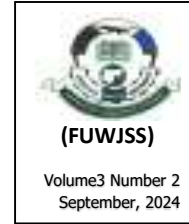


HOSPITAL WAITING TIME AND PATIENT SATISFACTION IN PUBLIC HOSPITALS IN NORTH-CENTRAL NIGERIA

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Abstract

Healthcare services in Nigeria are often connected to the length of time patients spend accessing hospital-based services. Waiting time is a significant predictor of health-service access, utilization, and patient retention. This study investigates hospital waiting time and patient satisfaction in public hospitals in north-central Nigeria. The study examines the effect of registration, consultation, treatment time and drug dispensing on patients' satisfaction in Jos University Teaching Hospital, National Hospital Abuja, Federal Medical Centre Keffi and Benue State University Teaching Hospital, Makurdi. Data for this study emerged from structured questionnaires administered to 314 respondents. The Partial Least Squares Structural Equation Model (PLS-SEM) was engaged in explaining nuances that this study interrogated. The study results showed that registration, consultation, and treatment time significantly influence and bring about increased patient satisfaction. However, drug dispensing time is the only factor that reduced patient satisfaction, as patients wait longer time before receiving prescribed drugs. The study concludes that waiting time has a significant effect on patient satisfaction even though the rate of services is slow. Hence, the study recommends that there is need for public hospitals in north-central Nigeria to improve their pharmacy or drug dispensing departments by increasing the number of pharmacists to enhance faster drug dispensing in order to avoid further frustration on the patients thereby increasing their speed of recovery.

Keywords: Hospital, patient satisfaction, waiting time, pharmacy, drug

Introduction

The increasing calls for improved efficiency in the delivery of healthcare services in Nigeria are often connected to the length of time patients spend accessing hospital-based services. In Nigeria, as in many developing countries, waiting for long periods before access to care is prevalent. This is a common observation in healthcare delivery systems without specific appointments, and where there is a relative or absolute shortage of the health workforce. Long waiting time is also a common cause of concern for patients, but if appropriately managed, it could significantly improve the experiences of patients seeking care from hospitals. Waiting time is a significant predictor of health-service access, utilization, and patient retention. Patient experience with healthcare services is sometimes linked to expectations before or during encounters with care providers. In this way, patient satisfaction may improve following the prompt receipt of outpatient services. Besides the potential influence of expectation, the undertheorized concept of patient satisfaction could also reflect their experiences as elucidated in the 'value-expectancy', 'fulfillment' or 'discrepancy' models often used to unpack the meaning of patient satisfaction (Bjertnaes, Sjetne, & Iversen, 2012).

Patient satisfaction refers to the clarity between what is desired and the reality felt by the patient (Xesfingi & Vozikis, 2016). Patient satisfaction is also defined as a patient's emotional form after experiencing health services in the hospital (Marquis & Huston, 2012, p.6). When patients are not satisfied with the services provided, they do not want to return or look for other services (Russell, Johnson, & White, 2015). The target of patient satisfaction with the service is 90%, following the Ministry of Health's Minimum Service Standards (Kesehatan, 2008). Waiting time for patients on an outpatient is the time patients take to obtain outpatient services from the registration point to the doctor's examination room (Torry, Koeswo, & Sugianto, 2016). Long queues and waiting times are indicators of efficiency as dimensions of health service quality (Purwiyanti, Suryoputro, & Fatmasari, 2019). A long waiting time causes discomfort to patients and long queues indicate that many patients are waiting for services (Nursanti, Hariyanti & Harjayanti, 2018).

Patients' waiting time has been well-defined as "the span of time from when the patient arrived the outpatient department and the time the patient actually leaves the OPD". Whether patients receive long waiting

time at registration, doctor's appointment, emergency room Treatment, laboratory/diagnostic test, procedures, receiving the results of various tests, waiting occurs to just about everyone looking for medical care. It's often one of the most unsatisfying parts about healthcare delivery system. Outpatient department is a important indicator which deliver all health care services to the patients which they requisite to advancement of health and prevention from diseases. Late meet health care services have adverse effect on health outcomes because of delays in diagnosis and treatment (Kengy et al., 1999). The period of waiting time differs from country to country and differs from center to center. Both developed and developing countries long waiting time have been informed. The average waiting time in USA is about 60 minutes was found in Atlanta, and average 188 minutes in Michigan. Long waiting time in outpatient department adversely affects delivery of services and experience of clinic by the patients. Long waiting time in outpatient department is prevailing all in developed and developing countries such factors are over burden of patients, deficiency of hospital staff, inadequate equipment, long registration processes and inadequate human assets are main cause of long waiting time (Maluwa et al. 2012).

The result of long waiting time led to patient disappointment and poor effect on the patient health. Long waiting time create an anxiety both for the patients and the doctors some time led to poor consequences. There is need to direct the studies to identify the issues that cause long waiting time in outpatients department and find out strategies to reduced them.

Dispensing refers to the process of preparing and giving medicine to a named person on the basis of a prescription. It involves the correct interpretation of the wishes of the prescriber and the accurate preparation and labelling of medicine for use by the patient. Dispensing consists in "the pharmacist's role in providing instructions, medications and medicinal products to a patient, as a remunerated work or not" (Conselho Federal de Farmácia, 2001). The time taken for the interpretation of the prescription was determined by the time taken by the pharmacist to start and conclude the prescription analysis if no Drug Related Problems (DRP) was detected, or by the time taken by the pharmacist to start the prescription analysis and detect the first DRP. The time for dispensing was defined by the time elapsed between the moment the patient ordered the prescribed drug and the moment the patient left the drug dispensing table.

Healthcare Delivery and Patient Satisfaction

Patient satisfaction is a measure of how happy a patient is with their healthcare. Although “patient satisfaction” and “patient experience” are sometimes used interchangeably, they are two separate concepts. A patient's experience is based on what should happen during their appointment and whether that occurred, whereas patient satisfaction is based on whether a patient's *expectations* of what should happen were met. (Eisenberg, 2020). Every single interaction in a doctor's office or hospital can affect patient satisfaction, from how the waiting room looks to how the patient is greeted by your receptionist to what you are wearing, according to (Criswell, Carroll, Ajmeri, Losik & Baby, 2018). But the most important element is communication, especially between the patient and physician.

Patient Registration provides the ability to start and edit a patient file at a hospital. Most hospitals have a front desk where patients have to register before starting medical interactions such as consultation, lab tests, admission, procedures etc. Registration is a way of recording the account of what happened, when it happened and the act of authenticating with factual or substantial support of medical practices by qualified workers (Andualem, Asmamaw, Sintayehu, Liknaw, Edmealem & Gedfew 2019; Kebede, Endris, & Zegeye, 2017]. In addition, medical documentation is the process of recording the plan of care, patients' need, and interventions health providers need to implement and evaluation of the patient outcomes. Documentation includes a record of patient condition provided by health professionals; like clinical assessments, clinical evaluation, and professional judgment regarding the provision of patient care (Mamykina, Vawdrey, Stetson, Zheng, & Hripcsak, 2012). Specifically, it includes health documents, evaluation charts (a wall poster that help clinicians to track the progress of their patient), acts, tests (medical procedures involves testing sample of blood, urine and other substances from the human body), checklists (those formats used to collect data in an orderly and systematic manner), correspondence books, management reports, and clinical subjective notes or personal reflections; Physicians, nurses, midwives, laboratory technicians, Anesthesia and Pharmacy professionals can involve in medical documentation (Stewart, Doody, Bailey, & Moran, 2017; Kebede, Endris & Zegeye, 2017).

Treatment time is the time a patient receiving healthcare with dignity and respect and involving them in all decisions about their health. It is synonymous with patient care which is an interdisciplinary process centered on the care recipient in the context of the family, significant

others, and community. Typically, patient care includes the services of physicians, nurses, and members of other health disciplines according to patient needs: physical, occupational, and respiratory therapists; nutritionists; psychologists; social workers; and many others. Each of these disciplines brings specialized perspectives and expertise. Specific cognitive processes and therapeutic techniques vary by discipline, but all disciplines share certain commonalities in the provision of care (Doolan, Bates, & James, 2003).

The Global Practice of Hospital Waiting Time

This study examined various studies on waiting time and patient satisfaction starting from patient hospital registration, consultation, treatment time, to drug dispensation. A study on registration conducted by Alrasheedi, AL-Mohaithef, Edrees, and Chandramohan, (2019) examined association between the wait times and patient satisfaction in selected primary health-care centers in Al Qassim region in the Kingdom of Saudi Arabia. Methodology: A patient satisfaction questionnaire was administered to 850 patients, which collected patient perceptions on the delivery of care at health-care centers in Al Qassim City. Outcome measures included wait times for: registration and payment, seeing the physician, performing radiation and assays, and dispensing the medications. The response rate was 72.94% (n = 620). The study found that 27.90% of the participants stated that the wait time to see the physician ranged between 21 and 30 minutes. Overall patients were mainly dissatisfied for wait times in relation to medication dispensation, vital signs measurement, dental consultations, and radiological investigation. The study found a positive association between the patient satisfaction and their education, marital status, and job. A significant regression equation was established between the patient satisfaction and age-group and literacy. In another study on registration, Chandra (2017) investigated increased waiting time in Hospitals. Applications and contributions of different types of Operations Research Models in Health Care field to overcome the waiting time issues faced by Outpatient in Hospitals have been further discussed in the paper. Also, use of electronic health records and practice management tools by Medical practitioners to enable faster and more effective care to the patients and saving their valuable time has also been highlighted. The goal is to provide information to the Health care analysts who are engaged in improvement of hospital efficiency using an appropriate OR model.

In the case of drug dispensing, a study by Alrasheedi, AL-Mohaithef, Edrees, and Chandramohan, (2019) examined association between the wait times and patient satisfaction in selected primary health-care centers in Al Qassim region in the Kingdom of Saudi Arabia. Methodology: A patient satisfaction questionnaire was administered to 850 patients, which collected patient perceptions on the delivery of care at health-care centers in Al Qassim City. Outcome measures included wait times for: registration and payment, seeing the physician, performing radiation and assays, and dispensing the medications. The response rate was 72.94% ($n = 620$). The study found that 27.90% of the participants stated that the wait time to see the physician ranged between 21 and 30 minutes. Overall patients were mainly dissatisfied for wait times in relation to medication dispensation, vital signs measurement, dental consultations, and radiological investigation. The study found a positive association between the patient satisfaction and their education, marital status, and job. A significant regression equation was established between the patient satisfaction and age-group and literacy.

Consequently, in order to examine the effect of drug dispensing on patient satisfaction, a study by Kautsar, Nurhayati, and GozaliD (2017) measured influence between prescription waiting time and the level of patient satisfaction mediated by the quality of pharmacy unit service as a mediator at the public hospital in Bandung City. A cross-sectional questionnaire-based and direct observation method was conducted from February to April 2017. The questionnaire and observation sheet were used to obtain primary data to 302 NHI patients. Data were analyzed using structural equation modeling using software smartPLS. Based on the result, general and compounding prescriptions' waiting time is not suited with the standard. The waiting time has no positive and significant effect on the quality of pharmacy unit service with t -value of 0.532. The quality of service has a positive significant effect on patient satisfaction with t -statistics of 14.477. The waiting time has a positive and significant effect on patient satisfaction with t -statistics of 1.771 (t -table > 1.96 , $\alpha = 0.05$). The path model proposed did not fit and must be evaluated the length of waiting time and service quality as mediator. Waiting time has a positive influence on patient satisfaction even though the rate of services is slow. Then, the better pharmacy services given, then the much more patient satisfied to the hospital.

However, in a study on waiting for treatment, Ukizentaburuwe et al (2021) examined the waiting time and associated factors among outpatients at Kibungo Referral Hospital. 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. 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). 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. But the findings on treatment from Kreitz, Winters, and Pedowitz, (2016) revealed that the practice demonstrated no correlation during the same interval.

Alarcon-Ruiz et al. (2019) evaluated the association of waiting time and consultation time with patient satisfaction, in Peruvian ambulatory care facilities and propose a cut-off points of waiting and consultation time based on patient satisfaction. A Cross-sectional secondary data analysis of the National Survey on User Satisfaction of Health Services, a national-wide survey with a probabilistic sample of 181 Peruvian ambulatory care facilities. Patient satisfaction, waiting time, consultation time, and sociodemographic variables were collected. All variables were collected by survey directly to patients, from the selected ambulatory care facilities, after their consultation. Complex survey sampling was considered for data analysis. In the association analysis, the study grouped the waiting time and consultation time variables, every 10 min, because for it is more relevant and helpful in the statistical and practical interpretation of the results, instead of the every-minute unit. The survey was performed in 13,360 participants. Response rate were 99.8 to 100% in the main variables. Waiting time (for every 10min) was inversely associated with patient satisfaction (aOR: 0.98, 95% CI: 0.97-0.99), although the aOR was lower among those who reported a waiting time \leq 90 min (aOR: 0.92, 95% CI: 0.89-0.96). Consultation time (for every 10 min) was directly associated with patient satisfaction (aOR: 1.59, 95% CI: 1.26-2.01), although the aOR was higher among those who reported

a consultation time ≤ 15 min (aOR: 2.31, 95% CI: 1.66–3.21). In Peruvian ambulatory care facilities, both waiting time and consultation time showed an association with overall patient satisfaction, which was stronger in the first 90 min of waiting time and in the first 15 min of consultation time.

Finally, the study by Umar et al (2011) investigated the amount of time a patient waits to be seen is one factor which affects the utilization of health care services. This study adopted a cross-sectional descriptive study of the Usmanu Danfodiyo University, Sokoto. A total of 384 new patients were randomly selected into the study. A set of pretested questionnaires was used to extract information from the respondents; descriptive statistics was used for analysis. A total of 118 (31%) of the patients waited for less than an hour in the waiting room, while 371 (96.6%) spent less than 30 min with the doctor. More than half, 211 (55%) of the respondents were satisfied with the service delivery in the hospital, while only 63 (16%) of the respondents admitted to being given health talks while waiting to be seen by the doctor. Although majority of the patients waited for more than 1 h before being attended to, more than half of them were however satisfied with the services rendered to them.

Empirical studies reviewed in this study revealed that there are few who applied the methodology of PLS-SEM. Again there are dearth of studies in North Central Nigeria on Patients waiting time and patients satisfaction. Hence, the motivation to conduct this study.

Theoretical Framework

The Time Management Windows Principles

In many work environments, we are required to work with other people to achieve desired goals. While working with people may lead to higher productivity, it can also hinder our ability to manage our own time (Butler & Hope 2007). This is especially so in a group setting where conflicts among or between group members can cause decreased productivity and lead to time being wasted. Harris (2008) reveals that the Johari Window developed by Joseph Lufh and Harry Ingham can be a good time management tool. The Johari window is a model of communication that can help people build trust and confidence by facilitating open self expression as well as feedback from peers (Harris 2008, p.18). This will eliminate potential conflict and enable the group to engage in productive work.

Research Methodology

In this study, the cross-sectional survey research design was adopted, and the data was collected through the distribution questionnaire from the Jos university teaching hospital, National hospital Abuja, federal medical center Keffi and Benue State university teaching hospital. These hospitals were selected because they are teaching and specialist hospitals with standard procedures. The nature of the questionnaire used for this study was a five-point Likert-scale, ranging from “strongly agree” to “strongly disagree” (5 = ‘Strongly Agree’, 4 = ‘Agree’, 3 = ‘Undecided’, 2 = ‘Disagree’ and 1 = ‘Strongly Disagree’). A total of questionnaires were distributed to the patients who visited and were admitted and their helpers, and 314 questionnaires were returned, which represents a response rate of 78.5%. Data analysis was conducted using partial least square (PLS) software 3.3.3, an approach to structural equation modeling and presented as required. The PLS-SEM in this study tested for the measurement model and the structural model.

Measurement model

The measurement model assesses the constructs involved in the study, which is to determine whether the indicators such as, Composite reliability (CR), convergent validity, average variance extracted (AVE) and discriminant validity, as described by Hair et al. (2011), Hair et al (2012) and Henseler et al (2009) met their required threshold.

Table 1: Convergent Validity

Construct	Item	Loading	CR	AVE
Consulting Time	CT1	0.799	0.804	0.673
	CT4	0.841		
Drug Dispensing Time	DDT2	0.895	0.939	0.793
	DDT3	0.846		
	DDT5	0.899		
	DDT6	0.920		
Patient Satisfaction	PAS1	0.767	0.807	0.512
	PAS3	0.689		
	PAS4	0.701		
	PAS6	0.702		
Registration Time	RT1	0.951	0.954	0.912
	RT2	0.959		
Treatment Time	TT1	0.702	0.759	0.614
	TT4	0.858		

The result in Table 1 shows the convergent validity for the constructs under study. The results thus demonstrated a high level of convergent validity of the latent construct and used in the model. An AVE value of at least 0.5 indicates sufficient convergent validity, meaning that a latent variable can explain at least half of the variance of its indicators on average.

Table 2: Fornell-Lacrker Discriminant Validity

	CT	DDT	PAS	RT	TT
CT	0.820				
DDT	0.106	0.891			
PAS	0.426	-0.167	0.715		
RT	0.318	-0.155	0.421	0.955	
TT	0.588	0.020	0.489	0.312	0.784

Table 2 show the discriminant validity result. The result revealed that diagonal bolden values are greater that the inner value. Therefore, discriminant validity is achieved

The structural model

Structural model fitness is examined after measurement model assessment has been met and fitness is shown to be acceptable. The structural or inner model consists of the factors and the arrows that connect one factor to another. The loadings of the direct paths connecting factors are standardized regression coefficients. To ensure that the final estimated result from the PLS is true, it is important to determine the fitness of the model. The fitness of the model can be assessed in the following ways; testing for collinearity of the structural model, assessing the significance and relevance of the structural model relationships, the level of the R^2 values, and the f^2 effect size (Tenenhaus, Vinzi, Chatelin & Lauro 2005). Hock & Ringle, (2006) described results above the cutoffs 0.67, 0.33 and 0.19 to be “substantial”, “moderate” and “weak” respectively. The R-square here would be considered to be of moderate strength or effect. To assess multicollinearity in the structural model, tolerance or VIF criteria may be applied, discussed and illustrated. The VIF benchmark should be less than 4.

The f-square effect size measure is another name for the R-square change effect. The f-square coefficient can be constructed equal to $(R^2_{\text{original}} - R^2_{\text{omitted}})/(1 - R^2_{\text{original}})$. The denominator in this

equation is “Unexplained”. The f-square equation expresses how large a proportion of unexplained variance is accounted for by R^2 change (Hair et al., 2014). Following Cohen (1988), .02 represents a “small” f^2 effect size, .15 represents a “medium” effect, and .35 represents a “high” effect size.

Table 3: Structural Fitness Indices

Construct	Item	VIF	R^2	f^2	Q^2
Consulting Time	CT1	1.136		0.033	
	CT4	1.136			
Drug Dispensing Time	DDT2	3.128		0.035	
	DDT3	2.748			
	DDT5	3.055			
	DDT6	3.089			
Patient Satisfaction	PAS1	1.395	0.357		0.334
	PAS3	1.190			
	PAS4	1.260			
	PAS6	1.358			
Registration Time	RT1	3.112		0.076	
	RT2	3.112			
Treatment Time	TT1	1.059		0.094	
	TT4	1.059			

Table 3 also presents the VIF diagnostic and estimated PLS weights for the indicators of all the items from the questionnaire. A common rule of thumb is that problematic multicollinearity may exist when the variance inflation factor (VIF) coefficient is higher than 4.0 (some use the more lenient cutoff of 5.0). None of the original indicators had VIF greater than 5.

The overall effect size measure for the structural model, as in regression, indicated that 35.7% variation in the Patient satisfaction is explained by the effect of consulting time, drug dispensing time, registration time and treatment time.

The f-squared for consulting time, drug dispensing time, registration time and treatment time are considered be weak effect on the dependent variable, since their values are 0.033, 0.035, 0.076 and 0.094 below 0.19 weak range. The Q^2 was estimated by the blindfolding method. The values of the Q^2 are 0.334 indicated that a greater than greater than zero, they have predictive relevance for this study.

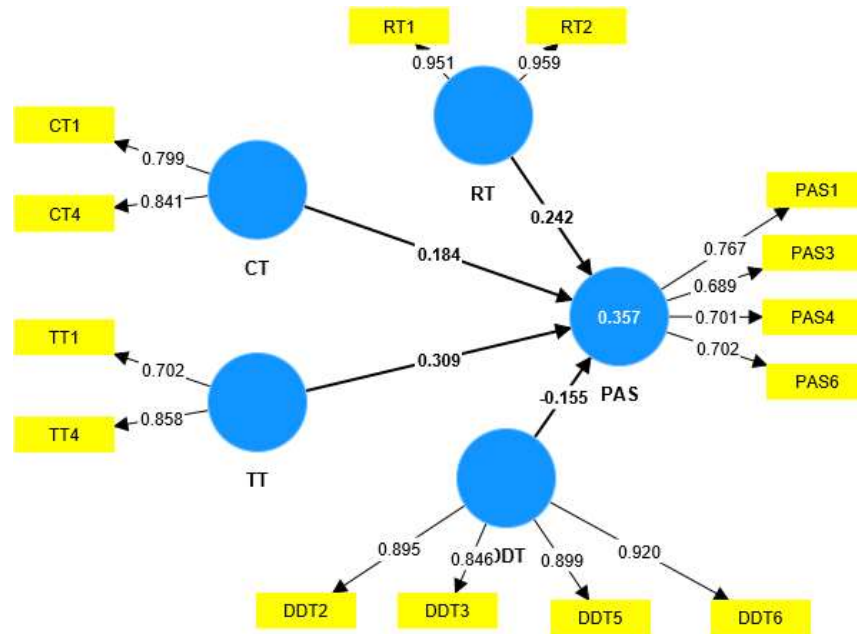


Figure 1: PLS-SEM structural model

Results and Discussion

Table 4: PLS-SEM Result

Hypo	Relationship	Beta	SE	T-test	P Values	Decision
H1	Registration -> Patient Satisfaction	0.242	0.052	4.689	0.000	Supported
H2	Consultation -> Patient Satisfaction	0.184	0.064	2.870	0.004	Supported
H3	Treatment Time -> Patient Satisfaction	0.309	0.068	4.508	0.000	Supported
H4	Drug Dispensing -> Patient Satisfaction	-0.155	0.047	3.325	0.001	Supported

The result Table 4, demonstrated that patients are satisfied with the registration process when they visit hospitals in North Central Nigeria. The registration time showed a positive and significant effect on patient satisfaction. This means that the quicker the time of registration the more satisfied the patients. The result agreed with the study of Chandra (2017), who found that the use of electronic health records and practice management tools by Medical practitioners to enable faster and more effective care to the patients and saving their valuable time. However, it does not agree with findings of Alrasheedi, AL-Mohaithef, Edrees and Chandramohan, (2019) who found that overall patients were mainly dissatisfied for wait times in relation to medication dispensation, vital signs measurement, dental consultations, and radiological investigation.

Furthermore, consultation time was found to be positive and significant on patient satisfaction. It also, revealed that the better the registration process, the more satisfied the patients. The result is consistent with study of Umar et al (2011), A total of 118 (31%) of the patients waited for less than an hour in the waiting room, while 371 (96.6%) spent less than 30 min with the doctor. More than half, 211 (55%) of the respondents were satisfied with the service delivery in the hospital, while only 63 (16%) of the respondents admitted to being given health talks while waiting to be seen by the doctor. Although majority of the patients waited for more than 1 h before being attended to, more than half of them were however satisfied with the services rendered to them. In the case of treatment time, the result showed that there is a positive and significant relationship between treatment and patient satisfaction. The outcome is inconsistent with the findings of Alrasheedi, AL-Mohaithef, Edrees, and Chandramohan (2019) who found that patients were mainly dissatisfied for radiological investigation. It was also found not corroborate with Kreitz, Winters and Pedowitz (2016) who revealed that the practice demonstrated no correlation during the same interval.

Finally, drug dispensing time was found to be negative and significant to patients' satisfaction. This revealed that most hospitals in North central Nigeria waste a lot of dispensing drugs to patients. This result does agree with the study of Alrasheedi, AL-Mohaithef, Edrees and Chandramohan, (2019). They found that overall, patients were mainly dissatisfied for wait times in relation to medication dispensation. On the contrary, the result does not agree with the result found by Kautsar, Nurhayati and GozaliD (2017) in which they found that compounding prescriptions' waiting time is not suited with the standard.

Conclusion and Recommendations

This study investigated hospital waiting time and Patient satisfaction in North Central Nigeria. It examined the effect of registration, consultation, treatment time and drug dispensing on patients satisfaction in North Central Nigeria. The result showed that registration, consultation, and treatment time significantly influence and bring about increased patient satisfaction but, drug dispensing time is the only factor that reduced patient satisfaction, as patients wait longer time before receiving prescribed drugs. It is important that hospitals improve their pharmacy department so as to enhance faster drug dispensing. It is important that hospitals improve their pharmacy/drug dispensing

department by increasing the number pharmacists to enhance faster drug dispensing, so as to avoid further frustration on the patients thereby, increasing their speed of recovery.

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