

# Factors Affecting Satisfaction with Antenatal Services in Nigeria

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## Abstract

Patient satisfaction is crucial to the development of healthcare quality improvement strategies. It is documented to be a multidimensional phenomenon regardless of the context from which it is being studied. The essence of evaluating patient satisfaction with healthcare services is well established. It can help to spot the aspect of service delivery processes that needs to be improved upon to deliver quality care. Patient satisfaction can be defined as a level of patient experience in accordance with her expectations. A higher proportion of the past studies had examined the influence of patient characteristics on satisfaction, while limited studies had investigated the effect of service characteristics or attributes of care on it. The purpose of this study therefore was to investigate the extent to which service characteristics influence satisfaction with antenatal services in Nigeria. It tested three hypotheses proposed in line with healthcare quality theory to provide answers to the question of “does interpersonal manner, self-reported health status, and perceived technical competence affect satisfaction with antenatal services?”. The study adopted a quantitative methodology with cross-sectional study design to examine the relationships. Two private hospitals and two public hospitals in the city of Abeokuta from Nigeria were randomly selected, followed by exit interview of one hundred pregnant women who visited the antenatal clinics of selected facilities on a routine follow-up basis. They reported their overall satisfaction with the care, and their perceptions on interpersonal manner of the nurses, health status, and technical competence on a 5-point Likert scale. The mean age was 29.92 years  $\pm$  standard deviation of 4.32 years. The mean overall satisfaction score was 4.22  $\pm$  0.86. The regression model supported the proposed hypothesis as three predictors of patient satisfaction were identified as interpersonal manner of nurses, self-reported health status, and perceived technical competence.

**Keywords:** antenatal care, health status, interpersonal manner, quality, satisfaction

## 1. Introduction

The concept of citizen and user satisfaction has become a common measure of performance across public goods and services globally (Olsen, 2015, 469). In the past, many managers of health care organisations gave little or no consideration to clients or patients in service management as they were seen as passive recipients of services and thought of as being at the bottom of the ladder while the managers considered themselves to be at the top of the organisation hierarchy (Zineldin, 2006, 68). This has however changed following the “new public management” practice and the attendant increase in “health consumer movement” (Gill and White, 2009, 10). Meanwhile, satisfaction of citizens with services received is said to be determined by their expectations and perceptions of service performance such that they are likely to be satisfied when performance surpasses expectations, and likely dissatisfied when performance is below expectations (Petrovsky et al., 2017, 395). Hence, patient satisfaction is defined as a level of patient experience in accordance with her expectations (Vukovic et al., 2012, 711). Satisfaction with services received from healthcare institutions has been found to be associated with compliance and treatment success (Huynh et al., 2018, 746; Xiao and Barber, 2008, 719). This has therefore made the study of patient satisfaction an important topic in health care management.

Though research into the concept of patient satisfaction is growing, the factors various clients or service consumers utilize to consider themselves satisfied are to a large extent indefinite. Consequently, there are several pathways through which overall satisfaction with healthcare services can be influenced (Carlin et al., 2012, 2263). Thus, research works investigating factors influencing satisfaction have only explained just a fraction, not up to 20%, of variance in satisfaction as the concept of patient satisfaction is complex and multidimensional (Onyeonoro et al., 2015, 26; Gill and White, 2009, 8). Most of the previous studies had assessed the effect of sociodemographic factors on patient satisfaction (Pan et al., 2015, 146). However, there is limited literature on how some of the

attributes of healthcare services like interpersonal manner, technical competence, health status or outcome, service cost, and information exchange; affect overall satisfaction. This present study therefore sought to make contributions to the theoretical advancement of the concept of patient satisfaction by investigating the effect of these health service characteristics, on the basis of “healthcare quality theory”. The theory was proposed by Donabedian in 1980 and argued that the reported level of patient satisfaction is the perception of patients on all aspects of quality of care, but especially as it relates to the interpersonal element of care (Gill and White, 2009, 10; Hawthorne et al., 2014, 528; Ofili, 2014, 27; Pan et al., 2015, 146).

Many citizens of developing nations feel that health system requires some form of reform as they are dissatisfied with the quality of both public and private healthcare services (Zineldin, 2006, 64). Therefore, identifying factors related to patient satisfaction is a very relevant issue for managers and administrators of healthcare services to gain insight into what the patients considered to be important. In Nigeria, for example, studies have indicated low patronage of institutional antenatal services, about 61% coverage (Dahiru and Oche, 2015, 2; Onyeajam et al., 2018, 1), which may not be unconnected with patient satisfaction. Meanwhile, Adewuyi et al. (2018, 2) defined antenatal care (ANC) as ‘health care during pregnancy’ that requires pregnant women to make periodic visits to health institutions for antenatal services. Sadly, Agbata et al. (2018, 21) noted that developing nations often neglect women on issues related to their health. Meanwhile, Nigeria is the second largest contributor to the burden of maternal deaths in the world (Gayawan, 2014, 59). The argument is that lack of trust and dissatisfaction with health services may be responsible for the low patronage of health care organisations for antenatal services and the resultant prevalence of maternal death. Therefore, advocating for institutional ANC to reduce maternal deaths without dealing with the perceptions of prospective clients or service consumers is a very wrong approach (Jeffery and Jeffery, 2010, 1711).

Most of the previous relevant studies in Nigeria were “atheoretical”, and probably conducted in tertiary institutions. This study was however different as it contributed to healthcare quality theory, and had its source of data from both private and public facilities. The central question was “does client perception on attributes of care affect patient satisfaction?” The objective was to identify the predictors of patient satisfaction related to service characteristics in the context of antenatal services in Nigeria. Traditionally, the responsibility of defining and managing quality in healthcare industry lies with the service providers. There is therefore tendency to focus on wrong issues when patient perceptions are being neglected. Hence, the eventual waste of the already scarce resources on issues that may not be relevant to the concept of patient satisfaction as an indicator of quality. Following healthcare quality theory, the assumption is that patients, despite the fact that they may not have the potential to assess certain practical aspects of healthcare services, are able to judge correctly how comprehensible and helpful the information given to them at health facilities are. They can as well give valid information about their relationship with medical staff, and factors that bar them from accessing healthcare services. Consequently, this study sought to examine the relationship between patient perception on attributes of care and satisfaction. The specific question that therefore needed an answer was: “does interpersonal manner, self-reported health status, and perceived technical competence affect satisfaction with antenatal services?”. Hence, a quantitative research was conducted to investigate the influence of these attributes of care or service characteristics on client satisfaction with antenatal services in Nigeria. The main argument was that the association would be positive as patients were expected to feel more satisfied in an environment of positive interactions.

## **2. The Concept of Patient Satisfaction**

The current situation in healthcare services has progressively turned to “consumer-driven” affairs (Bleustein et al., 2014, 393). It is now therefore very essential to deliver generally patient satisfaction and not only quality treatment. Though patient satisfaction is considered as an individual perception, it can be described as a mirror image of fact since it can help to spot the sections in service delivery that might require a change to enhance client satisfaction. Patient satisfaction has become a priority for healthcare managers and administrators, especially in this age of competitive market, as it has been predicted that clients who are satisfied with the services received are likely to be loyal to the service provider by their willingness to keep appointment dates and recommend the provider to family members and friends (Astuti and Nagase, 2016, 72; Crow et al., 2002, 9; Hollowell, 1996, 27-28). Moreover, evaluating public service satisfaction from citizens’ perspectives has been a long practice in urban research (Van de Walle and Van Ryzin, 2011, 1437). Consequently, healthcare system is not spared as it is regularly being assessed on patient satisfaction as a cardinal area to evaluate healthcare quality. In the United States of America for example, performance of health institutions on “Hospital Consumer Assessment of Healthcare Providers and Systems” (HCAHPS) is made available to the public to ensure accountability (Martsof et al., 2016, 2222). Meanwhile, Reeves and West (2015, 131) noted that in the last twenty years, patient satisfaction survey has gained global attention as it is now regularly conducted in Netherland, England, Scotland, United States and

Norway. Similarly, Nigeria was reported to have launched its “first patients' bill of rights” which was described as a “code of accountability” (Illoani, 2018; Ehikioya, 2018). The nation had in the past introduced “Respectful Maternity Care” (McConville, 2014, 155).

A number of approaches, from theoretical models to atheoretical studies, had been used in research works aimed at determining predictors of patient satisfaction, and there is still no consensus model as the concept of patient satisfaction is complex and multidimensional (Crow et al., 2002, 6). Five major theories upon which many patient satisfaction studies are based are “determinants and components”, “expectancy-value”, “multiple-model”, “discrepancy and transgression”, and “health-care quality” (Pan et al., 2015, 146; Ofili, 2014, 27; Hawthorne et al., 2014, 527-528; Gill and White, 2009, 9-10). To sum up the theories, factors that influence patient satisfaction can be generally grouped into individual and service characteristics (Linder-Pelz, 1982, 577). In another instance, Pan et al. (2015, 145) referred to them as health-care market, hospital, and patient characteristics. Meanwhile, Crow et al. (2002, 7) classified them as provider characteristics, factors related to the relationship between patients and medical staff, and features of the healthcare setting. Consequently, attributes related to provider may include ownership in terms of public or private, and other service characteristics like interpersonal manner, perceived or actual technical competence, and health outcome of the care. Figure 1 provides a framework to illustrate the relationships between these factors and patient satisfaction. Gender was not included in the framework as all the present study's respondents were women. This study aimed to contribute to the body of literature on patient satisfaction theories by investigating the relationship between patient satisfaction and these factors, especially service characteristics, as most of the previous relevant studies had been on the relationship between sociodemographic characteristics and patient satisfaction though the results had been inconsistent.

Some studies had found that women are more likely to report dissatisfaction with healthcare services (Elliott et al., 2012, 1483). Weisman et al. (2000, 658) identified communication issue as one of the reasons women are likely to be less satisfied with medical care than men. It is assumed that women make more enquiries than men, and can be more emotional especially when they are disappointed. They require more explanation and more time with care providers (Schmittiel et al., 2000, 761). Hence, their perception about the “quality of communication” they had with hospital staff might be responsible for the reported dissatisfaction. In a related manner, ethnicity or race had been said to affect satisfaction based on communication challenge in the aspect of language comprehension which does not permit free flow of information. Mander and Miller (2016, 85) argued that patient satisfaction and clinical outcome improve when clients' first language is used in health institutions to communicate with service users. Meanwhile, Rahmqvist (2001, 385) described age as a well-known predictor of patient satisfaction; the younger clients being less satisfied with health services than the older clients. On the other hand, travel distance between clients' place of residence and the facility's location was found to determine patronage (Keating et al., 2016, 1568; Masters et al., 2013, 147). There is also an argument that cost of healthcare is associated with voicing dissatisfaction (Dowding and John, 2011, 1410). In resource-limited settings, cost of care can be a major issue in accessing healthcare services as service payment relies heavily on out-of-pocket. Nguyen et al. (2012, 724) noted that the rate of “catastrophic payment” is high in nations with limited health insurance coverage. As regards hospital ownership, Andersen and Jakobsen (2011, 958) indicated that private and public facilities are under different degrees of political control. This has been noted to influence management styles and performance (Amirkhanyan et al., 2018, 37; Bjorvatn, 2018, 167). However, Perotin et al. (2013, 633) found no significant association between hospital ownership and patient experience. It is suggested that qualities of human resource management greatly influence citizen experience of public services (Petrovsky et al., 2017, 396).

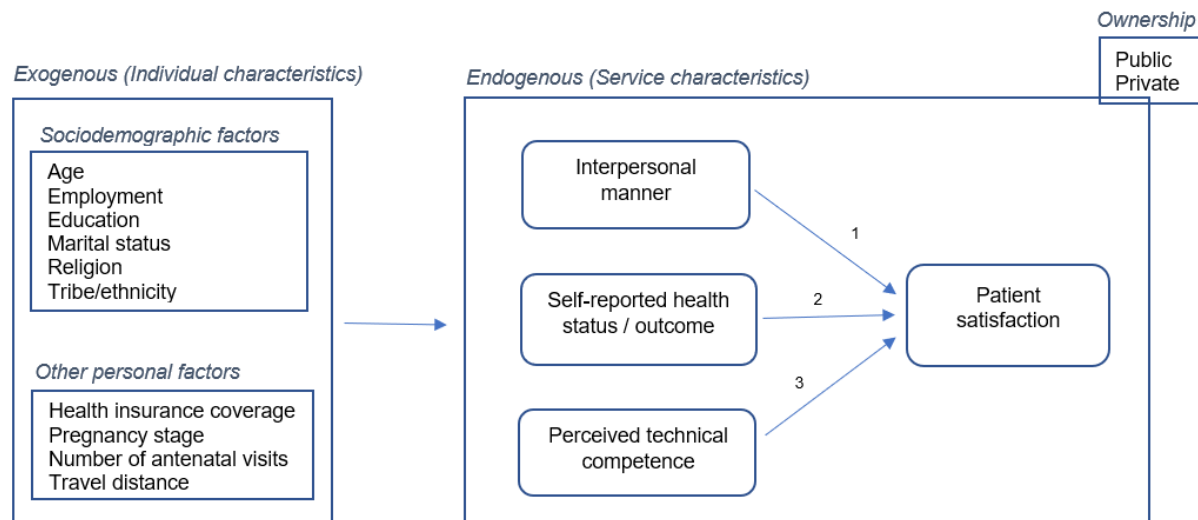


Figure 1. Framework of factors affecting satisfaction with antenatal services

Adapted from Carlin et al. 2012, 2254&2262; Crow et al., 2002, 9; Lee and Lin, 2010, 1812; Pan et al., 2015, 146; Powers and Bendall, 2004, 242-243; Priporas et al., 2008, 327; Thomassen et al., 2017, 899; Zineldin, 2006,70

### 2.1 Interpersonal Manner and Patient Satisfaction

Interpersonal manner of personnel involved in the delivery of healthcare services is key in ensuring that customers are satisfied and happy with the care they received. This is supported by healthcare quality theory as proposed by Donabedian in 1980 which emphasized that interpersonal dimension of healthcare is a major factor in predicting whether a patient will feel satisfied with healthcare services or not (Ofili, 2014, 27; Gill and White, 2009, 5; Cheng et al., 2003, 346). It is therefore expected that consumers of health services would place a very great deal of importance on the interpersonal manner of the hospital staff, most especially the nurses because they are in most cases the first category of staff patients have encounter with as they enter health facilities. Positive interpersonal manner can be described as interactions with genuine empathy (Mander and Miller, 2016, 85). Meanwhile, humans have been described as social beings and would therefore love to have good interactions wherever they found themselves. However, because of the load of work, hospital staff tend to fail in social aspect of care, especially when there is inadequate nurse staffing as it has been reported to hamper progress in healthcare (McHugh et al., 2013, 1740). In other words, staff may be less friendly, and strictly just face the technical aspect of care. Unfortunately, the technical aspect most of the times is difficult to assess by consumers as they may lack the practical knowledge. Hence, the tendency to still feel less satisfied even in the midst of best experts if the social aspect of the care is neglected. McHugh et al. (2011, 202) indicated a low level of patient satisfaction in hospitals where the nurses are burnt-out. The danger in this is that it has been documented that the less satisfied patients tend to fail in treatment compliance, and this slows down their health recovery process. This therefore indicates a waste of resources; time, money and manpower. Meanwhile, the targets of healthcare system are supposed to be good patient experience, advanced public health, and reduced service cost (Lewis et al., 2013, 669). Many studies have linked client-practitioner communication to medication adherence and patient satisfaction (Linn et al., 2016, 798). Hence, healthcare managers and administrators need to have a continuous medical education programme that will always address the issue of interpersonal manner of hospital staff.

It is difficult to have a quality healthcare without good interactions between service users and service providers. An appreciable corpus of published articles in the healthcare service journals has pointed out the significance of interpersonal process in the establishment of service quality in healthcare industry (Gill et al., 2011, 539). This is because an opportunity for feedback can be created when there is a good interaction between patients and healthcare professionals. Clients are likely to open up in a very friendly environment, and this can help the managers of his health to get more information that can aid the treatment of the health condition that brought him to the facility. One can therefore conclude that social dimension of care, in terms of interpersonal manner, supports healthcare system to deliver the technical elements of the care successfully. Meanwhile, Agbata et al. (2018, 24) indicated that positive interactions during ultrasound scan for pregnant women improved their experience of the

procedure. Furthermore, patient-centred care is being advocated as an instrument of delivering quality care because the needs of individual client vary, and a “one size fits all” approach might not work. It is therefore effective and efficient to find out the specific needs of individual service consumers in order to meet their expectations and save resources as well. However, this is possible only in the atmosphere of good interactions that encourages the customers to exchange information with the service providers. The quality of interaction among all the stakeholders in healthcare industry, including service consumers, is therefore crucial to the development of a good healthcare system.

It is important for health care organisations to understand that services must be patient centred if they intend to satisfy their clients and win their loyalty. This is especially important as it has been documented that satisfied clients are more compliant with the recommendations of their physicians and tend to be more loyal to them (Fenton et al., 2012, 405). In expanding “transformational leadership theory”, Huynh et al. (2018, 744) referred to three models of patient care; “patient-centred care (PCC)”, “patient empowerment”, and “patient care styles”. This indicated the significance of patient-physician relationship and the leadership role of physicians. Consequently, it is suggested that PCC has a positive impact on client-practitioner relationship, patient satisfaction and health-promoting actions (Meterko et al., 2010, 1188; Levinson et al., 2010, 1310). It has been described as health services in which service providers involve clients in an interactive conversation without passing judgement on them, as there is transition from a “paternalistic” care to PCC globally (Lee and Lin, 2010, 1811-1812). Hence, delivery of PCC is an important component of “high-quality care” (Li et al., 2013, 1417). Moreover, service users wish to be carefully listened to, they want to be able to communicate with their doctors and expect enough time with them. They need privacy and confidentiality. Sometimes, the reason for visiting a health facility may just be an emotional issue, which if not properly handled can worsen mental health and result into psychiatric issues. Therefore, the process set up within health care organisations to deliver services are crucial. The client is keen about salient matters such as service timeliness and the attitudes of medical staff towards them. Clients do not like to be kept waiting at service centre. They want to be able to get into the consulting room to see a doctor immediately they arrive at the hospital. All these would add up if patient is to evaluate the perceived value he has derived from visiting healthcare institutions for medical services.

Meanwhile, nurses deliver the most personal services to clients in healthcare facilities (Stimpfel et al., 2016, 1121). It is therefore important to answer a critical question like “does interpersonal manner of the nurses affect patient satisfaction?”. Patients always have nurses with them throughout their stay in the hospitals unlike the physicians who are likely to come around only for consultation and when their attention is called for. The level of interaction healthcare service users would have at service utilization might therefore largely depend on the nursing care. Nursing care has been described as a major predictor of patient experience (Martsolf et al., 2016, 2222). Service users desire a welcoming environment and expect respect and courtesy all through their stay in the hospital. Mander and Miller (2016, 85) argued that positive interactions with care providers influence level of satisfaction women have towards maternity care. Furthermore, client experience with healthcare services have been found to depend on the organisation’s staff strength, especially as regards nursing. This is because when there is inadequate number of nurses on duty, work-related stress can set in; thereby affecting interpersonal manner of the nurses. Whereas, with adequate number of personnel on duty, nurses can give a better service experience to consumers as they would have time and strength to attend to social aspects of care such as communicating and interacting with clients. The assumption is that clients are able to judge correctly how positive their interactions with the nurses were, and its impact on their service experience. This study therefore aimed at identifying the extent to which interpersonal manner of nurses affect client satisfaction in the context of antenatal services. Hence, the first hypothesis is proposed as thus:

Hypothesis 1: Interpersonal manner of nurses affects the probability of feeling satisfied with antenatal services

## *2.2 Health Status and Patient Satisfaction*

Health status or outcome is one of the major elements of healthcare quality framework. It is described as value that a client perceived he has derived from his visit to healthcare facility. Meanwhile, there is debate about the relationship between health status of patients and the level of their satisfaction with healthcare services. Ricci-Cabello et al. (2018, 440) found a weak association between patient-reported health status and patient satisfaction in a study conducted in England. In another instance, Pan et al. (2015, 146) documented the arguments of many researchers where some claimed that health status of clients affect level of satisfaction with healthcare services while others disagreed. On the other hand, Tateke et al. (2012, 10) indicated a positive association between patient satisfaction and a self-judged health status. This study therefore aimed to make a theoretical contribution by answering this important question; “does self-reported health status affect patient satisfaction?”, and examining the causal effect as there is insufficient knowledge about the influence of health status on patient satisfaction (Crow

et al., 2002, 45). Health status in this context is used as a common term to describe the health of an individual as it may range from poor to excellent. Since the primary aim of an individual who comes to health facilities is to feel better about her state of health, it is therefore not impossible that clients who feel positive about their health are likely to feel more satisfied with the process of service delivery. Westaway et al. (2003, 338) argued that clients who reported higher level of satisfaction with service encounter tend to be those who indicated positive health status.

Furthermore, the health status of client is likely to affect access to healthcare services as those who are healthier can easily walk into the health facilities while those who are very sick might need other support to get into the facilities probably because they are too weak and might need ambulance services. Xiao and Barber (2008, 721) indicated a strong relationship between patient satisfaction with access to healthcare services and self-reported health status. Similarly, Crow et al. (2002, 45) referred to a study where it was found that sicker people reported a higher level of dissatisfaction with the process of obtaining primary care appointment. Sicker clients are likely to be less satisfied with the waiting time involved in securing an appointment with service provider as they would likely want an appointment immediately, without any further delay. Healthier clients on the other hand could bear with the waiting time as they might still be able to continue their daily activities when there is no feeling of urgency with their health conditions. Cheng et al. (2003, 346) indicated that illness severity and health status can influence level of overall satisfaction patients would eventually report. There is therefore the possibility of clients who perceived their health as being excellent to feel more satisfied with healthcare services they have experienced, especially as regards access to care.

On the other hand, the primary concern of a consumer of health services is the health outcome of his visit to a health institution. He therefore assesses his health status after leaving the facility to find out if there has been any value for his money and time at the hospital in terms of overall health; including mental and emotional health. Hence, the influence of health status or outcome on patient satisfaction. Meanwhile, health status of clients at the time of accessing care or prior to service encounters is of management concern to service organisations as more resources may be required to take care of critically ill people as against managing minor ailments on outpatient basis. McHugh et al. (2016, 78) indicated that the complexity and cost implication of attending to clients with chronic conditions is significantly higher than for those that have no chronic conditions as people with chronic conditions are likely to require services of multiple specialists. This challenge can therefore create a feeling of dissatisfaction as there is possibility of a critically ill client feeling less satisfied than a client who just came for a minor ailment. It has been argued that the expectations formed by patient about healthcare services are dependent on their health status. This implies that health status plays a key role in predicting the level of satisfaction that service users are likely to report, especially because patient satisfaction may be assessed as patient experience against expected health outcome.

The eventual outcome of patient experience with service providers might in the end have an effect on overall satisfaction as regards whether clients feel better about their health or not. It has been indicated that changes in the state of health can affect level of satisfaction with healthcare services over time (Powers and Bendall, 2004, 242). Health care organisations might therefore need to employ different strategies with different categories of clients to ensure good health outcome. Crow et al. (2002, 45) noted that service organisations that manage more serious conditions may obtain lower level of patient satisfaction regardless of service quality as seriously ill clients tend to report lower level of satisfaction. Efforts targeted at such category of clients could however be put in place by managers and administrators of the facilities, if patient satisfaction is to be achieved. On the other hand, healthier clients might pose no challenge to health institutions, they probably need less care and minimal level of interaction with service providers, and may therefore indicate higher level of satisfaction (Xiao and Barber, 2008, 723). It therefore appears reasonable to expect clients who have experienced improvement in their health to be more satisfied, and conversely, but the evidence is limited (Covinsky et al., 1998, 223). Meanwhile, health status or outcome in the context of antenatal services is described as the well-being of mother and foetus (Srivastava et al., 2015, 7). It is used as a common term to refer to perception of the woman during pregnancy about her well-being and that of the baby. The assumption is that women are able to give valid information about their general health and pregnancy-related conditions. Hence, it is relevant to investigate the impact of reported health status on satisfaction with antenatal services. Thus, the second proposed hypothesis is:

Hypothesis 2: Self-reported health status affects the probability of feeling satisfied with antenatal services

### *2.3 Technical Competence and Patient Satisfaction*

Technical competence, also referred to as technical quality, is an important element in healthcare service delivery process. It can be described as the clinical expertise of care providers and compliance with standard operating procedure or guidelines as it concerns diagnosis and treatment (Ware et al., 1983, 248). In many instances, service

users may be concerned about the qualification of the medical staff as well as the quality of medical equipment being used on them (Ofili, 2014, 29). They want to be sure that they can trust the medical staff with their health, and have no doubt about their ability to deliver quality health care. They expect accuracy and thoroughness with no mistakes and risks. In other words, they can be very bothered about the technical skills of the medical team. They are also curious about the availability of essential tools needed for their care. They need assurance that the instruments are appropriate and capable of delivering desirable outcome to them. In addition, they expect that the prescribed medications would work well for them as there will not be any error in diagnosis or drug efficacy. The onus therefore is on health institutions to ensure that medical staff perform to standard.

Meanwhile, Pham et al. (2011, 704&708) indicated that though physicians generally recognise the significance of technical clinical quality in the delivery of health care services, they sense a tension in trying to ensure technical quality and seeking to satisfy patient simultaneously. In other words, healthcare providers are afraid that would hinder them from managing patients in accordance with medical guidelines. This is because of the possibility of clients asking for a specific care that is not recommended by the guidelines. In such case, it may be difficult to satisfy patients as it is expected of physicians to perform in line with the established guidelines. This can therefore be frustrating for physicians especially in this age where health institutions are being evaluated based on patient satisfaction scores. Hence, it appears that there is a puzzle that needs to be solved.

Many studies have been conducted to observe the relationship between service quality and patient satisfaction but only few have examined the association between technical competence and patient satisfaction (Zineldin, 2006, 61). Service quality refers to all the attributes of a product (Lim and Tang, 2000, 290) while technical quality or competence on the other hand has to do with the supplied treatment (Hawthorne et al., 2014, 528). De Keyser and Lariviere (2014, 33) referred to technical and functional quality as two separate dimensions of service quality. Meanwhile, Oyatoye et al. (2016, 67) noted that there is no conclusion on the best way to conceptualize the link between perceived quality of care and client satisfaction. In view of this, it would be essential to investigate the relationship between technical competence and patient satisfaction by asking a crucial question; “does technical competence affect patient satisfaction?”. Cheng et al. (2003, 346&350) indicated that the perception of clients about hospital’s technical skills or clinical competence influence their level of satisfaction and affect their willingness to recommend the facility to other citizens.

Healthcare service users attached a great deal of significance on how well the medical staff converse among themselves in knowledge sharing about their care and support for one another to close any skill gaps in the interest of the clients. They expect a certain level of team spirit among the practitioners that can boost their confidence in the ability of their health providers and allay their fears and doubts. Adequate communications among medical staff can help health institutions to ensure that all their staff are up to date with new clinical skills as they can mentor on another if they communicate often. In the context of antenatal services, the level of perception women have about the technical competence of their healthcare providers had been identified to influence their level of satisfaction with received care and their perceived safety. Mander and Miller (2016, 84) argued that measures of safety in maternal health involve “perceptions of staff technical competence” in terms of lack of risk to the mother as well as the baby. The assumption here is that women place a high level of significance on the technical ability of their care providers and able to assess to a reasonable extent their competence as regards safe delivery. This is consistent with the proposition of Evans and Tarneberg (2018, 91) that “patients care about and are able to discern the quality of provider knowledge”. Hence, the third hypothesis is proposed as thus:

Hypothesis 3: Perceived technical competence affects the probability of feeling satisfied with antenatal services

### 3. Methodology

A “quantitative methodology” approach was adopted to test the three hypotheses as proposed above and illustrated in Figure 1. It has been indicated that this approach could produce results that can confirm generally that patient satisfaction is a multi-dimensional concept (Crow et al., 2002, 7). The analysis focused on a sample of pregnant women who came for routine antenatal services in two public hospitals and two private hospitals located in Abeokuta, the capital city of Ogun State, Southwest Nigeria. The people of the state belong to the Yoruba ethnic group, but also accommodates people from other ethnic groups in the country. Meanwhile, the system of healthcare services provision in Nigeria is managed by the three tiers of government; namely, local, state and federal governments (Omoruan et al., 2009, 105), and the service providers can be categorized into public and private. The service payment is mainly through out of pocket mode of payment in contrast to the Italian and United Kingdom healthcare system where healthcare financing is by general taxation as indicated by Fiorentini et al. (2018, 268). However, there is a National Health Insurance Scheme (NHIS) that takes care of service payment for a small percentage of Nigerian citizens in the formal sector (Welcome, 2011, 474-475).

The four hospitals used as the study sites were randomly selected by ballot method from a list obtained from Ogun State Ministry of Health that indicated names of registered public and private health institutions in the capital city. The study design was cross-sectional, with the use of pretested interviewer-administered questionnaires on pregnant women as ANC outpatient was the “unit of analysis”. One hundred respondents were indicated as the sample size based on the number of identified pregnant women who consented to participate, similar to the situations in patient satisfaction studies by Sciacca et al. (2014, 645) and Gavran et al. (2013, 381). The distribution of respondents across the four hospitals was based on the number of women who visited the antenatal clinic during the study period and accepted to be interviewed. The inclusion criteria for the study included the fact that the respondents must be at least 18 years of age which is regarded as “full age” or “adult age” in Nigeria’s context. Those coming for the antenatal services for the first time were excluded from the study because of the assumption that some degree of expectation is expected with previous experience. The facilities included in the survey were First Alpha Hospital (private), General Hospital Ijaye (public), Oba Ademola Maternity Hospital (public), and Sacred Heart Hospital Lantoro (private), having the number of study participants as 20, 11, 40, and 29 respectively to make a total of 100 respondents for the study. These facilities usually follow clinical guidelines designed to ensure quality antenatal services for pregnant women.

The draft questionnaire was an adaptation from some standardized survey instruments like the “hospital consumer assessment of healthcare providers and systems”; HCAHPS (CAHPS and AHRQ, 2003), “core questionnaire for patient satisfaction”; COPS (Kleefstra et al., 2010, 3), “patient satisfaction questionnaire”; PSQ (Ware et al., 1983, 252-253), “short assessment of patient satisfaction”; SAPS (Hawthorne et al., 2014, 534-535), and “prenatal care satisfaction questionnaire” (Raube et al., 1998, 27). While developing the instrument, efforts were made to avoid bias due to “priming and context effects” and “acquiescent response set” as described by Hjortskov (2017, 924), Petrovsky et al. (2017, 399), and Ware et al. (1983, 251). For instance, some items on the questionnaire were “negatively worded” or “reverse phrased” as there is tendency of high satisfaction scores with positive statements (Dunsch et al., 2018, 2), and some items were “open-ended” to provide opportunity for more comments. The instrument was pretested, as a validity test. Necessary corrections were made to the questionnaire based on the field findings from the pretest.

The questionnaire was administered in form of an exit interview to those who were eligible and gave informed consent. The interview was conducted in either English or the native language (Yoruba) depending on what respondents preferred and could communicate easily with, as the research tool was translated from English into Yoruba similar to the situation with Kazakhstani women (Dauletyarova et al., 2018, 3). The respondents were approached after being attended to by the practitioners, and the objective of the survey was explained to them. The questionnaire assessed major attributes of antenatal care or service characteristics as indicated by Grayson-Sneed et al. (2016, 1054). It also included sociodemographic characteristics of the respondents. For instance, distance to facilities was assessed and measured by the travel time which was defined as number of minutes it would take respondents to move from her house to the facilities. The dependent variable was overall satisfaction, and was measured by a single item on the questionnaire similar to the practice of Andaleeb (1998, 183). The participants reported their overall satisfaction with a 5-point Likert scale that had the following designations: 1 - very dissatisfied; 2 - dissatisfied; 3 - neither satisfied nor dissatisfied; 4 - satisfied; and 5 - very satisfied. The independent variables included the six composite factors generated from 20 items on the questionnaire by exploratory factor analysis, and identified as patient-physician relationship (5 items), interpersonal manner of the nurses (5 items), information exchange (3 items), perceived technical competence (2 items), self-reported health status (2 items), and affordability of the service cost (3 items) as shown in Appendix 1. They were measured on a 5-point Likert scale of 1 - strongly disagree; 2 - disagree; 3 - neither agree nor disagree; 4 - agree; and 5 - strongly agree. Meanwhile, health status was measured on a different 5-point Likert scale of 1 - poor, 2 - fair, 3 - good, 4 - very good, and 5 - excellent. Items 14, 15, and 19 were “negatively worded; therefore, the way they were scored was reversed as shown in Table 1a, item 21 represented the “overall satisfaction”. Since all the responses ranged from 1 to 5, score for each factor was derived by summing the responses to all items in each factor, and computing the mean score for each factor as illustrated in Table 1b.



Table 1a. Scoring of items

Item Numbers	Original Response Value	Scored Value
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 20, 21	1	1
	2	2
	3	3
	4	4
	5	5
14, 15, 19	1	5
	2	4
	3	3
	4	2
	5	1

Note: Table was adapted from Marshall and Hays, 1994

Table 1b. Computing scale scores

Scale	Average These Items
Relationship	Items (1+2+3+4+5) / 5
Interpersonal Manner	Items (6+7+8+9+10) / 5
Information Exchange	Items (11+12+13) / 3
Technical Competence	Items (14+15) / 2
Health Status	Items (16+17) / 2
Affordability	Items (18+19+20) / 3

Note: The average of all items in each scale was measured after they were scored in accordance with Table 1a” (Marshall and Hays, 1994)

Primary data were collected from 100 respondents with the questionnaire. They were monitored and checked for completeness and accuracy before leaving the respondents to ensure reduced number of missing data. They were entered, cleaned, stored and analysed with computer software, Statistical Package for Social Sciences (SPSS) version 20. The data were exported to a statistical program, Stata version 15 for further analysis as it takes complex nature of sample design into account (Xiao and Barber, 2008, 721). Categorical variables were assigned numerical codes while entering them into SPSS. These codes were put in the questionnaire when collecting the data. Missing data were assigned “999” as numerical codes, the value was chosen as it was not relevant for the variables. Missing data were defined as those items with no response or responses more than one (Vukovic et al., 2012, 711). Descriptive statistics and tables were used to summarize variables such that mean values and percentages were computed for continuous and categorical variables respectively. With SPSS, an exploratory factor analysis (EFA) was run to identify attributes of healthcare or service characteristics that would be considered for further analysis. Using Stata, correlation analysis was run among the dependent and independent variables as practised by Andaleeb (1998, 184). Correlation analysis was also run among the dependent variable and variables indicating the respondent’s age, distance to facility, tribe, insurance coverage, waiting time, and hospital ownership to identify if there was a significant relationship that could define them as control variables as indicated by Evans and Tarneberg (2018, 91). In the analysis, age and waiting time were treated as continuous or interval variables while others were dummy coded or dichotomous variables (Xiao and Barber, 2008, 721; Pallant, 2016, 132; Rahmqvist, 2001, 388; Adeyinka et al., 2017, 4, 11). The coding system for the dummy-coded variables is as illustrated in Table 1c. Thereafter, ordinary least square (OLS) regression analysis was run to test the proposed hypotheses, and control for confounding. Meanwhile, Perotin et al. (2013, 633) documented that the difference in patient-reported

experience can partly be linked to unobserved features specific to each health institution. Therefore, the model was tested for heteroskedasticity, and was corrected accordingly with robust regression at the level of the four different hospitals selected for the study as practised by Fiorentini et al. (2018, 274-275), and Evans and Tarneberg (2018, 92). Ziebarth (2010, 117) indicated that reporting heterogeneity is an issue when measures of health are self-reported.

Table 1c. Coding system

Variable	Code	Label
Age in years	1-4	1 = 19-23, 2 = 24-28, 3 = 29-33, 4 = 34 or older
Employment	1-4	1 = Unemployed, 2 = Self-employed, 3 = Privately employed, 4 = Government employed
Education	1-5	1 = Primary, 2 = Secondary, 3 = OND (Ordinary National Diploma), 4 = HND (Higher National Diploma), 5 = University
Marital status	0-1	0 = Divorced, 1 = Married
Distance	0-1	0 = Near (travel time less than 28 minutes, average travel time for the respondents); 1 = Far (travel time of 28 minutes or more)
Religion	0-1	0 = Islam, 1 = Christianity
Tribe	0-1	0 = Igbo, 1 = Yoruba
Insurance coverage	0-1	0 = Out-of-pocket, 1 = Health insurance
Pregnancy stage	0-1	0 = Second trimester, 1 = Third trimester
ANC visits	0-1	0 = Less than 5 (average number of antenatal visits for the respondents), 1 = 5 or more
Waiting time	1-3	1 = Less than 60 minutes, 2 = 60-119 minutes, 3 = 120 minutes or more
Time spent with doctor	1-4	1 = 5 minutes or less, 2 = 6-10 minutes, 3 = 11-15 minutes, 4 = 16 minutes or more
Hospital ownership	0-1	0 = Public hospital, 1 = Private hospital

Before proceeding with the study, ethical approval was obtained from the Ethical Review Board, School of Business and Management, Queen Mary University of London. The selected health institutions gave permission for the study to take place in their facilities. In addition, one of the facilities issued a letter to communicate the approval (Appendix 2). After ensuring the respondents understood the purpose of the study, their right to participate or not was made known to them. Before commencing the administration of the questionnaire, informed consent was obtained from the participants. The little challenge on the field was the initial reluctance or non-response from the respondents which was overcome with further explanation on the reason for the research and presentation of letter of introduction from the school (Appendix 3) to indicate that the research was not commercial but institutional. Anonymity of the respondents were also maintained as no name or address was requested. Meanwhile, the choice of quantitative methodology might suffer some limitations as it restricts the scope of the feedback unlike when it is qualitative where respondents could freely express themselves, which is good for exploratory purpose. The cross-sectional design in this study might be a limitation and probably lead to overestimation of the findings because antenatal care is longitudinal in nature (Lee and Lin, 2010, 1812; Martsolf et al., 2016, 2224; Crow et al., 2002, 45).

#### 4. Data Analysis and Its Implications

##### 4.1 Description of Study Population

One hundred pregnant women were surveyed from the four health institutions, and descriptive statistics was computed with Stata. Table 2a shows that there were 51 respondents from the public facilities, and 49 from the private facilities. It appears the two groups were not much different in age considering the mean of 29.53 with standard deviation of 4.92, and a value of  $30.33 \pm 3.60$  from the public and private facilities respectively. This is further confirmed by the P-value of 0.084 in Table 2b. The mean age for the total sample was 29.92 with standard deviation (S.D.) of 4.32. The present study population could therefore be said to be older group compared to the group of respondents in another study in the northern part of the country where the average age was 25 years (Onyeajam et al., 2018, 4). The implication is that some studies had found age to be positively associated with satisfaction (Bleustein et al., 2014, 397; Hekkert et al., 2009, 72). On the other hand, travel time to public facilities (29 minutes and 43 seconds [ $\pm$  S.D. of 13.30]) was slightly higher compared to private institutions ( $26.18 \pm 12.02$ ). The mean travel time for the total sample was 27.84 minutes with standard deviation of 12.73. Overall, it might not be incorrect to say that those who really wanted the service were prepared to travel longer distance to get it as both the public and private facilities recorded high maximum travel time of 55 and 60 minutes respectively.

Meanwhile, the respondents in private facilities had higher attendance of antenatal clinics, between 2 and 15 (mean of  $5.47 \pm$  S.D. of 2.83), than those from public facilities whose visits ranged from 2 to 10 (mean of  $4.80 \pm$  S.D. of 1.79). This might mean that private facilities encourage their clients more as regards ANC attendance, keeping in mind that client loyalty may also have impact on private business as private organisations have been described as profit maximisers (Bjorvatn, 2018, 167; Astuti and Nagase, 2016, 72). The average number of antenatal visits for the whole sample was 5.13 with standard deviation of 2.37. Participants from the public facilities reported longer waiting time compared to those in private facilities as the average waiting time was about 1 hour 42 minutes (mean of  $102.06 \pm$  S.D. of 69.18) and 1 hour 6 minutes (mean of  $65.71 \pm$  S.D. of 46.19) respectively. This association is further confirmed to be statistically significant by the P-value of 0.044 in Table 2b. The waiting could take as long as 5 hours (maximum value of 300 minutes) in the public facilities, and 3 hours (maximum value of 180 minutes) in private facilities. This is roughly comparable to the findings of Dauletyarova et al. (2018, 4) where waiting time was between 0 and 300 minutes. Meanwhile, waiting time had been found to be negatively associated with patient satisfaction (Bleustein et al., 2014, 397-398; Adeyinka et al., 2017, 5). Waiting this long to be attended to might mean that the particular client would not be able to take part in any other productive activities for that day. It is therefore justifiable that service customers might not feel good about this. On the other hand, clients only spent few minutes with the doctors after waiting so long. The average time spent with the doctor in the consultation room was reported as 8 minutes (mean of  $7.98 \pm$  S.D. of 3.91) in the public facilities, and 11 minutes (mean of  $11.35 \pm$  S.D. of 7.58) in the private facilities. This association is further confirmed to be statistically significant by the P-value of 0.049 in Table 2b.

Table 2a. Descriptive statistics

HOSPITAL OWNERSHIP = PUBLIC HOSPITAL					
Variable	Obs	Mean	Std. Dev.	Min	Max
AGE (Years)	51	29.53	4.917	19	41
TRAVEL TIME (min)	51	29.43	13.300	5	55
NUMBER OF ANC VISITS	51	4.80	1.789	2	10
WAITING TIME (min)	51	102.06	69.175	10	300
TIME SPENT WITH DOCTOR (min)	51	7.98	3.906	3	20
HOSPITAL OWNERSHIP = PRIVATE HOSPITAL					
Variable	Obs	Mean	Std. Dev.	Min	Max
AGE (Years)	49	30.33	3.602	24	39
TRAVEL TIME (min)	49	26.18	12.024	5	60
NUMBER OF ANC VISITS	49	5.47	2.829	2	15
WAITING TIME (min)	49	65.71	46.188	10	180
TIME SPENT WITH DOCTOR (min)	49	11.35	7.576	3	30

From another perspective, Table 2b shows the frequency distribution of respondents across the two categories of health institutions, and the P-value to indicate any statistically significant association. The largest proportion of the total number of respondents, 45 (45%), was in the age group of 29-33 years. In a similar study among Kazakhstani women, the predominant age group was between 20 and 29 years (Dauletyarova et al., 2018, 3). Majority of the respondents were self-employed (54 [54%]), married (99 [99%]), Christians (70 [70%]), and of Yoruba ethnic group (90 [90%]). The number of HND and university graduates attending private facilities (14 [28.6%]) and 20 [40.8%] respectively) are more than those in public facilities (9 [17.6%] for each category). This association is further confirmed to be statistically significant by the P-value of 0.008 in Table 2b. Generally, the

educational status of the respondents could be described as high as majority of them were university graduates (29 [29%]). This supports the argument of Andaleeb (1998, 181) that today's service users of healthcare are well informed and better educated than those in the past. The implication therefore is that service providers cannot afford not to satisfy the clients if they intend to keep their patronage as some studies had found higher education to be associated with dissatisfaction (Carlin et al. 2012, 2267; Hekkert et al., 2009, 72; Kemp et al., 2015, 989; Pan et al., 2015, 149) though there were contrary findings as well (Dauletyarova et al., 2018, 6; Priporas et al., 2008, 331). Meanwhile, respondents from the private facilities were all married while married respondents constituted 98% of the study population in public facilities. Many of the respondents, (53 [53%]), travelled far distance to reach the health facilities.

Two tribes or ethnic groups were represented in the study; the Yorubas (native speakers) and the Igbos (another ethnic group in Nigeria, but non-native of the study area). The proportion of Yorubas in the public facilities (48 [94.1%]) was more than the proportion in private facilities (42 [85.7%]). This might mean that the language barrier has tendency to drive away other ethnic groups from public facilities as some studies indicated that ethnicity played a role in determining satisfaction especially as it concerns language comprehension (Mander and Miller, 2016, 88-89; Hekkert et al., 2009, 72). Concerning insurance coverage, only a very small proportion of service payment was done via health insurance in public facilities (4 [7.8%]) compared to a value of 15 (30.6%) in private facilities. This association is further confirmed to be statistically significant by the P-value of 0.004 in Table 2b. Most of the women, (81 [81%]), were not covered under any form of health insurance. The low health insurance coverage on both sides might affect satisfaction as some studies had found that insured clients tend to report higher levels of satisfaction (Carlin et al., 2012, 2267; Priporas et al., 2008, 331). The respondents in the study were either in the second or third trimester stage of pregnancy; none was in the first trimester. Majority of the respondents were in third trimester; 78.4% from public facilities, and 63.3% from private facilities. This might imply that women delay antenatal clinic attendance till when they are close to delivery probably to reduce cost implications on them as service payment is mainly via "out of pocket" since health insurance coverage is low in the country. Meanwhile, a higher proportion of them, (55 [55%]), had gone for institutional antenatal care five times or more.

Table 2b. Association between hospital ownership and some socio-demographic variables

VARIABLES	HOSPITAL OWNERSHIP						X <sup>2</sup>	P-value
	PUBLIC HOSPITAL		PRIVATE HOSPITAL		TOTAL			
	Freq.	Percent	Freq.	Percent	Freq.	Percent		
<b>AGE (Years):</b>								
19 – 23	6	11.8	0	0	6	6	8.03	0.084
24 – 28	13	25.5	17	34.7	30	30		
29 – 33	21	41.2	24	49.0	45	45		
34 or older	11	21.6	8	16.3	19	19		
<b>EMPLOYMENT STATUS:</b>								
Unemployed	4	7.8	4	8.2	8	8	2.123	0.573
Self Employed	31	60.8	23	46.9	54	54		
Privately Employed	9	17.8	13	26.5	22	22		
Government Employed	7	13.7	8	18.4	16	16		
<b>HIGHEST EDUCATION:</b>								
Primary	5	9.8	2	4.1	7	7	13.53	0.008*
Secondary	17	33.3	5	10.2	22	22		
OND	11	21.6	8	16.3	19	19		
HND	9	17.6	14	28.6	23	23		
University	9	17.6	20	40.8	29	29		
<b>MARITAL STATUS:</b>								
Divorced	1	2.0	0	0	1	1	0.97	0.325
Married	50	98.0	49	100	99	99		
<b>TRAVEL DISTANCE:</b>								
Near	20	39.2	27	55.1	47	47	2.532	0.112
Far	31	60.8	22	44.9	53	53		
<b>RELIGION:</b>								
Islam	16	31.4	14	28.6	30	30	0.093	0.78
Christianity	35	68.6	35	71.4	70	70		
<b>TRIBE:</b>								
Igbo	3	5.9	7	14.3	10	10	1.981	0.161
Yoruba	48	94.1	42	85.7	90	90		
<b>INSURANCE COVERAGE:</b>								
Out of Pocket	47	92.2	34	69.4	81	81	8.418	0.004*
Health Insurance	4	7.8	15	30.6	19	19		
<b>PREGNANCY STAGE:</b>								
Second Trimester	11	21.6	18	36.7	29	29	2.792	0.095
Third Trimester	40	78.4	31	63.3	71	71		
<b>ANC VISITS:</b>								
Less than 5	25	49.0	20	40.8	45	45	0.679	0.41
5 or more	26	51.0	29	59.2	55	55		
<b>WAITING TIME:</b>								
Less than 60 min	12	23.5	21	42.9	33	33	6.241	0.044*
60 – 119 min	14	27.5	15	30.6	29	29		
120 min or more	25	49.0	13	26.5	38	38		
<b>TIME SPENT WITH DOCTOR:</b>								
5 min or less	26	51.0	17	34.7	43	43	9.53	0.049*
6 – 10 min	19	37.3	17	34.7	36	36		
11 – 15 min	5	9.8	5	10.2	10	10		
16 min or more	1	2.0	10	20.4	11	11		

\* Statistically significant

#### 4.2 Exploratory Factor Analysis

Exploratory factor analysis was run on SPSS as a measure of validity and “data reduction technique” to find a significant approach to cluster items on the questionnaire into valid attributes of care or service characteristics that influence patient satisfaction (Veronesi et al., 2015, 1036) since measures with no reliability and validity are of limited use (Amirkhanyan et al., 2018, 34). Moreover, the concept of satisfaction is a complex and multidimensional phenomenon which suggests why it is hard to find a simple measurement. A total

of 37 items was selected from the questionnaire for the initial factor analysis. The data were screened to exclude problematic variables by inspecting the correlation matrix output and scanning for items with many correlation coefficients below 0.3. These items were dropped because of the inappropriateness of factor analysis when there is a small number of correlations above 0.3 (Field, 2018, 806; Pallant, 2016, 184). Subsequently some items with factor loading below 0.40 were eventually dropped as recommended (Stevens 2002, cited in Field, 2018, 795). In the end, 20 items were selected for the final principal axis factor analysis with orthogonal rotation (varimax). “Varimax” has been documented to produce more interpretable groups of factors” (Field, 2018, 793). A table of descriptive statistics that shows the minimum and maximum scores, mean, and standard deviation for each item is provided in Appendix 4.

The observed value of 0.72 for Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy as shown in Table 3a was greater than the acceptable minimum value of 0.5 (Field, 2018, 798&820). Individual items also had KMO values greater than 0.5. This implies that the sample size for this study was very likely to be adequate for factor analysis to produce reliable and distinct factors. Bartlett’s test of sphericity was significant at  $p < 0.001$ , with Chi-square value of 965.50. Hence, factor analysis could be said to be appropriate for the data set (Pallant, 2016, 184; Adeyinka et al., 2017, 4).

Table 3a. KMO and Bartlett’s Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.722
Bartlett's Test of Sphericity	Approx. Chi-Square	965.499
	df	190
	Sig.	.000

Furthermore, an initial analysis was conducted to find eigenvalues associated with each factor in the data set. The extraction method was principal axis factoring. Table 3b shows the eigenvalues for each factor prior to and following extraction as well as after rotation. In line with Kaiser’s criterion or eigenvalue rule, six factors had eigenvalues of 1 or more, and in combination explained 72.18% of the variance. The respective initial eigenvalues associated with factors 1 to 6 were: 5.61, 2.44, 1.97, 1.77, 1.46, and 1.18 while the percentage of variance they explained were: 28.06%, 12.20%, 9.84%, 8.87%, 7.32%, and 5.89% respectively. Though scree plot can be debatable, the point of inflexion at factor 7 as shown in Figure 2 indicates a certain level of uniformity between Catell’s scree test and Kaiser’s criterion (Pallant, 2016, 185; Field, 2018, 811). Hence, all the six factors were retained to represent dimensions of satisfaction in further analysis.

Table 3b. Eigenvalues associated with each factor before extraction, after extraction, and after rotation

Factor	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.612	28.061	28.061	5.229	26.144	26.144	3.277	16.385	16.385
2	2.440	12.200	40.261	2.058	10.289	36.434	2.861	14.306	30.691
3	1.969	9.843	50.104	1.663	8.315	44.749	1.828	9.139	39.830
4	1.773	8.867	58.971	1.456	7.278	52.027	1.608	8.041	47.871
5	1.463	7.316	66.287	1.110	5.551	57.578	1.575	7.877	55.748
6	1.178	5.889	72.176	.753	3.765	61.343	1.119	5.595	61.343
7	.815	4.076	76.252						
8	.722	3.608	79.860						
9	.565	2.826	82.686						
10	.535	2.676	85.362						
11	.512	2.558	87.920						
12	.442	2.208	90.128						
13	.381	1.903	92.030						
14	.329	1.647	93.678						
15	.296	1.480	95.158						
16	.293	1.467	96.625						
17	.215	1.077	97.702						
18	.181	.903	98.604						
19	.168	.842	99.446						
20	.111	.554	100.000						

Extraction Method: Principal Axis Factoring.

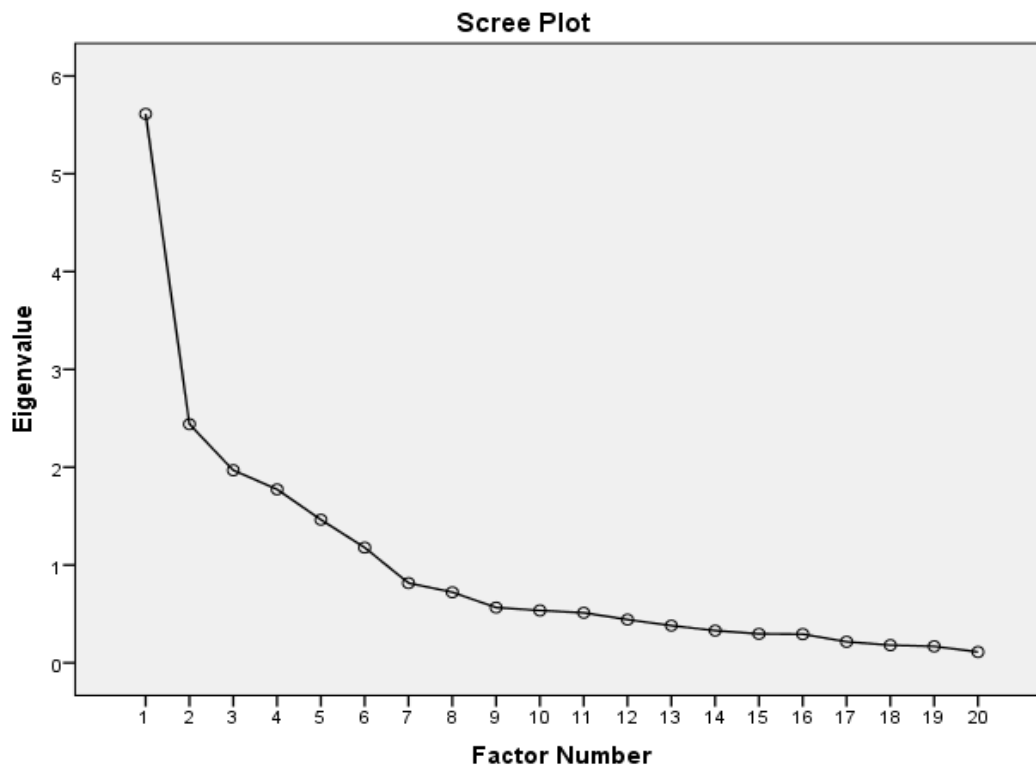


Figure 2. Scree plot

Table 3c indicates the rotated factor loadings. The items that aggregated around the same factor indicated that factor 1 described relationship between patients and physicians, factor 2; interpersonal manner of the nurses, factor 3; information exchange, factor 4; perceived technical competence, factor 5; health status or

outcome, and factor 6 represented affordability of service cost. Reliability check was thereafter conducted to ensure the scale was reliable. The full SPSS output for reliability statistics is provided in Appendices 5a-5f. Meanwhile, Table 3d presents the summary of the exploratory factor analysis to reflect the reliability statistics with respective value for Cronbach's  $\alpha$ , in addition to number of items, eigenvalues, percentage of variance and factor loadings, for each factor. From the result of varimax rotation, there were six subscales. Subscale 1 (Relationship) included items 1-5 (5 items), subscale 2 (Manner) included items 6-10 (5 items), subscale 3 (Information) included items 11-13 (3 items), subscale 4 (Competence) included items 14-15 (2 items), subscale 5 (Health) included items 16-17 (2 items), and subscale 6 (Affordable) included items 18-20 (3 items). The relationship, interaction, communication, competence, and health subscales all had high internal consistency with values for Cronbach's Alpha ( $\alpha$ ) being 0.88, 0.84, 0.71, 0.84, and 0.80 respectively, which were above recommended value of 0.70 (Andaleeb, 1998, 184). However, the cost subscale had relatively low reliability, Cronbach's  $\alpha$  being 0.59. The number of cases and items listed in the case processing summary table and reliability statistics table respectively was correct. All the values for inter-item correlation matrix were positive, which indicated that the underlying characteristics being measured by all the items were the same (Pallant, 2016, 104). In addition, the values for corrected item-total correlation that appeared in the item-total statistics table were all above 0.3.



Table 3c. Factor loadings after rotation

Rotated Factor Matrix<sup>a</sup>

	Factor					
	1	2	3	4	5	6
1. Doctors always treat me with courtesy and respect	<b>.842</b>	.077	.066	.066	.004	.141
2. Doctors always listen carefully to me	<b>.821</b>	.079	.043	.094	.050	.015
3. Doctors always explain things in a way I could understand	<b>.792</b>	.163	.076	-.027	.083	.050
4. I always have confidence and trust in the doctors attending to me	<b>.738</b>	.272	.102	.259	.005	.027
5. Doctors always spend enough time to discuss my health with me	<b>.592</b>	.059	.296	-.069	.188	.087
6. I always have confidence and trust in the nurses attending to me	.167	<b>.792</b>	.078	.046	.084	.088
7. Nurses always listen carefully to me	.081	<b>.746</b>	.071	-.022	.124	-.005
8. Nurses always treat me with courtesy and respect	.126	<b>.736</b>	.195	.057	-.044	-.016
9. Nurses always explain things in a way I could understand	.037	<b>.666</b>	-.008	.127	.041	.050
10. I always get help as soon as I want it	.175	<b>.583</b>	.306	.152	-.128	.186
11. Before prescribing any new medicine to me, I am always asked if I am allergic to any medicine	.017	.106	<b>.850</b>	.041	.212	.052
12. Before prescribing any new medicine to me, possible side effects of the medicine are always described to me in a way I could understand	.165	.372	<b>.616</b>	-.038	.028	.007
13. Before prescribing any new medicine to me, I am always asked if I am taking any other medicine or supplement	.224	.078	<b>.501</b>	.150	-.069	.046
14. Some of the doctors I have seen lack experience with antenatal services	.028	.138	.108	<b>.894</b>	.036	.107
15. I have some doubts about the ability of the doctors who attend to me	.131	.078	.047	<b>.735</b>	.144	.141
16. In general, how would you rate your overall mental or emotional health after your experience in the clinic?	.072	-.066	-.010	.058	<b>.949</b>	.080
17. In general, how would you rate your overall health after your experience in the clinic?	.153	.191	.156	.125	<b>.675</b>	.097
18. The amount charged for antenatal services is reasonable	.093	.084	.206	.067	.196	<b>.686</b>
19. The amount charged for laboratory tests and ultrasound scan is extremely high	.052	.079	-.190	.299	-.055	<b>.580</b>
20. I think I can get antenatal services easily even if I do not have money with me	.394	.022	.322	-.028	.134	<b>.429</b>

Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Table 3d. Summary of the exploratory factor analysis (N = 100)

Item	Rotated Factor Loadings					
	1 Relationship	2 Manner	3 Information	4 Competence	5 Health	6 Affordability
1. Doctors always treat me with courtesy and respect	<b>0.842</b>	0.077	0.066	0.066	0.004	0.141
2. Doctors always listen carefully to me	<b>0.821</b>	0.079	0.043	0.094	0.050	0.015
3. Doctors always explain things in a way I could understand	<b>0.792</b>	0.163	0.076	-0.027	0.083	0.050
4. I always have confidence and trust in the doctors attending to me	<b>0.738</b>	0.272	0.102	0.259	0.005	0.027
5. Doctors always spend enough time to discuss my health with me	<b>0.592</b>	0.059	0.296	-0.069	0.188	0.087
6. I always have confidence and trust in the nurses attending to me	0.067	<b>0.792</b>	0.078	0.046	0.084	0.088
7. Nurses always listen carefully to me	0.081	<b>0.746</b>	0.071	-0.022	0.124	-0.005
8. Nurses always treat me with courtesy and respect	0.126	<b>0.736</b>	0.195	0.057	-0.044	-0.016
9. Nurses always explain things in a way I could understand	0.037	<b>0.666</b>	-0.008	0.127	0.041	0.050
10. I always get help as soon as I want it	0.175	<b>0.583</b>	0.306	0.152	-0.128	0.186
11. Before prescribing any new medicine to me, I am always asked if I am allergic to any medicine	0.017	0.106	<b>0.850</b>	0.041	0.212	0.052
12. Before prescribing any new medicine to me, possible side effects of the medicine are always described to me in a way I could understand	0.165	0.372	<b>0.616</b>	-0.038	0.028	0.007
13. Before prescribing any new medicine to me, I am always asked if I am taking any other medicine or supplement	0.224	0.078	<b>0.501</b>	0.150	-0.069	0.046
14. Some of the doctors I have seen lack experience with antenatal services	0.028	0.138	0.108	<b>0.894</b>	0.036	0.107
15. I have some doubts about the ability of the doctors who attend to me	0.131	0.078	0.047	<b>0.735</b>	0.144	0.141
16. In general, how would you rate your overall mental or emotional health after your experience in the clinic?	0.072	-0.066	-0.010	0.058	<b>0.949</b>	0.080
17. In general, how would you rate your overall health after your experience in the clinic?	0.153	0.191	0.156	0.125	<b>0.675</b>	0.097
18. The amount charged for antenatal services is reasonable	0.093	0.084	0.206	0.067	0.196	<b>0.686</b>
19. The amount charged for laboratory tests and ultrasound scan is extremely high	0.052	0.079	-0.190	0.299	-0.055	<b>0.580</b>
20. I think I can get antenatal services easily even if I do not have money with me	0.394	0.022	0.322	-0.028	0.134	<b>0.429</b>
Eigenvalues	5.61	2.44	1.97	1.77	1.46	1.18
% of variance	28.06	12.20	9.84	8.87	7.32	5.89
Cronbach's Alpha ( $\alpha$ )	0.88	0.84	0.71	0.84	0.80	0.59
Number of items	5	5	3	2	2	3

Note: Factor loadings over 0.40 appear in bold

#### 4.3 Descriptive Statistics of Dependent and Independent Variables

The six attributes of care or service characteristics identified from exploratory factor analysis were referred to as independent variables. Their scores were computed as the average score for all the items that constituted each factor as shown in Appendix 4. Table 4 presents the descriptive statistics of both the dependent and independent variables. The total number of respondents was 100. Patient-physician relationship had the highest mean score ( $4.55 \pm 0.66$ ), followed by interpersonal manner of nurses ( $4.42 \pm 0.67$ ) and self-reported health status or outcome ( $4.34 \pm 0.74$ ). Affordability of the service cost and perceived technical competence had the last two least scores of  $3.72 \pm 0.81$  and  $3.77 \pm 1.04$  respectively. The reported scores ranged from 1 to 5 for patient-physician relationship, perceived technical competence, and

affordability of service cost, while it ranged from 2 to 5 for interpersonal manner of the nurses, self-reported health status, and information exchange. The mean score for the overall satisfaction was 4.22 with standard deviation of 0.86, and the score ranged from 1 to 5. This was similar to the finding of a study in the United States by Stolzmann et al. (2010, 678-679) where the overall satisfaction also recorded a mean score of 4.2, and a higher score on patient-physician relationship was observed. However, Umeano-Enemuoh et al. (2014, 16) indicated a mean satisfaction score of 3.75 in a study in Southeast Nigeria. On the other hand, Andaleeb (1998, 184) reported lowest mean score of  $2.76 \pm 1.02$  on perception about affordability of service cost similar to the observation in this present study. In another instance, Cheng et al. (2003, 350) reported highest average score of  $4.3 \pm 0.7$  for physicians' communication of situations to patients, and a lowest average score of  $3.9 \pm 0.7$  for perceived recovery or health outcome. These findings therefore had indicated that the social aspect of care, in terms of relationship and interpersonal manner, might be more important than technical competence, in influencing patient satisfaction.

Table 4. Summary statistics of dependent and independent variables

Variable	Obs	Mean	Std. Dev.	Min	Max
SATISFACTION	100	4.22	.8596452	1	5
RELATIONSHIP	100	4.546	.6635412	1	5
MANNER	100	4.422	.6684189	2	5
INFORMATION	100	4.056667	.9236329	2	5
COMPETENCE	100	3.77	1.035774	1	5
HEALTH	100	4.34	.7347095	2	5
AFFORDABLE	100	3.723333	.8138186	1	5

#### 4.4 Correlation Analysis for Dependent and Independent Variables

Correlation analysis was run for the variables under study to examine the relationship between them, in consistent with a study from a city in Pennsylvania by Andaleeb (1998: 184). Table 5 shows the correlation matrix for satisfaction (dependent variable) and the six service characteristics (independent variables); indicating the linear relationship between all possible combinations of pairs of these variables. The row for each variable is subdivided into other three rows: the first row provides the correlation coefficient ( $r$ ), the second row indicates the statistical significance level ( $p$ -value), and the third shows the number of respondents ( $n$ ) as 100. All the relationships among the measured variables were statistically significant at  $p$ -value less than 0.05 ( $p < 0.05$ ) except the relationships between health and manner, competence and information, health and information, and competence and relationship, though the last two were still significant at  $p < 0.1$ . However, some of the relationships were significant at a more statistical significance level of  $p < 0.001$ . For example, the relationships between competence and satisfaction, information and satisfaction, manner and satisfaction, relationship and satisfaction, information and manner, and information and relationship were all statistically significant at  $p < 0.001$ . Meanwhile, only the relationship between manner and satisfaction, which was positive as others, produced a large correlation ( $r = 0.54$ ) as  $r$  value of 0 is described as “no relationship”,  $r$  value equals to 0.10 to 0.29 as “small relationship”,  $r$  value equals to 0.30 to 0.49 as “medium relationship”, and  $r$  value equals to 0.50 to 1.0 as “large relationship” (Cohen 1988, cited in Pallant, 2016, 137). When considering the relationship of other independent variables with the dependent variable, they all produced a medium positive correlation except for “affordable service cost” which had a small positive relationship with satisfaction ( $r = 0.23$ ). Overall, it can be confidently stated that there was a strong, positive correlation between manner and satisfaction,  $r = 0.54$ ,  $n = 100$ ,  $p < 0.0001$ . This implies that satisfaction level increases as level of interpersonal manner of the nurses increases, though it does not confirm causal effect. Furthermore, the values of correlation coefficient in Table 5 could be said to promote “discriminant validity” because the values of Cronbach's  $\alpha$  for a particular scale, as provided in Table 3d, is still higher than the correlation coefficients between the scale and other scales (Andaleeb, 1998, 184; Westaway et al., 2003, 340).

Table 5. Zero-order correlations

	SATISF~N	RELATI~P	MANNER	INFORM~N	COMPET~E	HEALTH	AFFORD~E
SATISFACTION	1.0000						
	100						
RELATIONSHIP	0.4354*	1.0000					
	0.0000						
	100	100					
MANNER	0.5364*	0.3234*	1.0000				
	0.0000	0.0010					
	100	100	100				
INFORMATION	0.3573*	0.3259*	0.4015*	1.0000			
	0.0003	0.0009	0.0000				
	100	100	100	100			
COMPETENCE	0.3524*	0.1963	0.2262*	0.1651	1.0000		
	0.0003	0.0503	0.0236	0.1007			
	100	100	100	100	100		
HEALTH	0.3042*	0.2287*	0.1286	0.1896	0.2033*	1.0000	
	0.0021	0.0221	0.2023	0.0588	0.0424		
	100	100	100	100	100	100	
AFFORDABLE	0.2275*	0.3075*	0.2106*	0.2032*	0.3072*	0.2321*	1.0000
	0.0229	0.0019	0.0354	0.0426	0.0019	0.0201	
	100	100	100	100	100	100	100

\* represents  $p < 0.05$

#### 4.5 Correlation Analysis for Dependent and Other Relevant Variables

Correlation analysis was run for dependent variable and some other relevant variables that have been indicated by previous studies to influence patient satisfaction as discussed under Section 4.1. This is to confirm if they might have any effect in this study so that they could be included in the regression analysis as control variables. Table 6 shows the correlation matrix for these variables and satisfaction (dependent variable). Only four relationships were statistically significant at  $p < 0.05$  among all possible combinations of pairs of the examined variables. Firstly, the relationships between satisfaction and tribe was significant and positive, which implies that satisfaction level increases as the likelihood of being Yoruba increases. However, it was a small correlation ( $r = 0.28$ ,  $n = 100$ ,  $p < 0.01$  [ $p = 0.0047$ ]), and there was no significant relationship between satisfaction and the remaining relevant variables examined. Hence, their exclusion from regression analysis. Secondly, age and insurance were significantly related positively, with small correlation ( $r = 0.26$ ,  $n = 100$ ,  $p < 0.01$  [ $p = 0.0079$ ]). This means that age increases as health insurance coverage increases. Thirdly, there was a significant and positive relationship between insurance and hospital ownership, with small correlation ( $r = 0.29$ ,  $n = 100$ ,  $p < 0.01$  [ $p = 0.0034$ ]). This indicates that health insurance coverage increases as the likelihood of the facility being a private organisation increases. Lastly, waiting time and hospital ownership were significantly related negatively, with medium correlation ( $r = -0.30$ ,  $n = 100$ ,  $p < 0.01$  [ $p = 0.0027$ ]). This implies that waiting time increases as the likelihood of the facility being a private organisation decreases, and might be seen as supporting some previously documented findings (Dauletyarova et al., 2018, 4; Adeyinka et al., 2017, 5; Bleustein et al., 2014, 397-398). On the other hand, Onyeajam et al. (2018,

6-7) found no significant association between patient satisfaction and demographic factors in northern Nigeria, which is comparable to this study’s findings. However, some studies had linked older age with high level of satisfaction (Carlin et al., 2012, 2267; Hekkert et al., 2009, 72; Kemp et al., 2015, 989; Xiao et al., 2008, 721; Bleustein et al., 2014, 397). In another instance, Pan et al. (2015, 150) and Kemp et al. (2015, 989) indicated that ethnic minorities reported higher level of satisfaction while Carlin et al. (2012, 2267) found no significant association. Some reports had linked health insurance coverage with satisfaction (Xiao and Barber, 2008, 721; Priporas et al., 2008, 331; Pan et al., 2015, 149; Carlin et al., 2012, 2267).

Table 6. Correlation matrix

	SATISF~N	AGE	DISTANCE	TRIBE	INSURA~E	WAITIN~E	OWNERS~P
SATISFACTION	1.0000						
	100						
AGE	0.0456	1.0000					
	0.6524						
	100	100					
DISTANCE	-0.1560	0.0291	1.0000				
	0.1211	0.7739					
	100	100	100				
TRIBE	0.2806*	0.0171	0.0200	1.0000			
	0.0047	0.8662	0.8432				
	100	100	100	100			
INSURANCE	-0.0650	0.2640*	-0.1568	-0.0935	1.0000		
	0.5207	0.0079	0.1193	0.3550			
	100	100	100	100	100		
WAITING_TIME	-0.0656	-0.0213	0.0834	-0.0749	-0.1815	1.0000	
	0.5166	0.8332	0.4095	0.4590	0.0708		
	100	100	100	100	100	100	
OWNERSHIP	-0.1352	0.0927	-0.1591	-0.1400	0.2901*	-0.2968*	1.0000
	0.1799	0.3589	0.1138	0.1647	0.0034	0.0027	
	100	100	100	100	100	100	100

#### 4.6 Regression Analysis

With some levels of relationship observed between individual independent variables and dependent variable in Table 5, OLS (ordinary least squares) regression was run to control for confounding and examine the difference in the relationship from a simple correlation to a multiple one to confirm a causal effect and test the proposed hypotheses. The three proposed hypotheses can be represented in a regression equation as:

Equation 1: Satisfaction (Y) = Intercept ( $\alpha$ ) +  $\beta_1$ \*Interpersonal manner of the nurses +  $\beta_2$ \*Self-reported health status +  $\beta_3$ \*Perceived technical competence + error

The OLS (ordinary least squares) regression was run following the four stages as labelled below in Tables 7a-7d. In the first step, the OLS regression was run with the assumption of homoscedasticity. Breusch-Pagan / Cook-Weisberg test for heteroskedasticity was conducted in Stage 2 to confirm if the assumption could hold. The test

was statistically significant:  $p\text{-value} = 0.0000$ ; which can be interpreted as  $p < 0.0005$  (Pallant, 2016, 176). It indicated that the assumption was violated, and that there was heteroscedasticity. This implies that error does not remain constant with either an increase or decrease in value of the predictor variables (Field, 2018, 387). The estimates therefore needed to be corrected by running robust regression at the level of the four facilities selected for the study in Stage 3. A table of the two OLS regression analysis was computed in Stage 4 to compare the results.

Table 7a. Stage 1 - OLS regression testing the hypothesis of manner, competence and health status with satisfaction

Source	SS	df	MS	Number of obs	=	100
				F(6, 93)	=	11.93
Model	31.8129814	6	5.30216357	Prob > F	=	0.0000
Residual	41.3470186	93	.444591598	R-squared	=	0.4348
				Adj R-squared	=	0.3984
Total	73.16	99	.738989899	Root MSE	=	.66678

SATISFACTION	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
RELATIONSHIP	.2912097	.1138736	2.56	0.012	.0650794 .51734
MANNER	.4836181	.1137234	4.25	0.000	.257786 .7094501
INFORMATION	.0729297	.0820216	0.89	0.376	-.089949 .2358083
COMPETENCE	.1556556	.0697356	2.23	0.028	.0171744 .2941367
HEALTH	.1856713	.0963941	1.93	0.057	-.0057483 .377091
AFFORDABLE	-.0329996	.0910016	-0.36	0.718	-.2137108 .1477116
_cons	-.8080164	.6334104	-1.28	0.205	-2.065844 .4498111

Table 7b. Stage 2 - heteroscedasticity check

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of SATISFACTION

chi2(1) = 19.04

Prob > chi2 = 0.0000

Table 7c. Stage 3 - ordinary least square regression with robust standard errors

Linear regression	Number of obs	=	100
	F(2, 3)	=	.
	Prob > F	=	.
	R-squared	=	0.4348
	Root MSE	=	.66678

(Std. Err. adjusted for 4 clusters in HOSPITAL\_NAME)

SATISFACTION	Robust		t	P> t	[95% Conf. Interval]	
	Coef.	Std. Err.				
RELATIONSHIP	.2912097	.3134621	0.93	0.421	-.7063667	1.288786
MANNER	.4836181	.1485512	3.26	0.047	.010862	.9563742
INFORMATION	.0729297	.1833421	0.40	0.717	-.5105468	.6564062
COMPETENCE	.1556556	.063085	2.47	0.090	-.0451092	.3564203
HEALTH	.1856713	.0431743	4.30	0.023	.0482713	.3230714
AFFORDABLE	-.0329996	.0325815	-1.01	0.386	-.1366884	.0706892
_cons	-.8080164	.1889095	-4.28	0.023	-1.409211	-.2068222

Table 7d. Stage 4 - OLS regression

	<i>OLS (H0)</i>	<i>OLS (HA)</i>
	(1) SATISFACTION	(2) SATISFACTION
RELATIONSHIP	0.291** (0.114)	0.291 (0.313)
MANNER	0.484*** (0.114)	0.484** (0.149)
INFORMATION	0.0729 (0.0820)	0.0729 (0.183)
COMPETENCE	0.156** (0.0697)	0.156* (0.0631)
HEALTH	0.186* (0.0964)	0.186** (0.0432)
AFFORDABLE	-0.0330 (0.0910)	-0.0330 (0.0326)
Constant	-0.808 (0.633)	-0.808** (0.189)
Observations	100	100
R-squared	0.435	0.435

Standard errors in parentheses

\* p&lt;.10, \*\* p&lt;.05, \*\*\* p&lt;.01

Note: OLS (H0): OLS regression with assumption of homoscedasticity, OLS (HA): OLS with robust standard errors

The table in Stage 4 shows the two models of OLS regression. There was statistically significant association between satisfaction and four of the explanatory variables; namely, relationship, manner, competence and health, when errors were assumed to be homoscedastic. However, the final regression analysis with robust cluster by facilities indicated statistical significance between satisfaction and only three variables; that is, manner, health, and competence. After correcting for heteroscedasticity, there was change in level of significance, standard errors (S.E.), and t statistic (t) as provided in the tables in Stages 1, 3, and 4. For example, “health” had S.E. = 0.0964,  $t = 193$ ,  $p = 0.186$  ( $p < 0.1$ ),  $\beta_2 = 0.186$  in Stage 1, and S.E. = 0.0432,  $t = 4.30$ ,  $p = 0.023$  ( $p < 0.05$ ),  $\beta_2 = 0.186$  in Stage 3; which indicated reduction in standard error, increase in t statistic, and higher level of significance. The model could be described as reasonably good as 44% of the overall variance in probability of feeling satisfied with antenatal services was explained by the predictors ( $R$ -squared = 0.44). Overall, the three predictors of satisfaction with antenatal services identified in this study were interpersonal manner of the nurses, self-reported health status, and perceived technical competence. Therefore, the regression model supported the three hypotheses proposed, and the regression equation stated in equation 1 can now be defined from Stage 4 table as:

Equation 2: Satisfaction (Y) =  $-0.81 + 0.48 \times \text{Interpersonal manner of the nurses} + 0.19 \times \text{Self-reported health status} + 0.16 \times \text{Perceived technical competence} + \text{error}$

This implies that the three identified predictors might independently affect patient satisfaction. In respect of interpersonal manner, there was 95% confidence that interpersonal manner of the nurses affected the probability of feeling satisfied with antenatal services as tables in Stage 3 and Stage 4 indicated  $p$ -value = 0.047 ( $p < 0.05$ ),  $t = 3.26$  ( $t > 2$ ). For 95% confidence,  $t$  value of 2 or more is required as rules of thumb to reject null hypothesis. Since  $\beta_1$  (regression coefficient) from equation 1 had been estimated as 0.48 (48%) from Stage 4 table, it can be concluded that interpersonal manner of the nurses affected the probability of feeling satisfied with antenatal services by 48%. This means that probability of satisfaction with antenatal services increases by 48% for every one-point increase in interpersonal manner of the nurses as shown below:

Probability of satisfaction =  $-0.81 + 0.48 \times \text{Interpersonal manner of the nurses} + \text{error}$

Similarly, there was 95% confidence that self-reported health status affected the probability of feeling satisfied with antenatal services as  $p$ -value = 0.023 ( $p < 0.05$ ),  $t = 4.30$  ( $t > 2$ ). Since  $\beta_2$  was 0.19 (19%), it can be concluded that self-reported health status affected the probability of feeling satisfied with antenatal services by 19%. This means that probability of satisfaction with antenatal services increases by 19% for every one-point increase in self-reported health status as shown below:

Probability of satisfaction =  $-0.81 + 0.19 \times \text{Self-reported health status} + \text{error}$

In the same vein, there was 90% confidence that perceived technical competence affected the probability of feeling satisfied with antenatal services as  $p$ -value = 0.090 ( $p < 0.10$ ),  $t = 2.47$  ( $t > 2$ ). Since  $\beta_3$  was 0.16, it can be concluded that perceived technical competence affected the probability of feeling satisfied with antenatal services by 16%. This means that probability of satisfaction with antenatal services increases by 16% for every one-point increase in perceived technical competence as shown below:

Probability of satisfaction =  $-0.81 + 0.16 \times \text{Perceived technical competence} + \text{error}$

The findings of this regression model are consistent with some of the published studies. For instance, Cheng et al. (2003, 350) indicated interactions and competence as major predictors of satisfaction with health services. Similarly, Andaleeb (1998, 184) found competence and demeanour (interpersonal manner) with regression coefficient of 35% and 30% respectively as having the greatest impact on patient satisfaction. On the other hand, Hekkert et al. (2009, 72) found health status as having strongest effect on patient satisfaction”.

## 5. Conclusion

This study examined the effect of some major attributes of healthcare on patient satisfaction in the context of antenatal services. The findings were in support of the hypotheses proposed to address the research questions. Interpersonal manner of nurses, self-reported health status, and perceived technical competence seemed to be major determinants of satisfaction with antenatal services. According to past published studies, interpersonal processes of care appeared to be the dominant predictor of patient satisfaction. The present study’s findings to a great extent supported their propositions. It indicated interpersonal manner of the nurses as the most influential determinant of satisfaction with antenatal services as probability of feeling satisfied increased by forty eight percent for each one-point increase in the level of interpersonal manner, while it only increased by nineteen percent and sixteen percent for self-reported health status and perceived technical competence respectively. This implies that interpersonal manner is crucial in delivering satisfactory healthcare services that produce good health outcome. In other words, good interactions between clients and hospital staff can support the system to deliver the technical



elements of the care successfully. This is consistent with healthcare quality theory that indicated interpersonal process as the dominant predictor of patient satisfaction (Hawthorne et al., 2014, 528). Positive interactions therefore add value to healthcare system as clients can contribute freely to the service delivery process.

This is very important especially in the area maternal health where Nigeria is lacking behind. Policy makers need to find lasting solution to low utilisation of institutional antenatal services if third sustainable development goal is to be achieved. Patient dissatisfaction has been linked with low utilization of institutional antenatal services. It might therefore be helpful if policies are formulated to address the three dimensions of care identified to affect satisfaction. For example, modules on patient centred care could be introduced into the training curriculum of medical personnel to improve interpersonal processes of delivering healthcare services. This can help boost their ability to communicate in an interactive manner especially as client-practitioner communication had been indicated to have healing effect (Neumann et al., 2011, 996).

Meanwhile, maternal death is a global challenge, and increasing access to institutional antenatal service is crucial (Kruk et al., 2010, 209; Gayawan, 2014, 59). Though the variable on affordability seemed not to be significantly associated with patient satisfaction in this study, it is worth noting that it recorded the least mean score which might imply that women were not favourably disposed to antenatal service cost. Duong et al. (2004, 2588) identified financial difficulty as a barrier to access health setting care. Therefore, policies should be made by government to introduce a functional health insurance system that can guarantee protection against financial barrier to healthcare services. This is crucial especially as health insurance coverage among the study respondents was nineteen percent. Furthermore, this study observed a small but significant correlation between patient satisfaction and ethnicity. This might call for a policy to introduce the use of “professional interpreters” in healthcare industry especially when there is language diversity or multilingualism to aid communication as mean score for information exchange was not part of the top three mean scores in the present study. Mander and Miller (2016, 85) argued that patient satisfaction and clinical outcome improve when clients’ first language is used in health institutions to communicate with the service users.

The high mean satisfaction score observed might limit the application of the findings as indicator for performance improvement. However, this is consistent with some previous findings, and it has been argued that it does not necessarily imply good patient experience, but might be due to “courtesy bias” in which respondents did not want to give a negative feedback to the interviewers (Evans and Tarneberg, 2018, 91; Kleefstra et al., 2010, 5). Crow et al. (2002, 51) also reported that higher satisfaction might be a “cohort effect” where expectations were low because of past experience of low standards. However, some attributes of care like affordability of service cost and perceived technical competence still recorded relatively low mean scores. The low score recorded by perceived technical competence may need to be investigated further for more evidence probably by a qualitative method that encourage respondent to communicate their perception without bounds. This is important as perceived technical competence is one of the main predictors of patient satisfaction as identified in this study. Ith et al. (2013, 73-74) indicated that positive interactions and perceived technical competence in terms of safe delivery affected the choice of health institutions for maternity care.

Another identified limitation was the fact that health status was self-reported. This therefore might not give a detailed representation compared to surveys done with “validated health-related quality-of-life instruments” (Crow et al., 2002, 45). However, the health status or outcome in this study was considered as a general term to describe the well-being of mother and foetus (Srivastava et al., 2015, 7) especially since pregnancy is not regarded as a disease condition. Also, the cross-sectional design of this study might be a limitation and probably lead to overestimation of the findings because of longitudinal nature of antenatal care (Lee and Lin, 2010, 1812; Martsof et al., 2016, 2224; Crow et al., 2002, 45). Hence, a longitudinal design can be considered for future research on patient satisfaction, especially as regards the influence of health outcomes on satisfaction. In another instance, the lack of consensus research tool as noted by Dahlstrom et al. (2018, 224) might be a challenge especially in a multidimensional phenomenon like patient satisfaction. This study may also be limited in external validity as it only covered a small number of women from just a city. Hence, caution will be required in generalising the result to the entire national or international population of pregnant women.

This study however has made significant contribution by extending the existing evidence about the predicting effect of interpersonal manner, health status, and technical competence on patient satisfaction. Meanwhile, satisfaction survey has policy implications because it promotes reforms and accountability (Van de Walle and Van Ryzin, 2011, 1438). Therefore, Nigeria can institute a strong accountability system in the healthcare industry by introducing performance assessment programme where client satisfaction surveys are regularly conducted, and the results are made available to the public. This has been indicated to be useful in helping all the stakeholders in the industry; decision-makers, health institutions, and service users; to make informed choices (Huppertz and Carlson,

2010, 1602; Hjortskov, 2017, 912) though Yackee (2013, 105) questioned the extent to which governments use feedback to inform regulations.

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Not applicable.

### **Competing interests**

The author declare that he has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### **Informed consent**

Obtained.

### **Ethics approval**

The Publication Ethics Committee of the Canadian Center of Science and Education.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

### **Provenance and peer review**

Not commissioned; externally double-blind peer reviewed.

### **Data availability statement**

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

### **Data sharing statement**

No additional data are available.

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