

Waiting Time and Associated Factors Among Outpatients at Kibungo Referral Hospital-Rwanda

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ABSTRACT

INTRODUCTION: Patient waiting time is defined as the total amount of time spent within the healthcare facility outside of provider service or contact time. This has been evidenced in most healthcare facilities and becomes problematic if it exceeds thirty minutes. Most studies have shown that patients wait for two to four hours, resulting in their dissatisfaction and non-adherence to treatment plans.

This study aimed to assess the waiting time and associated factors among outpatients at Kibungo Referral Hospital.

METHOD: The quantitative research approach with the descriptive cross-sectional design was conducted for the outpatients received in September 2020 and 400 patients were considered. Convenience sampling technique and structured questionnaire were used for data collection. SPSS version 24 was used for data analysis and a p-value less than 0.05 was considered significant. Univariate, bivariate, and multivariate logistic regression were performed. Ethical principles were respected throughout the study.

RESULTS: The median outpatient waiting time was 4 hours. Female patients were 48% less likely to wait for a long time than men (AOR: 0.523, 95% CI: 0.294-0.931). However, patients who visited specialty units were 4 times more likely to wait for a longer time than those who visited allied health services (AOR: 4:246, CI: 1.463-12.316). In addition, patients who underwent paraclinical investigations were 18 times more likely to wait for a long time than others (AOR: 17.506, CI: 2.349-130.445).

CONCLUSION: The median outpatient waiting time is long and the insufficient staffing, especially in specialty units and the laboratory, was evidenced to contribute to the long waiting time. Therefore, Kibungo Referral Hospital is recommended to increase staff in specialty units and paraclinical investigation departments.

Keywords: Patient waiting time, Associated factors, Referral Hospital, Outpatient, Rwanda

INTRODUCTION

Patient waiting time is defined as the total time used from registration until the last service

point, excluding contact or service time with the healthcare facility's personnel [1]. Thus, the time spent being attended to by health care providers (service/contact time) in this context is excluded.

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The World Health Organization (WHO) identified patient waiting time for healthcare services as one of the key measurements of a responsive health system. The WHO regards waiting time as an index used to assess patients' satisfaction and the effectiveness of a healthcare facility in providing healthcare to healthcare consumers [2].

It is generally acknowledged that quality healthcare is a human right and higher healthcare quality results in an organization's stakeholders' satisfaction and better performance [3]. High-quality healthcare refers to the proper care, at the right time, in a coordinated way, responding to the service users' needs and preferences while minimizing harm and resource waste [3]. The United States (US) Institute of Medicine's report *Crossing the Quality Chasm* outlines a framework of six guiding principles to staying ahead in a more competitive healthcare delivery system and baptized them as STEEP. One of these principles is providing timely care and reducing harmful delays [4]. The Patient's Charter of the United Kingdom (UK) Government sets a series of standards that state that all patients must be seen within 30 minutes of their appointment time [5]. It is globally agreed that a well-designed healthcare service management system should not have patients wait a long time for appointments and consultation [5]. Patient waiting times in service delivery affect the quality of healthcare and increase dissatisfaction among service users. Thus, the patient's long waiting time might be among the main factors that affect disease and/or health condition's outcome, including an increase in morbidity and mortality in developing countries, especially in Africa [6]. Lengthy waiting time, poor access, lack of information, and good relationships with healthcare workers in outpatient clinics remain a challenge to quality care [7]. In addition, waiting time can affect patient utilization of health services adversely because it affects the patient's willingness to return to the clinic, ultimately impacting continuity of care. Therefore, reducing waiting time may lead to improved patient satisfaction and a greater desire to continue to receive care at the same healthcare facility [8].

The patient waiting time, in general, is perceived as complex, subjective, and culturally influenced [9]. Registration time, payment processing, triaged time, insufficient human resources, and logistics are the determinants of patient waiting time in

the general outpatient departments [10]. Lengthy waiting time has long been considered frustrating to patients and thus appears to be a consistent and significant potential cause of patient dissatisfaction [11]. As healthcare solutions become more personalized and consumer-driven, the need to provide overall patient satisfaction by reducing waiting time is becoming more important.

In Rwanda, the estimated patient waiting time and associated factors are not yet established. However, the study conducted in developing countries has shown the magnitude of outpatient waiting time as a handicap for effective healthcare delivery [12,13,14]. Thus, our study aimed to assess the waiting time and associated factors among outpatients at Kibungo Referral Hospital.

METHODS

Study design: A quantitative, cross-sectional study was conducted to determine the patient waiting time and associated factors among outpatients of Kibungo Referral Hospital, Rwanda

Study setting and location: This study was conducted in Kibungo Referral Hospital, located in an urban area in Ngoma District, Rwanda. The hospital is one of the three hospitals upgraded to the National referral hospital as Ruhengeri and Kibuye, meaning that it receives patients from its catchment area and patients throughout the country due to the expertise of specialty services. The hospital has multiple outpatient services, including non-communicable diseases management, gynecology and obstetrics consultations, dental specialty services, ophthalmology services, mental health services, surgery, physiotherapy, internal medicine, pediatrics, and otolaryngology (ENT).

Participants/subjects: In this study, the population was patients attending Kibungo Referral Hospital's outpatient departments during September 2020.

Eligibility criteria: Inclusion criteria were all patients who consulted outpatient departments and were 18 years old and older. Also, patients who were less than 18 years old but were accompanied by adults (18 years and above) and provided informed consent were included in the research. Exclusion criteria were all patients who consulted outpatient departments less than 18 years old

who were not accompanied by adults or those accompanied by adults but refused to consent.

Sample size (power calculation): A sample size of 400 was determined using the Yamane formula to give power of 84% from the previous study with a level of significance set at 5% (0.05) and based on our population size, 35,703 received in OPDs annually [13].

$n=N/(1+Ne^2)$ With; **n**= Sample to be selected, **N**=Total population size, **e**= Stands for margin error of 0.05

The sample was: $2975/1+2975.(0.05)^2 = 399.8655914$ roughly 400.

Sampling strategy: The researcher used a convenience sampling strategy. Since the number of patients is not the same for working five days of the week, the researcher recruited conveniently among the available patients.

Data collection tools: The data collection instrument had four parts: patient sociodemographic information, visiting type/frequency, process/time tracking information where more than two hours was defined as a long waiting time. The patient's view on the causes of waiting time and suggestion to reduce it are then assessed. To ensure its reliability, a sample size of 40 study participants (10% of sample size) was used for pre-testing and Alpha Crobach's coefficient was 0.777 (77.7%). For validity, this questionnaire is adopted from the questionnaire used in a cross-sectional study conducted in Kenya then amended to fit with Kibungo Referral Hospital Context and research specific objectives [15].

During our study, the primary outcome of the study was outpatient waiting time, while the secondary outcomes were factors associated with long waiting time as results of structure, patient and process measures. The outcomes were measured using the developed survey tool and follow-up of participants. First, the patients were followed up at each service delivery area to determine the primary outcome, then, using the questionnaire, to measure the associated factors' secondary outcomes. Finally, the assessed waiting time was compared to the standardized waiting time to be ranked as either long or reasonable waiting time.

Data collection: Data were collected daily by

sampling 20 patients per working day for five days of the week for four weeks starting from 7:00 am up to 5:00 pm. According to the patient flow chart design (mapped process/schematically service identification), six trained research assistants were assigned each to a service point (contact) from the hospital gate to record the arrival and departure time. For the last service point, the researcher completed the questions related to the patient's view on waiting time and how to reduce it. The study response rate was 98.5%.

Statistical analysis: Data were entered in an Excel spreadsheet and then imported into Statistical Package for Social Sciences (SPSS) Version 24 for analysis. Before data analysis, the collected data was organized, cleaned by removing incorrect/duplicated data, checked for error or omission, and electronically entered. Then, they were analyzed to generate results in the form of univariate analysis where frequencies and percentages distribution were established for categorical data. Secondly, bivariate analysis was done using the chi-square test to establish factors associated with the outpatient long waiting time. Odds ratios (OR) and their 95% confidence intervals (CIs) were calculated through multivariate logistic regression and a p-value less than 0.05 was considered the statistical significance level. Finally, the interpretation and discussion of results and recommendations were made based on findings.

Study oversight: Kibungo Referral Hospital Ethics Committee provided the approval (Ref: No 16 on 28/08/2020) to conduct this study while Mount Kenya University Rwanda provided the letter for data collection. No risk encountered by the participants.

Confidentiality and consent process: The data collection tool was anonymous. All patients who met the criteria for participating in the study were explained the consent form's contents and requested to sign it before data collection.

RESULTS

The majority of respondents were female (67.5%) and most people were aged 18-34 years old (29.4%) (Table 1).

Table 1: Socio-demographic characteristics of participants

Variable	Category	Frequency and percentage
Gender	Male	128/394 (32.5%)
	Female	266/394 (67.5%)
Age	<18	64/394 (16.2%)
	18-34	116/394 (29.4%)
	35-49	95/394 (24.1%)
	50-69	84/394 (21.3%)
Occupation	>/=70	35/394 (8.9%)
	Farmer	279/394 (70.8%)
	Business	35/394 (8.9%)
	Employee	18/394 (4.6%)
	Student	29/394 (7.4%)
District	Unemployed	33/394 (8.4%)
	Ngoma	356/394 (90.4%)
	Out of Ngoma	38/394 (9.6%)
Sector	Kibungo	83/394 (21.1%)
	Out of Kibungo	311/394 (78.7%)
Health insurance	CBHI (Mutuelle)	346/394 (87.8%)
	RAMA	27/394 (6.9%)
	Other	18/394 (4.6%)
	None	4/394 (1.1%)

Concerning occupation, the majority were farmers (70.8%). The Rwanda Social Security Board (RSSB/ Mutuelle) (87.8%) was the most common form of insurance and the majority of patients came from Ngoma District (90.4) out of the Kibungo sector (78.7%).

The median waiting time is 240.500 minutes (approximately 4 hours), the first quartile is 151.750 minutes (approx. 2h31 minutes) and the third quartile is 321.500 min (approx. 5h21 minutes). The minimum and maximum waiting times are 20 minutes and 602 minutes (10 hours and 2 minutes), respectively (Figure 1).

Of the sociodemographic characteristics of respondents, the majority (83%) waited for a long time (>2hours) (Table 2).

Only gender was found to be associated with a long waiting time (p-value = 0.002) and the majority of patients who waited for a long time were males (71%).

There was no association between age, occupation, district, sector, and type of health insurance and extended waiting.

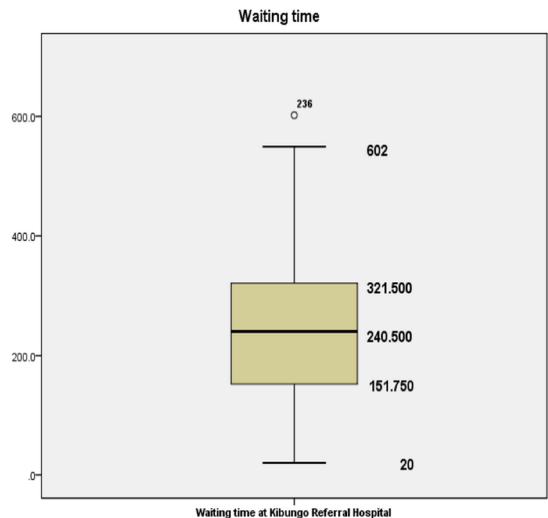


Figure 1: Outpatient waiting time at Kibungo Referral Hospital

Factors associated with a long waiting time were: appointment, type of visit, visited service and undergoing para-clinical investigations (p<0.001) (Table 3).

Table 2: Sociodemographic characteristics associated with a long waiting time

Variable	Category	WAITINGTIMEWT		p-value
		<2h Count (%)	>2h Count (%)	
Gender	Female	32/66 (48%)	96/328 (29%)	0.002*
	Male	34/66 (52%)	232/328 (71%)	
Age	<18	18/66 (27%)	46/328 (14%)	0.126
	18-34	16/66 (24%)	100/328 (30%)	
	35-49	14/66 (21%)	81/328 (25%)	
	50-69	13/66 (20%)	71/328 (22%)	
Occupation	>/=70	5/66 (7%)	30/328 (9%)	0.686
	Farmer	42/66 (64%)	237/328 (72%)	
	Business	8/66 (12%)	27/328 (8%)	
	Employee	4/66 (6%)	14/328 (4%)	
	Student	6/66 (9%)	23/328 (7%)	
District	Unemployed	6/66 (9%)	27/328 (8%)	0.298
	Ngoma	58/66 (88%)	298/328 (91%)	
	Out of Ngoma	8/66 (12%)	30/328 (9%)	
Sector	Kibungo	13/66 (20%)	70/328 (21%)	0.664
	Out of Kibungo	53/66 (80%)	258/328 (79%)	
	Mutuelle	58/66 (88%)	287/328 (87.5%)	
Health insurance	RAMA	4/66 (6%)	23/328 (7%)	0.882
	Other	3/66 (4.5%)	15/328 (4.5%)	
	None	1/66 (1.5%)	3/328 (1%)	

*Statistically significant with a p-value less than 0.05

The above factors found to be statistically significant on bivariate analysis were selected for entry in a multivariable logistic regression model. Upon performing the multivariable analysis, female patients were 47.7% less likely to wait for a long time than males (AOR: 0.523, 95% CI: 0.294-0.931, p-value: 0.028) (Table 4).

With regard to the clinic attended, patients who visited specialties (Gynaeco-obstetrics, surgery, pediatrics, and ENT) were 4 times more likely to wait for a long time compared to patients who visited the allied departments (dentistry, mental health, ophthalmology, and physiotherapy) (AOR: 4.246, 95% CI: 1.463-12316, p-value: 0.008) and patients whom paraclinical investigations were 17 times more likely to wait for a long time compared to patients whom no investigations were

performed (AOR: 17.506, 95% CI: 2.346-130.445, p-value: 0.005)

DISCUSSION

The study findings have shown that the majority of respondents were female (67.5%) and most people were aged 18-34 years old (29.4%) and 35-49 years old. Concerning occupation, the majority were farmers (70.8%) with RSSB/mutuelle (87.8%) and they came from Ngoma District (90.4) out of the Kibungo sector (78.7%).

These findings were consistent with the study results from Mulago hospital and the one study conducted in Cho Ray Hospital, Colorado, where the large number of participants were females [1,14]. This may be explained by the fact that females utilize health services than males.

Table 3: Factors associated with outpatient waiting time

Variable	WAITINGTIMEWT		p-value		
	</=2h Count (%)	>2 Count (%)			
Arrival time	<10 am	59/66 (89.4%)	295/328 (89.9%)	0.331	
	10am-12pm	7/66 (10.6%)	25/328 (7.6%)		
	12pm-1pm	0/66 (0%)	8/328 (2.5%)		
Referred	Yes	60/66 (91%)	296/328 (90.2%)	0.921	
	No	6/66 (9%)	32/328 (9.7%)		
Appointment	Yes	29/66 (44%)	80/328 (24.4%)	0.005*	
	No	37/66 (66%)	248/328 (75.6%)		
Type of visit	First	38/66 (57.6%)	259/328 (78.9%)	<0.001*	
	Follow up	28/66 (42.4%)	69/328 (21%)		
	General medical	27/66 (40.9%)	175/328 (53.3%)		<0.001*
	NCD clinics	11/66 (16.6%)	34/328 (10.4%)		
	Gyn&obs	0/66 (0%)	38/328 (11.6%)		
Area of visit	Paediatrics	1/66 (1.5%)	10/328 (3%)	< 0.435	
	Surgery	4/66 (6.1%)	12/328 (3.6%)		
	Dentistry	4/66 (6.1%)	16/328 (4.9%)		
	Ophthalmology	5/66 (7.6%)	20/328 (6.1%)		
	Mental health	11/66 (16.6%)	12/328 (3.6%)		
	ENT	0/66 (0%)	11/328 (3.3%)		
	Physiotherapy	3/66 (4.5%)	0/328 (0%)		
	Curative	66/66 (100%)	325/328 (99.1%)		
Diagnostic service	Diagnostic	0/66 (0%)	3/328 (0.9%)	0.281	
	Yes	65/66 (98.5%)	307/328 (93.6%)		
Functional service	No	1/66 (1.5%)	18/328 (5.5%)	0.484	
	Sometime	0/66 (0%)	3/328 (0.9%)		
Area of WT	Gate	0 (0)	3/328 (0.9%)	0.105	
	Reception	34/66 (51.5%)	154/328 (46.9%)		
	Nursing station	3/66 (4.5%)	19/328 (5.8%)		
	Consultation	4/66 (6.1%)	49/328 (14.9%)		
	Paraclinical	4/66 (6.1%)	23/328 (7%)		
	Cashier	18/66 (27.3%)	69/328 (21%)		
	Pharmacy	3/66 (4.5%)	11/328 (3.3%)		
	Absence s. providers	1/66 (1.5%)	20/328 (6.1%)		
	Slow staff	3/66 (4.5%)	45/328 (13.7%)		
	Distracted staff	4/66 (6.1%)	14/328 (4.3%)		
Cause of WT	No logistic for staff	0/66 (0%)	3/328 (0.9%)	<0.001*	
	Inefficient triage	51/66 (77.3%)	229/328 (6.8%)		
	distance b/n service	1/66 (1.5%)	5/328 (1.5%)		
	Amenity absence	3/66 (4.5%)	3/328 (0.9%)		
	Sophisticated flow	3/66 (4.5%)	8/328 (2.4%)		
	Inefficient orientation	0/66 (0%)	1/328 (0.3%)		
	Yes	1/66 (1.5%)	83/328 (25.3%)		
	No	65/66 (98.5%)	245/328 (74.7%)		

*Statistically significant with a p-value less than 0.05, NCD: No communicable diseases

Table 4: Multivariable analysis, factors associated with long outpatient waiting time

Variable	Adjusted odds ratio	95% CI	p-value
Gender			
Male	0.523	0.294-0.931	0.028*
Female	Reference		
Appointment			
Yes	1.186	0.218-6.461	0.844
No	Reference		
Type of service			
First	2.262	0.404-12.660	0.353
Follow up	Reference		
Visited area			
General medical	1.743	0.880-3.453	0.111
NCDs Clinic	1.237	0.509-3.002	0.639
Specialties	4.246	1.463-12.316	0.008*
Allied Services	Reference	Reference	
Investigations			
Yes	17.506	2.349-130.445	0.005*
No	Reference		

*Statistically significant with a p-value less than 0.05

This study has shown that the median of outpatient waiting at Kibungo referral hospital was 240 minutes (4 hours). It is 1.8 hours lower than the one of Mulago hospital in Uganda [10,11]. It is also 72 minutes higher than the Tertiary Health Institution in North-Western Nigeria, 91 minutes higher than one of Felge Hiwot referral hospital in Ethiopia and 21 minutes higher than the one conducted at Benin teaching hospital [1,2,12].

These differences may be explained by the difference in the number of medical doctors per population, such as 1/10,055 in Rwanda versus 1/1,000 in Uganda, 1/7,200 or 1/1,000 in Nigeria, and patient flow design [13,14,15]. Another explanation may be due to the task-shifting which was applied in Rwanda, where NCDs are managed by trained nurses [20].

Factors associated with long outpatient waiting

time were gender, visiting specialty units, and undergoing paraclinical investigations. Females were 47.7% less likely to experience long waiting time compared to males. At the same time, patients visiting specialty units (gyneco-obstetrics, surgery, pediatrics, and ENT) were 4 times more likely to experience long waiting times than those who visited allied health services (dentistry, ophthalmology, mental health, and physiotherapy). Patients who underwent paraclinical investigation were 17 times more likely to wait for a long time. These findings are consistent with a study conducted at the University of Nairobi health services, where gender and number of doctors were significantly associated with waiting time. It is also consistent with the findings from the Mulago hospital study [16] and one from Usmanu Danfodiyo University in Nigeria [13]. This may be

explained by more rapid health service utilization by females, as males tend to consult later [21]. Another explanation is that there are many specialist doctors per population and a low number of laboratory technicians (paraclinical investigation unit staff) per population at Kibungo Referral Hospital, specifically with 1/25,625 and Rwanda in general with a ratio of 1/10,500 [14,18]. Regarding the area to work on to reduce waiting time, the study findings suggested increasing staff, earlier clinic starting times, and increasing the number of service delivery areas. These findings are consistent with study findings from the University of Nairobi health services [15].

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