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# **Determinants Of Punctuality Among Medical Laboratory Students Attending Laboratory Postings In Tertiary Health Institution: A Cross-Sectional Study In Nigeria**

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## **ABSTRACT**

Punctuality is an essential professional attribute in healthcare training, particularly during laboratory postings where timely participation in laboratory activities is necessary for effective learning and service delivery. However, several environmental and behavioral factors may influence students' ability to report early for clinical training. This study assessed the determinants of punctuality among Medical Laboratory students during laboratory postings. A descriptive cross-sectional study design was adopted. Data were collected from 200 Medical Laboratory students using a structured self-administered questionnaire. The questionnaire captured information on socio-demographic characteristics, punctuality patterns, and perceived factors influencing lateness. Data were analyzed using Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics were used to summarize the data, while Chi-square test and binary logistic regression analysis were used to determine associations and predictors of lateness. Statistical significance was set at  $p < 0.05$ . A high prevalence of lateness was observed, with 73.0% of respondents reporting that they often arrive late to laboratory postings. Mean ranking of perceived challenges indicated that distance from hospital (Mean = 4.52) was the most prominent factor influencing lateness, followed by academic workload (Mean = 3.57) and transportation difficulties (Mean = 3.53). Chi-square analysis showed that age was significantly associated with lateness ( $p = 0.009$ ), whereas gender, school, and last rotation were not significantly associated with lateness. Significant associations were also observed between lateness and several perceived challenges, including time factor (alarm) ( $p = 0.005$ ), transportation difficulties ( $p = 0.026$ ), distance from hospital ( $p = 0.006$ ), academic workload ( $p = 0.040$ ), motivation issues ( $p = 0.012$ ), and poor supervision ( $p = 0.029$ ). Logistic regression analysis identified time factor (alarm) ( $p = 0.025$ ), transportation difficulties ( $p = 0.014$ ), distance from hospital ( $p = 0.043$ ), motivation issues ( $p = 0.001$ ), and academic workload ( $p = 0.027$ ) as significant predictors of lateness among the students. Punctuality among Medical Laboratory students during laboratory postings is influenced by a combination of environmental, academic, and behavioral factors. Addressing transportation barriers, reducing commuting distance, improving time management, and strengthening supervision may help enhance punctuality and improve the effectiveness of laboratory training.

**Keywords:** Punctuality, Medical Laboratory Students, Laboratory Postings, Time Management, Medical Education, Nigeria

## INTRODUCTION

Punctuality is widely regarded as a fundamental component of professionalism, discipline, and efficiency in both academic and professional environments. In healthcare settings, punctuality is particularly important because laboratory activities are highly time-dependent and require coordinated interaction among healthcare professionals. Timely attendance ensures effective patient management, smooth laboratory workflow, and optimal utilization of healthcare resources<sup>15</sup>. For students undergoing laboratory training, punctuality is not only a professional expectation but also a critical factor that determines the quality of practical learning and skill acquisition.

Medical Laboratory Science education combines theoretical instruction with extensive laboratory training in hospital laboratories. Laboratory postings provide students with the opportunity to apply theoretical knowledge to real clinical situations, develop diagnostic competencies, and familiarize themselves with laboratory equipment and procedures. During these clinical rotations, students participate in routine laboratory activities such as specimen collection, sample processing, laboratory quality control, diagnostic testing, and interpretation of laboratory results<sup>18</sup>. Therefore, punctual attendance during laboratory postings is essential for maximizing exposure to laboratory procedures and ensuring effective clinical training.

Professional training in healthcare disciplines places strong emphasis on punctuality because healthcare services often operate within strict schedules. Laboratory diagnostic services play a crucial role in patient management, as laboratory results influence approximately 60–70% of clinical decisions<sup>8</sup>. Consequently, laboratory operations must be timely and efficient to ensure prompt diagnosis and treatment of patients. Students who arrive late to laboratory postings may miss important diagnostic procedures, morning briefings, or specimen processing sessions, thereby limiting their learning opportunities and potentially disrupting laboratory workflow.

Despite the recognized importance of punctuality in laboratory education, studies have shown that students in health-related disciplines often experience challenges that affect their ability to attend clinical sessions on time. These challenges may include transportation difficulties, long commuting distances between residence and hospital facilities, financial constraints, academic workload, and personal responsibilities<sup>1</sup>. Environmental factors such as poor transportation infrastructure, traffic congestion, and inadequate student accommodation may further exacerbate lateness among students in developing countries<sup>3</sup>.

Research has also indicated that lateness among university students may result from behavioral and motivational factors, including poor time management, lack of awareness of professional expectations, and fatigue resulting from academic pressure<sup>7</sup>. In clinical training environments, repeated lateness may negatively affect students' learning experiences and may also reflect poorly on their professional development.

In Nigeria and other developing countries, healthcare training institutions often rely on teaching hospitals for the clinical education of health science students. However, logistical challenges such as transportation difficulties and long distances between university campuses and hospital facilities may affect students' punctuality during clinical postings<sup>12</sup>. Understanding these challenges is important because punctuality during clinical training helps students develop professional discipline and prepares them for the time-sensitive nature of healthcare practice.

Several studies have emphasized that identifying the barriers to punctuality among health science students can help educational institutions develop effective strategies to improve attendance and enhance learning outcomes<sup>13</sup>. Such strategies may include improved scheduling systems, provision of student accommodation near clinical training centers, and reinforcement of professional expectations during clinical education.

Given the importance of punctuality in healthcare training and the potential impact of lateness on students' clinical learning, it is necessary to investigate the factors that influence punctuality among Medical Laboratory students during laboratory postings. Understanding these factors will provide valuable insights that can inform policies and interventions aimed at improving punctuality and strengthening clinical training programmes.

Therefore, this study seeks to assess the determinants of punctuality among Medical Laboratory students attending laboratory postings at Tertiary Health Institution in Nigeria.

### **1.2 Statement of the Problem**

Laboratory posting is an essential component of Medical Laboratory education because it allows students to acquire practical skills necessary for laboratory diagnosis and patient care. During laboratory postings, students are expected to report early to their designated laboratory units to participate in routine laboratory activities and observe diagnostic procedures. However, anecdotal observations from laboratory supervisors and clinical instructors suggest that some students occasionally arrive late to their laboratory postings.

Lateness during laboratory postings may have several negative consequences. Students who arrive late may miss important laboratory procedures, morning specimen processing, or quality control activities, which are often conducted early in the day. Missing these learning opportunities may reduce students' exposure to essential laboratory techniques and limit the effectiveness of clinical training. Furthermore, frequent lateness may disrupt laboratory workflow and undermine the professional discipline expected in healthcare practice<sup>15</sup>.

Various factors may contribute to lateness among students attending laboratory postings. These factors may include transportation challenges, long commuting distances between residence and hospital facilities, academic workload, financial constraints, and personal responsibilities. Environmental factors such as traffic congestion and inadequate transportation systems may also contribute to delays in reaching hospital facilities, particularly in urban areas<sup>3</sup>.

Although punctuality is a critical component of professional conduct in healthcare, there is limited empirical research examining the specific factors influencing punctuality among Medical Laboratory students in many Nigerian universities. Without adequate data on these challenges, it becomes difficult for academic institutions and hospital administrators to implement effective measures to improve punctuality during clinical training.

Therefore, there is a need to investigate the perceived challenges associated with punctuality among Medical Laboratory students attending laboratory postings at Tertiary Health Institution in Nigeria. Identifying these challenges will provide evidence-based information that can guide interventions aimed at improving punctuality and enhancing the effectiveness of clinical education.

### **1.3 Aim of the Study**

The aim of this study is to investigate the determinants of punctuality among Medical Laboratory students attending laboratory postings at Tertiary Health Institution in Nigeria.

### **1.4 Specific Objectives of the Study**

The specific objectives of this study are to:

- Assess the prevalence of lateness among students during laboratory postings.
- Identify the perceived challenges associated with punctuality among Medical Laboratory students.
- Determine the association between selected factors and lateness among the students.
- Identify predictors of lateness among Medical Laboratory students attending laboratory postings.
- To suggest strategies for improving punctuality among students during clinical postings.

### **1.5 Significance of the Study**

This study is important because it provides insight into the factors influencing punctuality among Medical Laboratory students during clinical training.

The findings of this study will be beneficial to several stakeholders.

Students: The study will help students understand the importance of punctuality in clinical training and encourage them to develop better time management and professional discipline.

Academic institutions: Universities offering Medical Laboratory programmes may use the findings to improve policies related to clinical postings and develop strategies that enhance punctuality and student participation during laboratory training.

Hospital management: Teaching hospitals involved in laboratory education may use the findings to improve coordination of student training programmes and create supportive environments that facilitate punctual attendance.

Policy makers and educators: The study will provide evidence that may guide the development of policies aimed at strengthening clinical education in health science programmes.

Researchers: The findings will contribute to existing literature on clinical education and punctuality among health science students and may serve as a reference for future research in this area.

### **1.6 Scope of the Study**

This study focuses on Medical Laboratory students undergoing laboratory posting at FUTA Teaching Hospital. The study specifically examines the perceived challenges affecting punctuality during laboratory postings and identifies factors associated with lateness among the students.

## **METHODOLOGY**

### **2.1 Research Design**

This study employed a descriptive cross-sectional survey design to investigate the perceived challenges associated with punctuality among Medical Laboratory students attending laboratory postings at FUTA Teaching Hospital. A cross-sectional design was considered appropriate because it allows the collection of data from a defined population at a single point in time in order to describe the prevalence of a phenomenon and examine relationships between variables<sup>16</sup>.

The design enabled the researcher to obtain information regarding students' punctuality patterns and the factors perceived to influence lateness during laboratory postings. In addition, the design allowed for the use of both descriptive and inferential statistical analyses to identify associations and predictors of lateness among the respondents.

### **2.2 Study Area**

The study was conducted at FUTA Teaching Hospital, which serves as a laboratory training facility for Medical Laboratory students of the Federal University of Technology, Akure. The teaching hospital provides laboratory diagnostic services across various departments including Haematology and Blood Transfusion Services (Haem/BTS), Clinical Chemistry (Chem Path), Medical Microbiology and Parasitology (MMP), Histopathology (Histo). The hospital plays an important role in the clinical training of Medical Laboratory students by providing opportunities for practical exposure to laboratory diagnostic procedures, specimen handling, laboratory quality control practices, and patient-centered laboratory services.

Students posted to the hospital participate in daily laboratory activities under the supervision of qualified medical laboratory scientists and laboratory supervisors.

### **2.3 Study Population**

The study population consisted of Medical Laboratory students undergoing laboratory postings at FUTA Teaching Hospital during the period of the study.

These students included those in the posting phases of the programme who are required to participate in hospital laboratory postings as part of their professional training.

### **2.4 Inclusion Criteria**

The following students were included in the study:

- Medical Laboratory students currently undergoing laboratory postings at FUTA Teaching Hospital.
- Students who consented to participate in the study.
- Students present during the period of data collection.

### **2.5 Exclusion Criteria**

The following students were excluded from the study:

- Students not currently participating in laboratory postings during the study period.
- Students who declined to participate in the study.
- Incomplete questionnaires were excluded from analysis.

### **2.6 Sample Size Determination**

The sample size for this study was determined using the Leslie Kish formula for single population proportion:

$$n = z^2p(1-p)/d^2$$

Where:

n = minimum sample size

Z = standard normal deviation at 95% confidence level (1.96)

p = estimated prevalence of lateness among students (assumed 50% since no previous study was available)

d = margin of error (0.05)

Substituting into the formula:

$$n = (1.96)^2(0.5)(0.5)/(0.05)^2$$

$$n = 384$$

Since the study population was relatively small, the sample size was adjusted using the finite population correction formula.

Although the Leslie Kish formula yielded a minimum sample size of 384, the total number of eligible students available during the study was 200. Therefore, a total enumeration approach was adopted, and all eligible students were included in the study.

### **2.7 Sampling Technique**

A total sampling technique was used for this study. All Medical Laboratory students attending laboratory postings at FUTA Teaching Hospital during the study period who met the inclusion criteria were invited to participate. The total population of students available during the study period was 200, and all consented participants were recruited, giving a response rate of 100%.

This approach ensured that all available students had equal opportunity to participate and helped to maximize the sample size and improve the representativeness of the data.

### **2.8 Data Collection Instrument**

Data for this study were collected using a structured self-administered questionnaire developed by the researcher after reviewing relevant literature on punctuality and clinical training among health science students.

Definition of Lateness: for the purpose of this study, lateness was defined as arrival at the laboratory posting venue after the officially scheduled reporting time (8am). Respondents who reported arriving late more than 50% of the time were classified as “often late”

The questionnaire consisted of four sections:

Section A: Socio-Demographic Characteristics

This section collected information on respondents’ demographic characteristics such as:

- Age group
- Gender
- School
- Last rotation

Section B: Punctuality Pattern

This section assessed students’ punctuality during laboratory postings, including frequency of lateness and general attendance patterns.

Section C: Perceived Challenges Associated with Punctuality

This section contained multiple response questions that assessed perceived challenges affecting punctuality, such as:

- Transportation difficulties
- Distance from residence to hospital
- Academic workload
- Health issues
- Personal responsibilities
- Time Factor (Alarm)
- Peer influence
- Motivation issues
- Poor communication of schedules
- Poor supervision

Section D: Likert Scale Questions

This section consisted of Likert scale items designed to assess respondents' level of agreement with statements regarding factors influencing punctuality. Responses were measured using a five-point Likert scale, ranging from:

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

### **2.9 Validity of the Instrument**

The questionnaire was subjected to content and face validity by experts in Medical Laboratory Science and research methodology. Their feedback helped ensure that the questions were relevant, clear, and capable of measuring the intended variables.

Necessary modifications were made based on the suggestions provided by the reviewers.

### **2.10 Reliability of the Instrument**

A pilot study was conducted among a small group of Medical Laboratory students who were not part of the main study population.

The reliability of the Likert scale items was assessed using Cronbach's alpha coefficient, which measures the internal consistency of the instrument. A Cronbach's alpha value of 0.70 or higher was considered acceptable for reliability<sup>17</sup>.

### **2.11 Method of Data Collection**

Data collection was carried out after obtaining necessary approval from the relevant authorities. The researcher distributed the questionnaires directly to eligible students during their laboratory postings.

The purpose of the study was explained to the respondents, and informed consent was obtained prior to participation. Respondents were assured that participation was voluntary and that their responses would be treated with strict confidentiality.

Completed questionnaires were collected immediately after completion to minimize loss of data.

### **2.12 Method of Data Analysis**

Data collected from the questionnaires were entered and analyzed using Statistical Package for Social Sciences (SPSS) version 25.

The following statistical analyses were performed:

#### **Descriptive Statistics**

Descriptive statistics including frequencies, percentages, means, and standard deviations were used to summarize the socio-demographic characteristics of respondents and their responses to questionnaire items.

#### **Multiple Response Analysis**

Multiple response analysis was used to identify the perceived challenges associated with punctuality among the students.

#### **Inferential Statistics**

Inferential statistical tests were conducted to determine associations between variables.

Chi-square test was used to examine associations between categorical variables and lateness.

Binary logistic regression analysis was performed to identify predictors of lateness among the students.

A p-value less than 0.05 ( $p < 0.05$ ) was considered statistically significant.

### **2.13 Ethical Considerations**

Ethical approval for this study was obtained from the appropriate authorities prior to data collection.

Participation in the study was entirely voluntary. Respondents were informed about the purpose of the study and were assured that their responses would remain confidential and used strictly for academic purposes.

No identifying information was collected from participants, and all data were handled with strict confidentiality.

## RESULTS

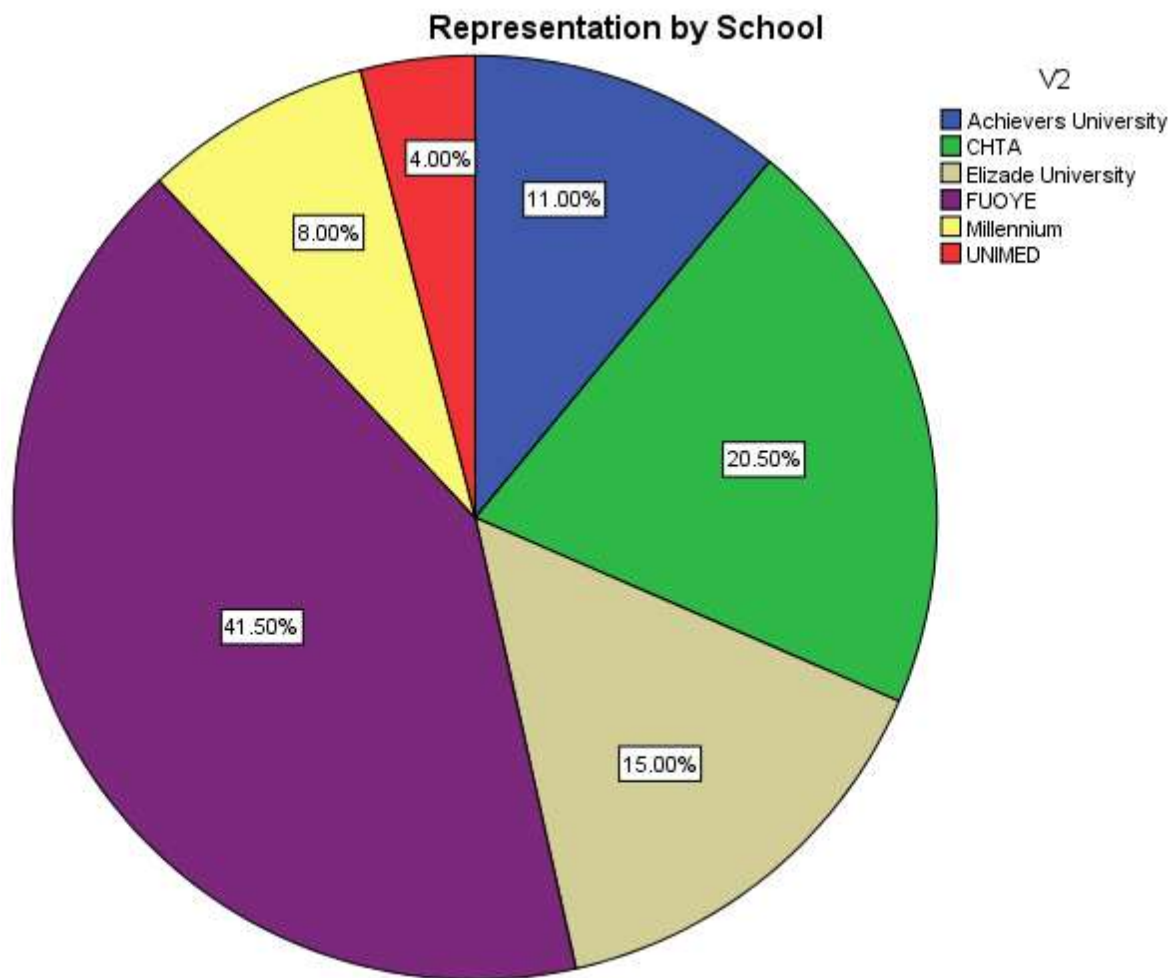
### 3.1 Introduction

Data collected from 200 respondents were analyzed using descriptive and inferential statistical methods. The schools are:

- Achievers University (AU)
- Elizade University (EU)
- Federal University, Oye-Ekiti (FUOYE)
- University of Medical Sciences (UNIMED)
- College of Health Technology, Akure (CHTA)
- Millenium College of Health Technology

The results are presented in tables and interpreted accordingly.

**Figure 1: Chart representation of respondents by School**



### 3.2 Socio-Demographic Characteristics of Respondents

Table 1 shows the socio-demographic characteristics of the respondents including age group, gender, school, and last laboratory rotation.

**Table 1: Socio-Demographic Characteristics of Respondents**

Variable	Frequency n= 200	Percentage
<b>Age Group (years)</b>		
18-20	112	56.0
21-23	78	39.0
24-26	8	4.0
27 and above	2	1.0
<b>Gender</b>		
Male	71	35.5
Female	129	64.5
<b>School</b>		
AU	22	11.0
CHTA	41	20.5
EU	30	15.0
FUOYE	83	41.5
Millennium	16	8.0
UNIMED	8	4.0
<b>Last Rotation</b>		
Chem Path	44	22.0
Haem/BTS	44	22.0
Histo	20	10.0
MMP	41	20.5
Others	51	25.5

The results show that the majority of respondents 112 (56.0%) were aged 18–20 years, followed by 78 (39.0%) aged 21–23 years. Only 8 (4.0%) were aged 24–26 years, while 2 (1.0%) were aged 27 years and above. This indicates that most respondents were relatively young students in their early years of clinical exposure.

Regarding gender distribution, 129 (64.5%) were female, while 71 (35.5%) were male. This suggests that female students constituted the majority of respondents in the study population. In terms of institutional representation, the largest proportion of respondents 83 (41.5%) were from FUOYE, followed by 41 (20.5%) from CHTA, 30 (15.0%) from EU, 22 (11.0%) from AU, 16 (8.0%) from Millennium, and 8 (4.0%) from UNIMED.

Concerning the last laboratory rotation completed, 51 students (25.5%) were in other units, 44 (22.0%) in Chemical Pathology, 44 (22.0%) in Haematology/Blood Transfusion Science, 41 (20.5%) in Medical Microbiology and Parasitology, and 20 (10.0%) in Histopathology.

These findings suggest that respondents came from different institutions and laboratory units, thereby providing a diverse representation of medical laboratory students.

### 3.3 Pattern of Punctuality Among Students

Table 2 presents the pattern of punctuality among students attending laboratory postings.

**Table 2: Pattern of Punctuality Among Students**

Variable	Frequency n=200	Percentage
Often Arrive Early	54	27.0
Often Arrive Late	146	73.0
Total	200	100.0

The results show that 146 respondents (73.0%) often arrived late, while 54 respondents (27.0%) often arrived early to their laboratory postings.

This finding indicates that lateness was highly prevalent among the students, with nearly three-quarters of the respondents reporting that they often arrived late. This suggests that punctuality may be a significant challenge among medical laboratory students during their clinical postings.

### 3.4 Mean Ranking of Perceived Challenges Affecting Punctuality

Table 3 presents the mean ranking of perceived challenges affecting students' punctuality during laboratory postings.

**Table 3: Mean Ranking Of Perceived Challenges Affecting Punctuality**

Perceived Factor	Mean Score	Standard Deviation	Rank
Time Factor (Alarm)	2.41	1.170	9
Distance From hospital	4.52	1.051	1
Motivation Issues	2.74	1.615	7
Personal responsibilities	2.67	1.304	8
Peer Interference	2.31	1.447	10
Health Issues	3.11	1.588	6
Academic workload	3.57	1.266	2
Transportation difficulties	3.53	1.392	3
Poor Communication of schedule	3.32	1.516	5
Poor supervision	3.35	1.591	4

The results indicate that distance from the hospital had the highest mean score (Mean = 4.52, SD = 1.051) and was ranked 1st, suggesting that it was the most important factor contributing to lateness.

This was followed by academic workload (Mean = 3.57, SD = 1.266) ranked 2nd, and transportation difficulties (Mean = 3.53, SD = 1.392) ranked 3rd.

Other notable factors included poor supervision (Mean = 3.35, SD = 1.591) ranked 4th, and poor communication of schedule (Mean = 3.32, SD = 1.516) ranked 5th.

Additionally, health issues (Mean = 3.11) ranked 6th, while motivation issues (Mean = 2.74) and personal responsibilities (Mean = 2.67) ranked 7th and 8th, respectively.

Less influential factors included time factor such as alarm issues (Mean = 2.41) ranked 9th, and peer interference (Mean = 2.31) ranked 10th.

Overall, the findings suggest that structural and logistical challenges such as distance, workload, and transportation are the most significant factors influencing lateness among students.

### 3.5 Association Between Socio-Demographic Variables and Lateness

Table 4 presents the association between respondents' socio-demographic characteristics and lateness using the Chi-square test.

**Table 4: Association between Socio-Demographics and Lateness**

Variable	X <sup>2</sup>	df	p-value	Interpretation
<b>Age</b>				Significant
Pearson	11.580 <sup>a</sup>	3	.009	
Likelihood	10.767	3	.013	
<b>Gender</b>				Not Significant
Pearson	.003 <sup>a</sup>	1	.955	
Likelihood	.003	1	.955	
<b>School</b>				Not significant
Pearson	2.764 <sup>a</sup>	5	.736	
Likelihood	2.783	5	.733	
<b>Last Rotation</b>				Not Significant
Pearson				
Likelihood	6.645 <sup>a</sup>	4	.156	
	6.563	4	.161	

The results show that age was significantly associated with lateness ( $\chi^2 = 11.580$ ,  $p = 0.009$ ). This implies that punctuality among students varied significantly across different age groups.

However, gender was not significantly associated with lateness ( $\chi^2 = 0.003$ ,  $p = 0.955$ ), indicating that male and female students exhibited similar punctuality patterns.

Similarly, school affiliation showed no significant association with lateness ( $\chi^2 = 2.764$ ,  $p = 0.736$ ), suggesting that students from different institutions experienced similar punctuality challenges.

In addition, last laboratory rotation was not significantly associated with lateness ( $\chi^2 = 6.645$ ,  $p = 0.156$ ).

Overall, the findings indicate that age was the only socio-demographic factor significantly related to lateness among students.

### 3.6 Association Between Perceived Challenges and Lateness

Table 5 presents the association between perceived challenges and lateness among students.

**Table 5: Association between Perceived Challenges and Lateness**

Variable	X <sup>2</sup>	df	p-value	Interpretation
<b>Time Factor</b>				Significant
Pearson	14.802a	4	.005	
Likelihood	14.631	4	.006	
<b>Peer Interference</b>				Not significant
Pearson	3.852a	4	.426	
Likelihood	6.158	4	.188	
<b>Transport Difficulty</b>				Significant
Pearson	11.041a	4	.026	
Likelihood	11.803	4	.019	
<b>Personal Responsibilities</b>				Not significant
Pearson	7.121a	4	.130	
Likelihood	7.364	4	.118	
<b>Distance from hospital</b>				Significant

Pearson	14.334a	4	.006	
Likelihood	18.889	4	.001	
<b>Health issues</b>				Not Significant
Pearson	1.309a	4	.860	
Likelihood	1.324	4	.857	
<b>Academic workload</b>				Significant
Pearson	10.027a	4	.040	
Likelihood	9.922	4	.042	
<b>Motivation issues</b>				Significant
Pearson	12.945a	4	.012	
Likelihood	12.646	4	.013	
<b>Poor schedule communication</b>				Not significant
Pearson	2.765a	4	.598	
Likelihood	2.687	4	.612	
<b>Poor Supervision</b>				Significant
Pearson	10.771a	4	.029	
Likelihood	10.666	4	.031	

The results indicate that several factors were significantly associated with lateness.

Time factor (alarm issues) showed a significant association with lateness ( $\chi^2 = 14.802$ ,  $p = 0.005$ ).

Transportation difficulties were also significantly associated with lateness ( $\chi^2 = 11.041$ ,  $p = 0.026$ ).

Similarly, distance from the hospital showed a significant association with lateness ( $\chi^2 = 14.334$ ,  $p = 0.006$ ).

Academic workload was another significant factor associated with lateness ( $\chi^2 = 10.027$ ,  $p = 0.040$ ).

Additionally, motivation issues ( $\chi^2 = 12.945$ ,  $p = 0.012$ ) and poor supervision ( $\chi^2 = 10.771$ ,  $p = 0.029$ ) were significantly associated with lateness.

However, peer interference, personal responsibilities, health issues, and poor communication of schedule were not significantly associated with lateness, as their p-values were greater than 0.05.

These findings suggest that logistical, motivational, and organizational factors play a significant role in students' punctuality during laboratory postings.

### 3.7 Logistic Regression Analysis of Predictors of Lateness

Table 6 presents the logistic regression analysis identifying predictors of lateness among students.

**Table 6: Logistic Regression Analysis of Predictors of Lateness**

Variable	B	SE	Wald	df	p-value	Odds Ratio (Exp B)
Time Factor (Alarm)	-.494	.219	5.058	1	.025*	.610
Health issues	-.127	.204	.389	1	.533	.880
Distance from hospital	.287	.142	4.078	1	.043*	1.333
Personal responsibilities	.199	.178	1.247	1	.264	1.220
Transportation difficulties	.493	.200	6.089	1	.014*	1.638
Motivation issues	-.522	.155	11.382	1	.001*	.593
Academic	.398	.181	4.862	1	.027*	1.489

workload						
Peer Interference	-.249	.207	1.452	1	.228	.779
Poor Communication of schedule	.150	.195	.591	1	.442	1.162
Poor supervision	.232	.139	2.788	1	.095	1.261

Risk factors (OR > 1)

Protective factor (OR < 1)

The results revealed that several factors were significant predictors of lateness.

Time factor (alarm issues) was significantly associated with lateness ( $p = 0.025$ , OR = 0.610), indicating that students with better time management practices were less likely to arrive late.

Distance from the hospital was also a significant predictor ( $p = 0.043$ , OR = 1.333), suggesting that students who lived farther from the hospital were more likely to arrive late.

Similarly, transportation difficulties significantly predicted lateness ( $p = 0.014$ , OR = 1.638), indicating that transportation challenges increased the likelihood of lateness.

Motivation issues were also significant ( $p = 0.001$ , OR = 0.593), implying that higher levels of motivation reduced the likelihood of arriving late.

In addition, academic workload was a significant predictor ( $p = 0.027$ , OR = 1.489), suggesting that increased academic demands contributed to lateness.

However, health issues, personal responsibilities, peer interference, poor communication of schedule, and poor supervision were not significant predictors of lateness, as their  $p$ -values were greater than 0.05.

Overall, the logistic regression model indicates that distance from the hospital, transportation difficulties, academic workload, motivation issues, and time management factors are the key determinants of lateness among medical laboratory students.

## **DISCUSSION, CONCLUSION AND RECOMMENDATIONS**

### **4.1 Discussion**

This study assessed the determinants of punctuality among medical laboratory students attending laboratory postings at Tertiary Health Institution in Nigeria. The findings of this study revealed a high prevalence of lateness, with nearly three-quarters of respondents reporting that they often arrived late. This finding underscores a significant gap in professional behaviour during laboratory training, which may have implications for both learning outcomes and future workplace conducts.

#### **Pattern of Punctuality Among Students**

The results of this study showed that 73.0% of the respondents reported that they often arrived late for laboratory postings, while only 27.0% reported arriving early. This finding indicates that punctuality is a significant challenge among medical laboratory students during clinical training. Punctuality is considered an essential professional attribute in healthcare practice, as delays can disrupt workflow, affect teamwork, and potentially compromise patient care<sup>10</sup>.

The high prevalence of lateness observed in this study may be attributed to the demanding nature of clinical postings, transportation challenges, and academic workload experienced by students. Similar findings were reported by Okeke et al.<sup>13</sup>, who observed that punctuality challenges were common among healthcare students undergoing clinical rotations due to competing academic and environmental pressures.

#### **Influence of Socio-Demographic Characteristics on Lateness**

The findings showed that age was significantly associated with lateness, indicating that punctuality behavior differed across age groups. Younger students were more likely to arrive late compared with older students. This may be due to differences in maturity, responsibility, and time-management skills, which tend to improve with age and academic progression.

This finding aligns with previous studies suggesting that younger students often experience greater difficulty managing time effectively during early clinical exposure<sup>2</sup>.

However, gender was not significantly associated with lateness, suggesting that both male and female students exhibited similar punctuality patterns. This finding is consistent with research conducted by Ogunleye et al.<sup>11</sup>, which reported no significant gender differences in punctuality among healthcare students.

Similarly, school affiliation and last rotation department were not significantly associated with lateness, indicating that punctuality challenges may be influenced more by individual and logistical factors rather than institutional differences.

#### **Perceived Challenges Affecting Punctuality**

The mean ranking analysis revealed that distance from the hospital was the most influential factor affecting punctuality, followed by academic workload and transportation difficulties.

Distance from the hospital can significantly affect punctuality due to longer travel times and transportation delays. Students who reside far from clinical training centers often face challenges such as traffic congestion, transportation costs, and unreliable public transport systems which are common in many urban settings in developing countries. Previous studies have identified distance and transportation challenges as major barriers to punctuality among students in clinical training environments<sup>6</sup>. This highlights the importance of structural and environmental determinants of student behavior, beyond individual responsibility.

Academic workload was also identified as a major factor affecting punctuality. Medical laboratory students often balance intensive academic schedules with demanding laboratory responsibilities, which may contribute to fatigue, poor sleep patterns, and reduced time-management efficiency. This finding suggests that institutional scheduling practices may inadvertently contribute to punctuality challenges and should be carefully reviewed. Similar findings have been reported in studies examining punctuality among medical and health science students<sup>9</sup>.

Transportation difficulties also ranked highly among perceived challenges, further emphasizing the role of environmental and infrastructural factors in influencing punctuality.

#### **Association Between Perceived Challenges and Lateness**

The chi-square analysis revealed that time management factors, transportation difficulties, distance from the hospital, academic workload, motivation issues, and poor supervision were significantly associated with lateness.

These findings suggest that punctuality among medical laboratory students is influenced by a combination of personal, institutional, and environmental factors. For example, inadequate supervision may reduce accountability, leading to poor adherence to reporting times. This observation supports the findings of Afolabi et al.<sup>4</sup>, who reported that strong supervision and monitoring significantly improved punctuality among clinical trainees.

However, factors such as peer interference, personal responsibilities, health issues, and poor communication of schedules were not significantly associated with lateness, suggesting that they may have less direct influence on punctuality within the study population.

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### **Predictors of Lateness**

Logistic regression analysis identified several significant predictors of lateness, including time management (alarm use), distance from the hospital, transportation difficulties, motivation issues, and academic workload.

Students who demonstrated better time-management practices were less likely to arrive late, highlighting the importance of personal discipline and planning. Conversely, transportation difficulties and academic workload increased the likelihood of lateness.

These findings support previous research indicating that effective time management, reliable transportation, and manageable academic schedules are key determinants of punctuality among students in healthcare training programs<sup>5</sup>.

The findings of this study demonstrate that punctuality challenges among medical laboratory students are multifactorial issues influenced by a complex interplay of environmental, academic, and behavioral factors. Addressing these challenges will require a combination of institutional intervention, as well as individual-level strategies aimed at enhancing time management and motivation.

Overall, improving punctuality during laboratory training is essential not only for optimizing learning experiences but also for fostering the development of professional behaviors that are critical for effective healthcare delivery.

### **4.2 CONCLUSION**

This study examined the perceived challenges associated with punctuality among medical laboratory students attending laboratory postings. The findings revealed a high prevalence of lateness among students, indicating that punctuality remains a significant concern during clinical training.

Distance from the hospital, academic workload, transportation difficulties, motivation issues, and time-management factors were identified as key contributors to lateness. Furthermore, age was found to be the only socio-demographic variable significantly associated with punctuality.

The findings highlight the need for targeted interventions aimed at improving punctuality among medical laboratory students through better time management practices, improved supervision, and enhanced institutional support.

Improving punctuality among medical laboratory students is essential for fostering professionalism and ensuring readiness for the time-sensitive demands of laboratory practice.

### **4.3 RECOMMENDATIONS**

Based on the findings of this study, the following recommendations are proposed:

- **Improved Time-Management Training:** Students should receive orientation and training on effective time-management strategies to help them balance academic and clinical responsibilities.
- **Improved Transportation Support:** Institutions and hospitals should consider providing transportation support or accommodation closer to clinical posting sites to reduce lateness caused by distance and transportation challenges.
- **Better Communication of Posting Schedules:** Clear and timely communication of posting schedules should be ensured to help students plan their activities effectively.
- **Enhanced Supervision and Monitoring:** Supervisors should implement stricter monitoring of attendance and punctuality to encourage discipline among students.
- **Workload Coordination:** Academic departments should coordinate lecture schedules with clinical postings to reduce excessive workload and fatigue among students.

### **4.4 Strengths of the study**

The study has several strengths. These include:

- Relatively large sample size
- Use of both descriptive and inferential statistical methods, providing robust identification of predictors of punctuality.
- The study addresses an important but under-explored aspect of laboratory training in a resource-limited setting.

### **4.5 Limitations of the study**

This study has some limitations that should be considered when interpreting the findings. They are:

- Study was conducted in a single tertiary health institution which may limit generalizability of the findings.

- Use of self-administered questionnaire introduces possibility of response bias.

#### 4.6 Suggestions for Further Studies

Future studies should explore punctuality challenges among medical laboratory students in other teaching hospitals and across different regions to allow for broader comparisons and generalization of findings.

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