowledge of it, and 6.2% were uncertain. When asked about the source of their information, the majority (63.8%) identified hospital staff as the primary medium through which they learned about the appointment system, whereas only a few mentioned other channels such as radio (5.0%), internet (1.9%), television (0.6%), and friends or family (3.7%). Notably, 25.0% of respondents did not provide a response to this item. With respect to conceptual understanding, 80.0% correctly defined the appointment system as the process of booking a specific time with a healthcare provider. However, misconceptions were observed, with 5.0% believing it involved bookings only on weekends, 1.9% thinking it referred to a biannual schedule, 0.6% associating it with public holidays, and 12.5%

admitting to having no idea. Perceptions of the effectiveness and functionality of the appointment system varied among respondents. Just over half (53.1%) believed that the system contributes to increased hospital attendance, while 24.4% disagreed and 22.5% remained unsure. A majority of respondents (57.5%) disagreed with the notion that the appointment system allows patients to visit the hospital at any time, whereas 26.3% believed it does, and 16.2% expressed uncertainty. Regarding waiting time, 43.8% felt the appointment system increases it, while 40.6% believed it does not, and 15.6% were unsure. A large proportion of respondents (80.0%) agreed that the appointment system enhances patient orderliness, while 7.5% disagreed and 12.5% did not have a definitive opinion.

Cultural attitudes towards punctuality were also examined, and while 61.3% rejected the idea that "African time" (a colloquial term for habitual lateness) is acceptable in the appointment system, 23.8% considered it acceptable and 15.0% were undecided. Additionally, 70.0% of the participants acknowledged that it is the patient's responsibility to document their next appointment, although 9.4% disagreed and 20.6% were not certain. When asked about where to locate appointment details, 82.5% correctly cited the appointment card, 7.5% referred to the nurse's station or hospital registry, and 10.0% were unaware of where such information could be found. Finally, the majority of respondents (65.0%) recognized that missing an appointment could result in delayed care or the need for rescheduling, while 20.0% did not perceive any consequence, and 15.0% remained uncertain.

Table 3: Attitudes of Patients Toward the Appointment System

Attitude-Related Statement	Response Category	Frequency (N = 160)	Percentage (%)
I am satisfied with the appointment schedule given to me	Agree	124	77.5
	Disagree	20	12.5
	Undecided	16	10.0
I do not keep to my appointment because I am not attended to at the exact time	Agree	25	15.6
	Disagree	120	75.0
	Undecided	15	9.4
I skip my appointment if it coincides with a social event (party or ceremony)	Agree	33	20.6
	Disagree	105	65.6
	Undecided	22	13.8
I miss my hospital visit if it coincides with a religious activity (church/mosque)	Agree	36	22.5
	Disagree	110	68.8
	Undecided	14	8.7
My job schedule allows me to keep medical appointments	Agree	91	56.9
	Disagree	45	28.1
	Undecided	24	15.0
I usually remember the date of my next clinic appointment	Agree	128	80.0
	Disagree	12	7.5
	Undecided	20	12.5
I arrive at the clinic before my scheduled appointment time to be seen early	Agree	112	70.0
	Disagree	33	20.6
	Undecided	15	9.4

I consider appointment reminders (calls/SMS) helpful in ensuring attendance	Agree	130	81.3
	Disagree	14	8.7
	Undecided	16	10.0
I find the appointment system stressful to follow	Agree	22	13.8
	Disagree	118	73.8
	Undecided	20	12.5

The assessment of patients' attitudes toward the appointment system revealed a generally positive disposition, with a substantial majority of respondents expressing satisfaction with their allocated appointment times. Specifically, 77.5% of the patients agreed that they were satisfied with the schedule given to them, while 12.5% disagreed and 10.0% remained undecided. However, when asked whether delays in being attended to discouraged them from following their appointments, 15.6% of the participants agreed that they did not keep to appointments due to not being seen at the exact scheduled time, although a significant majority (75.0%) disagreed with this notion, indicating a level of tolerance or expectation of minor delays within the system.

Regarding competing social obligations, 20.6% admitted to missing appointments when they clashed with social events such as parties or ceremonies, and 22.5% reported that religious programs could interfere with their clinic attendance. Nevertheless, the majority (65.6% and 68.8%, respectively) reported that these factors did not deter them from keeping their appointments, suggesting that while cultural and social activities can influence health-seeking behavior, they are not overriding barriers for most patients.

Work-related constraints were also considered, with 56.9% of the respondents indicating that their job schedule allowed them to adhere to medical appointments, while 28.1% stated otherwise, highlighting that a notable minority may struggle with time-off or flexibility at work. Memory retention regarding appointment dates appeared to be strong among the study population, as 80.0% affirmed that they usually remember their next clinic date, although a smaller proportion (7.5%) admitted forgetting, and 12.5% were uncertain. Punctuality was also explored, and it was encouraging to find that 70.0% of the respondents reported arriving at the clinic before their scheduled time in the hope of being seen early. Furthermore, 81.3% of the participants perceived that appointment reminders via calls or SMS were useful in facilitating their compliance with appointments, reinforcing the potential value of communication technologies in strengthening health system engagement. On the contrary, only a small proportion of respondents (13.8%) found the appointment system stressful to comply with, while a substantial majority (73.8%) did not consider it burdensome, and 12.5% were neutral.

Table 4: Compliance with the Appointment System Among Patients

Compliance-Related Statement	Response Category	Frequency	Percentage (%)
Do you usually attend your medical appointment as scheduled?	Yes	152	95.0
	No	8	5.0
If no, what is the main reason for missing your appointment?	Long distance	2	1.3
	Academic/work-related issues	3	1.9
	Transportation difficulty	3	1.9
What period of the day is your typical appointment scheduled?	Morning	112	70.0

	Afternoon	5	3.1
	No specific response	43	26.9
Do you arrive at the clinic before your scheduled appointment time?	Yes	140	87.5
	No	18	11.3
	No response	2	1.2
If no, what prevents you from arriving early?	Perceive it's unnecessary	3	1.9
	Academic/work obligations	4	2.5
	Transportation issues	2	1.3
	No response	151	94.4
Do you sometimes visit the clinic outside your scheduled appointment date?	Yes	60	37.5
	No	95	59.4
	No response	5	3.1
If yes, what is the reason for your unscheduled visit?	Emergency	24	15.0
	Need to lodge complaint	30	18.8
	Doctor not available before	2	1.3
	No response	104	65.0
Are you usually attended to at your scheduled appointment time?	Yes	133	83.1
	No	20	12.5
	No response	7	4.4
Have you ever had your appointment rescheduled?	Yes	63	39.4
	No	93	58.1
	No response	4	2.5
If yes, what was the reason for the rescheduling?	Public holiday	11	6.9
	Health worker strike	16	10.0
	Personal travel	7	4.4
	Doctor unavailable	3	1.9
	Pending lab test	4	2.5
	Poor staff coordination	3	1.9
	No response	116	72.5
Do you bring your appointment reference card on clinic days?	Yes	156	97.5
	No	4	2.5
Do you usually confirm your next appointment before leaving the clinic?	Yes	139	86.9
	No	15	9.4
	Not sure	6	3.7

Do you find it easy to understand the appointment details written on your reference card?	Yes	142	88.8
	No	12	7.5
	Not sure	6	3.7

The data presented in Table 4 provides a comprehensive overview of patients' compliance with the appointment system. A substantial majority of the respondents (95.0%) reported that they usually attend their medical appointments as scheduled, indicating a high level of adherence to set clinical schedules. Only a small proportion (5.0%) admitted to missing appointments, with reasons including long distances (1.3%), academic or work-related commitments (1.9%), and transportation difficulties (1.9%). Regarding the timing of appointments, 70.0% stated that their appointments were scheduled in the morning, while only 3.1% indicated afternoon schedules; 26.9% did not specify a particular time. Most patients (87.5%) affirmed that they arrive at the clinic before their scheduled appointment time, whereas 11.3% did not, and 1.2% gave no response. Among those who did not arrive early, perceived lack of necessity (1.9%), academic or work commitments (2.5%), and transportation challenges (1.3%) were cited, though the overwhelming majority (94.4%) did not provide a response to this item, suggesting either limited relevance or omission.

Additionally, 37.5% of the participants reported visiting the clinic outside their scheduled appointment date, often due to emergencies (15.0%), the need to lodge complaints (18.8%), or because the doctor was unavailable on the initial date (1.3%), although 65.0% did not respond to this question. When asked about punctuality in receiving care at their scheduled time, 83.1% affirmed they were usually attended to as scheduled, while 12.5% were not, and 4.4% offered no response. Appointment rescheduling had been experienced by 39.4% of the patients, with causes such as public holidays (6.9%), health worker strikes (10.0%), personal travel (4.4%), doctor unavailability (1.9%), pending laboratory tests (2.5%), and poor staff coordination (1.9%). However, a substantial number (72.5%) did not provide reasons for rescheduling, possibly indicating limited experience or reluctance to disclose. Almost all respondents (97.5%) confirmed that they brought their appointment reference cards during clinic visits, demonstrating a strong habit of appointment tracking. Furthermore, 86.9% reported that they confirmed their next appointment before leaving the clinic, indicating effective communication and planning, although a minority either did not (9.4%) or were uncertain (3.7%). Lastly, the majority (88.8%) found the appointment details written on the reference card easy to understand, while 7.5% did not, and 3.7% were unsure, highlighting the general clarity and usability of the appointment documentation system.

Table 5: Association Between Respondents' Knowledge of the Appointment System and Their Attitude (N = 160)

Attitudinal Statement	Response	Poor Knowledge (%)	Good Knowledge (%)	Total (%)	χ^2	p-value
I am satisfied with the appointment scheduling process	Agree	33 (20.6%)	74 (46.3%)	107 (66.9%)	3.982	0.137
	Disagree	4 (2.5%)	18 (11.3%)	22 (13.8%)		
	Undecided	7 (4.4%)	5 (3.1%)	12 (7.5%)		
I sometimes miss appointments because I'm not attended to promptly	Agree	10 (6.3%)	14 (8.8%)	24 (15.0%)	13.874	0.001*
	Disagree	26 (16.3%)	84 (52.5%)	110		

				(68.8%)		
	Undecided	8 (5.0%)	6 (3.8%)	14 (8.8%)		
I skip appointments when they fall on days with family or social events	Agree	14 (8.8%)	17 (10.6%)	31 (19.4%)	12.763	0.002*
	Disagree	20 (12.5%)	72 (45.0%)	92 (57.5%)		
	Undecided	10 (6.3%)	6 (3.8%)	16 (10.0%)		
I miss appointments when they clash with religious obligations	Agree	11 (6.9%)	20 (12.5%)	31 (19.4%)	9.814	0.010*
	Disagree	25 (15.6%)	67 (41.9%)	92 (57.5%)		
	Undecided	8 (5.0%)	5 (3.1%)	13 (8.1%)		
My job or academic schedule allows me to keep appointments	Agree	22 (13.8%)	58 (36.3%)	80 (50.0%)	6.671	0.043*
	Disagree	11 (6.9%)	27 (16.9%)	38 (23.8%)		
	Undecided	11 (6.9%)	31 (19.4%)	42 (26.3%)		
I always remember my next appointment date	Agree	29 (18.1%)	78 (48.8%)	107 (66.9%)	7.593	0.022*
	Disagree	11 (6.9%)	24 (15.0%)	35 (21.9%)		
	Undecided	8 (5.0%)	10 (6.3%)	18 (11.3%)		
I arrive early at the clinic so I can be seen on time	Agree	27 (16.9%)	65 (40.6%)	92 (57.5%)	9.729	0.008*
	Disagree	8 (5.0%)	20 (12.5%)	28 (17.5%)		
	Undecided	13 (8.1%)	5 (3.1%)	18 (11.3%)		
I rely on reminders (SMS, call, card) to keep my appointments	Agree	24 (15.0%)	60 (37.5%)	84 (52.5%)	5.842	0.054
	Disagree	15 (9.4%)	30 (18.8%)	45 (28.1%)		
	Undecided	9 (5.6%)	22 (13.8%)	31 (19.4%)		

Table 5 presents the association between respondents' knowledge of the appointment system and their attitudes towards appointment adherence. Overall, a higher level of knowledge about the appointment system appears to be significantly associated with more positive attitudinal responses. Although 66.9% of respondents expressed satisfaction with the appointment scheduling process, the association between knowledge and satisfaction was not statistically significant (χ^2 = 3.982, p = 0.137). However, respondents who reported good knowledge were significantly less likely to agree that they miss appointments due to delays in being attended to, with a statistically significant association observed (χ^2 = 13.874, p = 0.001). Similarly, a significant relationship was found between knowledge level and the tendency to skip appointments for social or family events (χ^2 = 12.763, p = 0.002), as those with good knowledge were more likely to disagree with this behavior.

Further, a significant association existed between knowledge and missing appointments due to religious obligations (χ^2 = 9.814, p = 0.010), with a larger proportion of knowledgeable respondents disagreeing with the statement. The nature of respondents' work or academic schedules also showed a significant influence (χ^2 = 6.671, p = 0.043), where those with good knowledge more frequently reported that their schedule permitted them to keep appointments.

Additionally, knowledge level significantly influenced the ability to remember appointment dates ($\chi^2 = 7.593$, $p = 0.022$), and respondents with good knowledge were also more likely to arrive early at the clinic ($\chi^2 = 9.729$, $p = 0.008$), indicating that knowledge may facilitate punctuality and preparedness. While more than half of the respondents (52.5%) agreed that they relied on reminders such as SMS, calls, or appointment cards to keep their appointments, the association between knowledge and use of reminders approached but did not reach statistical significance ($\chi^2 = 5.842$, $p = 0.054$).

Discussion

The findings from this study highlight a significant relationship between patients' knowledge of the appointment system and their subsequent behaviors and attitudes towards appointment adherence in outpatient clinics. This association is crucial as it underpins the role of health literacy in determining the effectiveness of healthcare delivery systems, particularly in low-resource settings such as Nigeria. Respondents with good knowledge of the appointment system were significantly more likely to arrive early at the clinic, remember their scheduled dates, and attend appointments despite potential competing commitments. These outcomes reflect the positive influence of health system orientation and patient education on health-seeking behaviors. Consistent with the present study, Mwanga, Ngalya, and Maduhu (2023) reported that outpatient clients in Tanzanian clinics who were adequately informed about scheduling procedures demonstrated higher punctuality and lower default rates compared to those who lacked such knowledge. This supports the broader view that enhancing patient knowledge fosters better engagement with the health system and promotes continuity of care. Furthermore, this study showed that poor knowledge of the appointment system was significantly associated with non-compliance behaviors, such as missing appointments due to scheduling conflicts with religious or social activities, or dissatisfaction with clinic waiting times. These findings are supported by previous studies such as that of Jalloh, Koroma, and Bangura (2022), who identified low health literacy and inadequate orientation as key contributors to missed appointments in outpatient clinics across Sierra Leone. Similarly, Otieno and Achieng (2021) observed that a lack of understanding of clinic operations and insufficient staff-patient communication were major deterrents to appointment adherence in urban Kenyan hospitals. While the majority of respondents in the current study showed a high level of compliance with appointments (95.6%), systemic barriers were consistently reported, including the rescheduling of appointments due to public holidays, staff strikes, and long waiting times. These disruptions pose challenges to the efficiency and reliability of the appointment system and ultimately affect patients' satisfaction and trust in the healthcare process. Afolabi and Ojo (2020) also emphasized these systemic issues in their study of tertiary hospitals in southwestern Nigeria, pointing out that health system inefficiencies often discourage patients from maintaining regular appointments, especially in facilities that lack adequate workforce or coordination structures.

An important aspect of the study is the role of reminders (e.g., SMS, phone calls, appointment cards), which were recognized by a substantial proportion of respondents as beneficial tools in keeping track of appointment dates. Although the association between reminder usage and knowledge was not statistically significant in this study ($p = 0.054$), the practical implication remains relevant. Reminders serve as cognitive aids that compensate for forgetfulness and busy schedules, particularly in urban settings where patients may be overwhelmed by competing daily obligations. This aligns with the work of Adeleye and Salami (2022), who demonstrated that implementing structured reminder systems in outpatient settings in Lagos significantly improved appointment attendance rates. This study also underscores the importance of integrating sociocultural realities into appointment management. Findings revealed that appointments clashing with religious or family commitments led to a significant number of missed visits. This reflects the deeply embedded influence of culture, religion, and social expectations on health behavior, a theme echoed by Ndukwu, Alabi, and Omoigberale (2022), who emphasized the necessity of flexible appointment scheduling in Nigerian health facilities to accommodate such

socio-cultural dynamics.

Moreover, respondents who reported job or academic conflicts as barriers to attending appointments point to the need for more patient-centered scheduling strategies. These could include offering appointment slots outside traditional working hours or using telehealth alternatives where feasible. The growing digital health infrastructure, as discussed by Eneh and Ezeani (2023), offers promising avenues to modernize appointment systems and improve flexibility without compromising service quality. Additionally, the study's findings emphasize that knowledge does not exist in a vacuum; it is often reinforced by repeated interactions with healthcare providers, the clarity of communication during visits, and the consistency of system-wide practices. As such, strengthening patient-provider communication and developing standardized orientation protocols at registration points could further enhance patient understanding and engagement. Greene and Hibbard (2012) emphasized that activated patients—those who possess the motivation and knowledge to manage their health—tend to experience better outcomes, improved satisfaction, and more efficient service utilization. Taken together, these findings suggest that optimizing the appointment system in Nigerian outpatient settings requires a dual approach: patient-centered educational strategies to boost appointment literacy, and structural reforms to address system-level inefficiencies. Policymakers and hospital administrators must prioritize investments in digital technologies, consistent staff training, and patient communication tools to foster a more responsive and reliable outpatient care environment.

Conclusion

This study underscores the significant relationship between patients' knowledge of the appointment system and their attitudes and behaviors toward appointment adherence in outpatient settings. It reveals that patients with a good understanding of the scheduling process are more likely to exhibit positive appointment-keeping behaviors, such as timely arrival, adherence despite personal or social obligations, and a reduced likelihood of missed visits. Conversely, poor knowledge is associated with dissatisfaction, forgetfulness, and increased susceptibility to disruptions caused by systemic inefficiencies such as long wait times, rescheduling, and inadequate communication. The findings highlight the dual need for both patient-centered educational interventions and system-level reforms. Educating patients about the appointment process, using reminders, and fostering effective communication between health providers and clients can enhance adherence. Equally important is the optimization of operational factors such as staff availability, efficient scheduling, and reduction of wait times, which collectively influence patients' satisfaction and trust in the health system. Therefore, to improve outpatient care delivery and minimize missed appointments, health institutions must prioritize the implementation of integrated appointment management systems that combine robust patient education, flexible scheduling options, and digital reminder tools. Policy-makers and hospital administrators are urged to invest in sustainable health system improvements that consider both patient knowledge and structural efficiency as foundational components of quality healthcare delivery. Further research exploring the scalability of digital appointment solutions and their long-term impact on health outcomes in diverse clinical settings is recommended.

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