**SERVICE QUALITY DELIVERY IN PRENATAL SERVICES AND PATIENT SATISFACTION: A STUDY OF PUBLIC HEALTH INSTITUTIONS IN MINNA METROPOLIS, NIGER STATE.**

**ISAH IMAM PAIKO, PhD**

Department of Entrepreneurship, Federal University of Technology, Minna

imamudeen@futminna.edu.ng;+2348069086904

**ZULLAIIHAT ABDULLAHI MUHAMMAD**

Department of Public and Community Health. Novena University Ogume, Delta State

zullaihatwuni@gmail.com; +234 805 846 6776

**SULEIMAN AMINU**

Department of Entrepreneurship, Federal University of Technology, Minna.

allameensulsalam@gmail.com; +234 803 965 8927

**ASMA’Ú USMAN**

Department of Entrepreneurship, Federal University of Technology, Minna

Asmau.usmam@futminna.edu.ng +2349083137657

**FARUK IMAM LUPMA**

Department of Economics, Ibrahim Badamasi Babangida University, Lapai, Niger state

faruklupma@gmail.com; +234 810 405 9008

**Abstract**

This study investigates the impact of service quality delivery on patient satisfaction in prenatal services at public health institutions in Minna Metropolis, Niger State. Specifically, the study examines the relationship between four key dimensions of service quality—tangibles, reliability, responsiveness, and empathy—and the level of satisfaction experienced by pregnant women receiving prenatal care. Using a sample of pregnant women attending public health institutions, the study employs statistical analysis to evaluate the path coefficients, t-statistics, and p-values for each service quality dimension. The results indicate that tangibles (physical facilities, equipment, and staff appearance) had a negative, yet statistically insignificant effect on patient satisfaction (path coefficient = -0.047, p = 0.364), leading to the acceptance of the hypothesis that tangibles do not significantly influence satisfaction. In contrast, reliability (the ability to deliver consistent and accurate services) was found to have a positive but significant impact on patient satisfaction (path coefficient = 0.179, p = 0.001), although the hypothesis was rejected, possibly due to an initial misunderstanding of its directionality. Responsiveness (the willingness to help and provide prompt service) showed a significant negative relationship with patient satisfaction (path coefficient = -0.303, p = 0.034), suggesting that delayed or inadequate responses detract from satisfaction. Finally, empathy (the degree of care and understanding demonstrated by healthcare providers) exhibited a positive, nearly significant relationship with patient satisfaction (path coefficient = 0.372, p = 0.051), emphasizing the importance of compassionate care. The findings suggest that while tangibles are less critical in shaping satisfaction, other dimensions such as responsiveness and empathy play a more decisive role in enhancing patient satisfaction in prenatal services. The study underscores the need for public health institutions in Minna to focus on improving the responsiveness and empathetic behaviors of healthcare providers to increase patient satisfaction with prenatal care services.

Keywords: Service quality delivery, prenatal services and patient satisfaction.

***ORCID ID: 0009-0008-1283-8122***

1. **INTRODUCTION**

Service quality delivery in healthcare institutions, particularly in maternal health services such as pre-and post-natal care, is crucial to ensuring mothers' and new borns' health and well-being. In Niger State, as in many parts of Nigeria, the quality of healthcare services in public health institutions significantly affects maternal health outcomes, including satisfaction levels among pregnant women. The quality of pre-and post-natal services plays a pivotal role in reducing maternal and infant mortality rates, as well as improving the overall healthcare experience for expectant mothers. On the other hand, Patient satisfaction has become a central focus of healthcare service delivery worldwide, as it is directly linked to the quality of care patients receive and the overall effectiveness of healthcare systems. It is generally considered a key indicator of the success and efficiency of healthcare services (Dagger et al., 2020). Globally, patient satisfaction is recognized as an essential component in ensuring quality healthcare, particularly in prenatal services where women’s health during pregnancy plays a critical role in both maternal and child well-being (Sharma & Shukla, 2020). In the context of prenatal services, patient satisfaction reflects a pregnant woman’s experience regarding the care provided, which is shaped by various service quality dimensions, including tangibles, reliability, responsiveness, and empathy (Gupta et al., 2019).

In Africa, where maternal health remains a significant concern, the importance of patient satisfaction in prenatal care is underscored by the need for improving healthcare delivery systems. According to the World Health Organization (WHO, 2021), despite improvements in maternal health outcomes, sub-Saharan Africa still experiences high maternal mortality rates, largely attributed to poor quality of care, lack of access to skilled healthcare providers, and inadequate health infrastructure. Consequently, the delivery of quality prenatal services becomes crucial for improving maternal health and reducing preventable deaths during pregnancy and childbirth. Satisfied patients are more likely to adhere to prescribed treatments, attend follow-up appointments, and recommend services to others, thus contributing to overall better health outcomes (Parker et al., 2020).

In Nigeria, maternal and child health remains a significant public health challenge, with high rates of maternal mortality that are exacerbated by poor service delivery in both private and public health institutions (Okonofua et al., 2020). Prenatal care in public health institutions is a key aspect of maternal healthcare, yet the quality of services provided often fails to meet patient expectations, affecting the overall satisfaction levels of pregnant women. Research on the relationship between service quality and patient satisfaction in Nigeria's public healthcare institutions is limited, and there is a need for empirical studies that explore how service quality dimensions affect patient satisfaction, particularly in prenatal services.

Several studies conducted globally have highlighted the importance of service quality dimensions in influencing patient satisfaction. For instance, a study by Sadeghi et al. (2018) in Iran found that reliability and responsiveness were among the most significant predictors of patient satisfaction in maternal care. Similarly, research in India by Choudhury and Tripathi (2020) emphasized the role of empathy in improving patient satisfaction during prenatal visits. These studies suggest that service quality delivery is multidimensional, encompassing tangible aspects such as facility cleanliness and equipment, as well as more interpersonal aspects like responsiveness and empathy.

In Nigeria, while studies have explored patient satisfaction in various healthcare settings (e.g., Ogunjimi et al., 2019), there is a paucity of research specifically examining service quality delivery in prenatal services within public health institutions. This study, therefore, aims to explore how different dimensions of service quality—tangibles, reliability, responsiveness, and empathy—affect patient satisfaction among pregnant women receiving prenatal care in public health institutions in Minna Metropolis, Niger State. By examining these relationships, this study seeks to provide valuable insights into the factors that contribute to patient satisfaction and offer recommendations for improving service delivery in public health institutions.

1. **PROBLEM STATEMENT**

In Niger State, there are concerns about the quality of pre- and post-natal services offered at public health institutions. Despite various government interventions and policies aimed at improving maternal health outcomes, reports indicate that many pregnant women remain dissatisfied with the services they receive, which may lead to delays in seeking care or abandoning services altogether. This dissatisfaction can be attributed to various factors, including poor communication from healthcare providers, inadequate infrastructure, long waiting times, and perceived lack of attention to patient needs. As a result, pregnant women may not receive optimal care, which could contribute to poor maternal and infant health outcomes. Therefore, it is crucial to assess how service quality affects patient satisfaction in Niger State's public health institutions, particularly in pre-natal care.

1. **CONCEPTUAL FRAMEWORK**

The conceptual framework for this study is built upon the Service Quality (SERVQUAL) model, which measures service quality across five key dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman et al., 1988). In the context of pre-and post-natal services, these dimensions can be adapted as follows:

* **Tangibles**: The physical environment, cleanliness, medical equipment, and availability of necessary resources for pre- and post-natal care.
* **Reliability**: The ability of healthcare providers to deliver accurate, consistent, and timely services.
* **Responsiveness**: The willingness of healthcare staff to assist and respond to the needs and concerns of pregnant women.
* **Assurance**: The competence and professionalism of healthcare providers, ensuring patients feel confident in their care.
* **Empathy**: The degree of care, attention, and understanding shown by healthcare providers to the unique needs of pregnant women.



**Figure 1: Study’s Conceptual Framework**

**Source:** Researcher (2024)

Patients satisfaction, the dependent variable, is evaluated by assessing the overall experience of pregnant women with these service dimensions. A higher level of satisfaction is expected when service quality meets or exceeds patient expectations. The framework highlights the relationship between service quality and patients satisfaction, which is central to improving maternal health outcomes.

1. **THEORETICAL LITERATURE REVIEW**

Several theoretical perspectives underpin the relationship between service quality and patients satisfaction in healthcare settings.

**4.1 Consonance Theory:** was developed in 2017 by Bernado Oliver Arde, a registered nurse and scholar from the Philippines (Arde, 2017). The theory posits that patient satisfaction is the outcome of the level of congruence between the patient’s expectations of the quality of care to be received in the hospital and the actual level of care received (Dinsa *et al.*, 2022). The level of congruence between expectations and actual experience is hypothesized to affect the patient’s health outcomes and perceived quality of care received at the hospital (Dinsa *et al.*, 2022). The theory emphasizes the role nurses play in ensuring patient satisfaction, and suggests that a satisfied patient will be more likely to follow the instructions of the medical personnel and thus get better quickly while also recommending the healthcare institution to his circle of family, friends and colleagues thus increasing the patronage of the hospital and its revenue stream (Dinsa *et al.*, 2022).

The Consonance Theory offers a clear and systematic framework for understanding how individuals strive for consistency between their attitudes and behaviors. It provides insights into the mechanisms through which cognitive dissonance is resolved, shedding light on how individuals modify their beliefs or actions to alleviate the discomfort arising from inconsistencies, thereby contributing to a better understanding of decision-making processes.

One notable weakness of the Consonance Theory is that it may oversimplify the complexity of human behavior by emphasizing the drive for consistency without accounting for the nuanced interplay of various psychological, social, and situational factors that can influence attitudes and actions. Additionally, the theory's explanatory power might be limited in cases where cognitive dissonance is not the sole driver of attitude or behavior change, potentially leading to an incomplete understanding of certain decision-making processes.

It can be observed that consonance theory has a lot of similar elements to expectation-confirmation theory as it relates to the congruence between expectations and actual experience being the major determinant of patients satisfaction; the main difference between the two theories is that the latter theory is specific to the healthcare sector and actually conceptualizes PS as satisfaction with the services received as well as willingness to recommend the healthcare institution to other people. It also discusses PS as a strategy for increasing profitability for healthcare institutions. As it relates to this study, this theory is quite amenable particularly as it relates to its view of PS as being a combination of patient’s feeling of satisfaction with the service received as well as a willingness to recommend the healthcare institution to others.

**4.2 The SERVQUAL Model:** This was developed by Parasuraman et al. (1988) and is widely used to evaluate service quality across different industries, including healthcare. This model posits that service quality is the difference between patients expectations and perceptions of actual service delivery. In the context of public health institutions in Niger State, understanding this gap is crucial for improving maternal health services.

The Expectancy Disconfirmation Theory (Oliver, 1980) also plays a key role in explaining patients satisfaction. According to this theory, satisfaction occurs when the service delivered meets or exceeds the expectations of the customer. In maternal healthcare, pregnant women have specific expectations regarding the quality of care they receive, such as the availability of skilled professionals and a clean, comfortable environment. If these expectations are not met, dissatisfaction may arise, which can affect their perception of the healthcare system and their likelihood of seeking care in the future.

4.3 Health **Belief Model** (Rosenstock, 1974), this model suggests that individuals' health behaviors are influenced by their perceptions of susceptibility to health issues, the severity of those issues, and the perceived benefits of seeking medical care. In the case of pregnant women, their satisfaction with pre- and post-natal services may depend not only on the actual service delivery but also on their belief in the effectiveness of the healthcare system in addressing maternal health concerns.

1. **THEORETICAL FRAMEWORK**

the postulates of consonance theory best suit this study’s conceptualization of patient satisfaction and is thus selected to underpin this study’s theoretical framework. Specifically, patients have certain quality expectations of the public health institution they utilize in terms of physical facilities (tangibles), dependable services (reliability), prompt services (responsiveness) and individualized attention from the healthcare professionals (empathy). The extent to which these patients feel that these quality expectations are met will determine their level of overall satisfaction with the actual medical services received as well as affect their willingness to recommend the hospital to others. Figure 2.2 provides a diagrammatic representation of this study’s theoretical framework based on consonance theory.

1. **EMPIRICAL LITERATURE REVIEW**

Service quality delivery in public health institutions plays a crucial role in shaping patient satisfaction, especially for pregnant women seeking pre-natal care. In Nigeria, a substantial proportion of pregnant women rely on public health institutions for antenatal services, where the quality of these services significantly impacts their overall satisfaction. This literature review examines various service quality dimensions, including tangibles, reliability, responsiveness, and empathy, and their relationship with patient satisfaction.

 **6.1 Effect of Tangibles on Patient Satisfaction**

Tangibles, which refer to the physical facilities, equipment, and personnel in healthcare settings, have been identified as crucial elements in shaping patient satisfaction (Ravichandran et al., 2020). In the context of pre-natal care in public health institutions, the state of the physical environment, availability of modern medical equipment, and the appearance of healthcare providers are key factors influencing pregnant women's perceptions of the service.

A study by Akinmoladun and Oludare (2021) found that the physical environment and the availability of modern medical equipment significantly contributed to patient satisfaction among antenatal clients in public hospitals in Nigeria. This finding is consistent with previous research by Zeithaml et al. (2018), who emphasized the importance of physical evidence in healthcare settings. However, while Zeithaml et al. (2018) argued that tangibles are crucial for overall patient satisfaction, other studies (e.g., Adekeye et al., 2020) suggest that while tangibles are important, they might not be as significant as other service quality dimensions like reliability and responsiveness in influencing patient satisfaction. The reliance on tangibles as a primary determinant of satisfaction may overlook more subjective and personal aspects of care, which could be equally or more influential for pregnant women in pre-natal care settings. Therefore, while tangibles have an important role, they must be considered in conjunction with other service quality factors such as responsiveness and empathy to fully understand their impact on patient satisfaction.

**6.2 Causal Relationship Between Reliability and Patient Satisfaction**

Reliability refers to the ability of healthcare providers to consistently perform the promised services accurately and dependably (Parasuraman et al., 1985). In the context of pre-natal care, reliability encompasses consistency in the provision of medical services, accurate diagnosis, and the regular availability of staff.

A recent study by Obembe et al. (2023) found a positive and significant relationship between the reliability of service delivery and patient satisfaction in public health institutions. This study suggests that when pregnant women receive consistent, accurate, and dependable services, their level of satisfaction increases. Similarly, studies by Ali et al. (2020) and Nwosu and Nwachukwu (2022) corroborate this finding, indicating that reliability in service delivery improves patients' overall satisfaction. However, in contrast to the findings of Obembe et al. (2023), some studies have found that reliability alone may not be sufficient to satisfy pregnant women if it is not accompanied by other dimensions such as responsiveness or empathy (e.g., Ogunyemi, 2021). This indicates that while reliability is a significant predictor of satisfaction, it should not be overemphasized to the exclusion of other service quality attributes. Therefore, to enhance patient satisfaction in pre-natal services, it is important to balance reliability with responsiveness and empathy, ensuring a holistic approach to service delivery.

**6.3 Influence of Responsiveness on Patient Satisfaction**

Responsiveness involves the willingness of healthcare providers to help patients and provide prompt service (Parasuraman et al., 1985). For pregnant women, responsiveness may include timely antenatal check-ups, prompt attention to complications, and quick communication with healthcare providers.

According to a study by Raji and Tijani (2020), responsiveness has a significant and positive effect on patient satisfaction in public health institutions in Nigeria, particularly for pregnant women in antenatal care. This finding aligns with the results from studies in other regions, such as those by Lee et al. (2021), who found that responsiveness significantly influenced patient satisfaction in South Korea’s public health institutions. However, a study by Akintoye and Olatunji (2019) noted that the level of responsiveness in Nigerian public health institutions may vary greatly depending on the institutional resources and staff workload, suggesting that responsiveness can be constrained by factors such as insufficient staff and overcrowded healthcare facilities. Despite the positive association between responsiveness and satisfaction, the challenge remains in ensuring that responsiveness is consistently delivered, particularly in resource-poor settings. Therefore, increasing responsiveness in pre-natal services requires not only addressing institutional constraints but also training healthcare staff to prioritize timely and effective communication with pregnant women.

**6.4 Effect of Empathy on Patient Satisfaction**

Empathy, or the ability of healthcare providers to understand and share the feelings of their patients, is a key aspect of patient-centered care. Empathy in prenatal care may involve healthcare workers showing compassion, listening attentively to patients’ concerns, and providing emotional support during the antenatal process.

In a study by Salihu et al. (2022), empathy was found to be a significant predictor of patient satisfaction among pregnant women attending public health institutions. The study emphasized that empathetic interactions were essential for ensuring that pregnant women felt valued and supported throughout their antenatal visits. This aligns with previous research by Ferreira et al. (2020), who argued that empathy was a major determinant of satisfaction in healthcare services across different patient groups. However, a study by Olaoye et al. (2020) suggested that empathy alone might not be enough to ensure high levels of patient satisfaction, particularly when other factors like accessibility and service efficiency are lacking. While empathy is undeniably important, it must be combined with the other dimensions of service quality to create a more comprehensive service experience. For pregnant women in public health institutions, the integration of empathy with reliability, responsiveness, and tangible elements can significantly enhance overall satisfaction.

The literature suggests that multiple dimensions of service quality—tangibles, reliability, responsiveness, and empathy—play integral roles in shaping patient satisfaction in public health institutions, particularly in pre-natal services. While each dimension contributes individually to satisfaction, the interaction between these factors determines the overall service experience. Future research should focus on exploring how these dimensions can be improved in resource-constrained settings like Niger State, where service delivery challenges persist.

1. **METHODOLOGY**

**7.1 Study Area Description**

The current study area is Minna-Niger State, Nigeria. Minna town was formerly identified as Gwari settlement on paida hill, a meagrely inhabited city with a population of around 304 113 thousand people making it the biggest city in Niger State. Minna-Niger State occupies a land area of 923,768 square kilometers. The city is viewed as the state's capital, inhabited by different ethnic groups, of which the three largest are: Nupe, Gwari, and Hausa, which speak Hausa as the native language and are identified with a wide variety of cultures. Minna city is also constrained on the south by Kwara State; on the North by Sokoto State; on the East by Kaduna State the location of this research. Minna falls within latitude 9.62` and 6.55 longitude of the equator (World Population Review, 2021).

**7.2 Research Design**: The study employs survey research design because it is research approach allows the use of survey instruments to generate first-hand data to establish the relationship between service quality and patient satisfaction this research design befits the nature of this study because the study examines the effect of service quality and patient satisfaction and the required data for this study could only be generated from the filled, hence the choice of survey research design (Bloomfield and Fisher, 2019).

7.3 **Population and sample size of the Study:** The population for this study is the total number of pregnant women who registered for antenatal service in the last three months and patronized the Public health institutions in the study area (Minna metropolis). The total population of pregnant women registered in Minna Metropolis in the last six months is 1005 (Niger State Hospital Management Board) Considering this study's survey approach, the sample size for the study using Taro yemani formula is 338.

**7.4 Method of Data Collection**

A close-ended questionnaire (was employed to collect data using a ‘wait and collect’ approach to ensure that the selected federal civil servants fill the questionnaire immediately and return it to the researcher in one sitting to ensure a high response rate. The questionnaire has three sections, with Section A collecting demographic data (name of ministry/department/agency, name of public hospital or clinic, age group, marital status, and gender), section B collecting data on the four service-quality proxies (tangibles, reliability, responsiveness, and empathy) and section C collecting data on patient satisfaction. Sections B and C will require respondents to indicate their level of agreement with the statements based on a five-point Likert scale, with 1 being ‘strongly disagree’ and 5 beings ‘strongly agree’. The service quality and patient satisfaction items were adapted from (Ahmed *et al.*, 2017

**7.5 Method of Data Analysis**

The study adopted a partial least squares structural equation modeling (PLS-SEM) approach to analyze the data. Due to its ability to estimate and evaluate a full conceptual model rather than just testing individual hypotheses, PLS-SEM offers numerous well-known advantages over other techniques like traditional regression analysis (Hsu, 2023). The skill of predicting measurement error is another one of the benefits (Olya, 2023).

**7.6 Model Specification Specification and Measurement**

 The statistical model for this study’s analysis is expressed as follows:

PS = bo+ b1Tan + b2Rel + b3Res + b4Emp + £…… (3.1)

(adapted from Dam and Dam (2021) considering its coverage of the study’s variables)

 PS = β0 + β1T + β2R +β3Re+ β4E + µ…… (3.2)

Where PS = Patient Satisfaction; Tan = Tangibles, Rel = Reliability, Res = Responsiveness, Emp = Empathy, µ= Error term. β0 = constant or the value of the dependent variable when all the predictor variables are zero (0) β1 - β4 = the estimated regression coefficient of predictor variables.

**Table 1.0 : Distribution of Selected Public Health Institutions in Minna Metropolis and Number of Women Registered for Prenatal Services in the last 4 months**

|  |  |
| --- | --- |
| **WARD(MINNA METRPOLIS)** | **CLINIC/HOSPITAL /PRIMART HEALTH CARE CENTRE (PUBLIC HEALTH INSTITUTIONS)** |
|  Limawa 'A' Ward |  Family Support Program Primary Health Clic |
|  Limawa 'A' Ward |  Old Airport Road Clic |
|  Makera Ward |  Minna General Hospital |
|  Nassarawa 'B' Ward |  Police Clic Minna |
|  Nassarawa 'C' Ward |  Anguwan Biri Primary Health Care |
|  Nassarawa 'C' Ward |  Autabarde Primary Health Care |
|  Nassarawa 'C' Ward |  Tayi Health Clic (Chanchaga) |
|  Sabon Gari Ward |  A/Kuje UBE School Clic |
|  Sabon Gari Ward |  Abdulsalam Qtrs Clic |
|  Tudunwada North Ward |  Kanfanyi Primary Health Centre |
|  Tudunwada North Ward |  M.i wushishi clic |
|  Tudunwada North Ward |  Primary Health Care Centre Kafintela |
|  Tudunwada South Ward |  Primary Health Care Tunga |
|  Tudunwada South Ward |  Sauka Kahuta Primary Health Care |
|  Tudunwada South Ward |  Shakwata Primary Health Centre |
|  Tudunwada South Ward |  Tunga Sabon Titi Health Centre |

**Source:** Author’s field data (2023)

 **Test of Multicollinearity\=0**

In SEM, collinearity refers to the high correlation between two or more predictor variables in the model. Collinearity can cause problems in parameter estimation and interpretation, similar to regression analysis. When predictor variables are highly correlated, it becomes difficult for the model to estimate the unique contribution of each predictor to the outcome variable, leading to unstable or imprecise estimates. VIF is a commonly used measure to assess collinearity in multiple regression and can be adapted for use in SEM. VIF quantifies how much the variance of an estimated regression coefficient increases due to collinearity. VIF values greater than 5 (Abdullah *et al.*, 2019) are often considered indicative of problematic collinearity.

**Table 2.0 Model Fit**

|  |  |
| --- | --- |
| **Fit Index**  | **Value**  |
| SRMR |  0.065 |
| Duls |  0.084 |
| Chi-Square |  123.47 (p = 0.063) |
| RMSEA |  0.072 |
| GFI |  0.88 |
| AGFI |  0.85 |

**Source:** Author’s Fieldwork (2024)

Table 2.0 . presents the model fit indices as shown in the table all the indicators have moderate to high values indicating a model fit.

**Table 3.0 VIF Multicollinearity statistics for inner model**

|  |  |
| --- | --- |
| **Variable**  | **Patients Satisfaction** |
| Patients Satisfaction |
| Empathy | 1.924 |
| Reliability | 1.449 |
| Responsiveness | 1.995 |
| Tangibles | 1.284 |

**Source:** Author’s Fieldwork (2024)

As shown in Table 3.0 , the Variance Inflation Factor (VIF) values for the predictor variables, namely Empathy, Reliability, Responsiveness, and Tangibles, about the outcome variable, patient satisfaction, are 1.924, 1.449, 1.995, and 1.284, respectively. It is worth noting that a statistical VIF value greater than 10 is generally considered indicative of collinearity issues, which can lead to challenges in estimating the distinct impact of each predictor on the outcome variable. However, in this specific analysis, the obtained VIF values are all below 5, indicating that collinearity is not a concern in the presented data. Consequently, the model will be able to accurately demonstrate the individual contributions of each predictor variable to the outcome variable without any complications arising from collinearity.

**T -Statistics and P-Values for Hypotheses Testing**

The t-statistics are commonly used to test hypotheses about the means of two groups or the difference between two means. They help researchers determine if the observed differences between groups are significant or just due to random chance. 1.96 is considered for a single test while 2.78 is considered as the cutoff for multiple tests (Abdullahi *et al.*, 2019). The p-value is a measure of the strength of evidence against the null hypothesis in hypothesis testing. The null hypothesis (H0) states no effect or difference, while the alternative hypothesis (Ha) proposes the effect or difference to be tested. The p-value quantifies the likelihood of obtaining the observed results or more extreme results if the null hypothesis were true.

A low p-value, typically below 0.05, indicates strong evidence against the null hypothesis. This suggests that the observed results are unlikely due to random chance alone, leading researchers to reject the null hypothesis in favor of the alternative hypothesis. Conversely, a high p-value (above the chosen significance level) indicates weak evidence against the null hypothesis. In such cases, researchers fail to reject the null hypothesis due to insufficient evidence to support the alternative hypothesis. The significance level (α) is a predetermined threshold used in hypothesis testing. It represents the maximum probability of committing a Type I error, which occurs when the null hypothesis is wrongly rejected. The most commonly used significance level is 0.05 (5%). When the calculated p-value is less than 0.05, the null hypothesis is rejected in favor of the alternative hypothesis, and the results are considered statistically significa**Table**

**4.0 Summary of** **t-statistics and p-values for hypothesis testing**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   | **Path Coefficient**  | **Sample mean**  | **Standard deviation** | **t statistic**  | **p values** | **Remark** |
| Tangibles - patients Satisfaction | -0.047 | -0.048 | 0.052 | 0.907 | 0.364 | Accepted |
| Reliability - patient Satisfaction | 0.179 | 0.186 | 0.056 | 3.216 | 0.001 | Rejected |
| Responsiveness - Patient satisfaction | -0.303 | 0.299 | 0.069 | 4.368 | 0.034 | Accepted |
| Empathy - Patient satisfaction | 0.372 | 0.372 | 0.058 | 6.42 | 0.051 | Accepted |

**Source:** Author’s Fieldwork (2024) (Note: \*Significant at p ≤ 0.05)

1. **INTERPRETATION AND DISCUSSION OF THE RESULTS**

In Table 4.0Tangibles do not affect patient satisfaction in public health institutions in Minna Metropolis, Niger State. The sample mean of the predictive variable "Tangibles" in the original data is -0.047. The study determined that there is no statistically significant relationship between "Tangibles" and "Patients Satisfaction." This conclusion is supported by multiple factors: the t-statistic (0.907) is relatively small, the path coefficient is negative (-0.047), and the p-value (0.364) exceeds the common significance level of 0.05. As a result, the null hypothesis was accepted, leading the study to conclude that "Tangibles" do not have a statistically significant impact on patient satisfaction in public health institutions in Minna Metropolis, Niger state.

The finding reveals that tangibles do not affect patient satisfaction in public health institutions in Minna Metropolis, Niger state, this indicates that the public health institutions are yet to achieve the optimal expectations in terms of modern equipment required, appealing facilities, and professional appearance required of health workers. The non-significant effect of tangibles on patient satisfaction in public health institutions in Nigeria may be attributed to the possibility that these institutions do not have standardized tangible elements that meet patients' expectations. If healthcare facilities lack consistency in providing tangible aspects, such as modern and well-maintained facilities, advanced medical equipment, or comfortable and clean environments, it could lead to varying perceptions among patients. This finding is in contrast with the study of Ahmed *et al.* (2017) on patent satisfaction in Iran. The study idnetified that the publichealth instituions has focus on contiious improvement of tangble as one of the dimensions of servce quality delivery for patient satisifaction, indicating the competitive publichealth sector which greatly emphasizes patient satisfaction by delivering competitive services and ensuring conducive environment compared to public health institutions.

The predictive variable "Reliability" has a sample mean of 0.179 in the original data. The study found that the relationship between "Reliability" and "Patient Satisfaction" was statistically significant with a t-statistic of 3.216, a path coefficient of 0.179, and a p-value of 0.001. the null hypothesis was thus rejected and the found a statistical relationship between reliability and patient satisfaction in public health institutions in Minna Metropolis, Niger state.

The finding on Reliability revealed a positive relationship between reliability and patient satisfaction in public health institutions in Minna Metropolis, Niger state. The positive and significant relationship between reliability and patient satisfaction in public health institutions in the Minna metropolis suggests that pregnant women place a high value on consistent and dependable healthcare services. The reliability of healthcare delivery, including timely and accurate diagnoses, consistent treatment outcomes, and reliable appointment scheduling, may contribute substantially to patient satisfaction, especially the antenatal services. This positive association could reflect that patient in this context prioritize reliability as a key factor influencing their overall satisfaction with antenatal services. Health institutions with a reputation for reliability may establish trust with their patients, leading to heightened satisfaction. This finding underscores the importance of public health institutions in the Minna metropolis maintaining high standards of reliability to positively impact and enhance overall patient satisfaction in the healthcare sector. This finding is consistent with the study of Ahmed *et al.* (2017) in the healthcare sector and Pakurár *et al.* (2019) in the Jordanian banking sector; reliability deepens the trust of customers in service delivery by their service provider, and this subsequently enhances the satisfaction of customers and sustained competitive advantage.

On Responsiveness, the study found that the relationship between "Responsiveness" and "Patients Satisfaction" was statistically insignificant with a t-statistic of 4.368, a path coefficient of 0.303 and a high p-value (less than 0.034). the study thus accepts the null hypothesis and reject the alternative which states that there is a statistical relationship between responsiveness and patient satisfaction in public health institutions in Minna Metropolis, Niger state. The findings revealed a negative statistical relationship between responsiveness and patient satisfaction in public health institutions in Minna Metropolis, Niger state. The negative and insignificant relationship between responsiveness and patient satisfaction in public health institutions suggests that patients are not highly valued and are not given timely and attentive service. The responsiveness of health institutions, including prompt attention to patient needs, effective communication, and quick resolution of concerns, play a crucial role in shaping patient satisfaction. The importance of healthcare providers in Minna metropolis prioritizing responsiveness as a key element in their service delivery to enhance overall patient satisfaction and foster positive patient experiences. This finding is not consistent with the study of Ahmed *et al.* (2017); and Nahida-Afroz (2019) in private clinics. Patient satisfaction can be achieved through the willingness of service providers to hasten services to meet patient needs in the most timely manner.

The predictive variable "Empathy" has a sample mean of 0.372 in the original data. The study found that the relationship between "Empathy" and "Patient Satisfaction" was statistically insignificant with a t-statistic of 6.42, a path coefficient of 0.372, and a very high p-value of 0.051. Based on this, the study accepts the null hypothesis and establishes that Empathy has an insignificant statistical effect on patient satisfaction in public health institutions in Minna Metropolis, Niger state.

The finding revealed a positive statistical effect of empathy on patient satisfaction. The positive but insignificant relationship between empathy and patient satisfaction in public health institutions in the Minna metropolis implies that customers are not highly valued and have less empathetic interactions with healthcare providers. This finding suggests that health institutions that do not demonstrate a genuine understanding of patients' concerns, emotions, and individual needs are more likely not to contribute positively to overall patient satisfaction with antenatal services. The empathy displayed by healthcare professionals, such as doctors, nurses, and support staff, may enhance the overall patient experience, fostering a sense of trust and connection. The positive association between empathy and patient satisfaction underscores the importance of cultivating a compassionate healthcare environment, where patients feel heard, understood, and cared for. Healthcare institutions in Minna metropolis that prioritize empathy in their interactions with patients are likely to see higher levels of patients satisfaction, contributing to positive perceptions and relationships with the healthcare provider. This is consistnent with the study of Ahmed *et al.* (2017) in Iranian healthcre sector; Walsh *et al.* (2019) in haalthcare sector; Vencataya *et al.* (2019) in te banking industry. Empathy is crucial in patients satisfaction as it fosters a strong emotional connection between the patients and the service provider. When customers feel understood, cared for, and valued, they are more likely to have a positive perception of the company and its services. Demonstrating empathy enhances patient loyalty, promotes word-of-mouth referrals, and contributes to long-term patient relationships, ultimately leading to increased patient satisfaction and business success.

1. **CONCLUSION/RECOMMENDATION**

The study concludes that the practice of quality service delivery and its dimensions, namely Empathy, Reliability, and Responsiveness, have demonstrated a significant explanatory effect on patient satisfaction in relation to antenatal services in Minna Metropolis. The findings show that out of the four variables, only Reliability was found to be statistically significant because the patient believe that the government hospital has more qualified and reliable health workers (doctors and nurses). Further, variables such as tangibles (hospital facilities), reliability and are weak resulting in a lack of confidence in the services of public health institutions. Cleanliness of environments, care, and professionalism in handling patients especially pregnant women on antenatal are essential to satisfaction.

The study recommends that all public health institutions implement a framework to assess their physical components and conduct periodic evaluations of the tangible components. It is crucial to upgrade existing facilities, incorporate modern equipment, and maintain the professional appearance of healthcare personnel. By adhering to these measures, patients can be assured of receiving satisfactory healthcare services from their chosen public healthcare providers. All public health institutions listed should ensure a robust system for efficient scheduling procedures that minimize waiting times for patients. This could include optimizing appointment booking processes, utilizing electronic systems for scheduling, and maintaining clear communication channels with patients regarding appointment confirmations and changes. Public health institutions should ensure the engagement of qualified personnel and establish training and development programs that prioritize empathic communication skills, active listening, and the ability to empathize with patients to better comprehend their concerns and emotions.

**REFERENCES**

* Adekeye, O. A., Adesola, A. A., & Olanrewaju, I. M. (2020). Impact of physical environment and facilities on patient satisfaction in healthcare institutions. *Journal of Health Services Research*, 29(2), 65-75.
* Akinmoladun, A. O., & Oludare, A. A. (2021). Impact of healthcare facility quality on patient satisfaction: Evidence from public hospitals in Nigeria. *International Journal of Health Systems and Policy*, 14(4), 222-231.
* Akintoye, S., & Olatunji, M. (2019). Exploring the relationship between responsiveness and patient satisfaction in Nigerian public hospitals. *Journal of Healthcare Management*, 19(1), 112-124.
* Ali, A. R., Khan, M. A., & Aslam, S. (2020). The role of reliability in patient satisfaction in healthcare services: A case study from Pakistan. *International Journal of Healthcare Quality Assurance*, 33(7), 144-153.
* Choudhury, S., & Tripathi, M. (2020). Service quality and patient satisfaction in prenatal care: A study in Indian public hospitals. International Journal of Healthcare Management, 13(2), 45-53.
* Dagger, T. S., Sweeney, J. C., & Johnson, L. W. (2020). A hierarchical model of service quality and its impact on patient satisfaction in healthcare settings. International Journal of Health Care Quality Assurance, 33(6), 455-466.
* Ferreira, L. F., Gomes, A. F., & Torres, M. S. (2020). Empathy in healthcare and its effects on patient satisfaction. *International Journal of Medical Practice*, 15(3), 78-87.
* Gupta, R., Kaur, A., & Mishra, A. (2019). Impact of service quality on patient satisfaction: A study of prenatal care in India. Journal of Healthcare Marketing, 40(1), 65-77.
* Lee, S., Kim, J., & Choi, S. (2021). Exploring the relationship between responsiveness and patient satisfaction in Korean hospitals. *Journal of Asian Healthcare Management*, 10(3), 114-126.
* Nwosu, C. I., & Nwachukwu, I. O. (2022). Reliability and patient satisfaction in Nigeria's healthcare system: Evidence from Lagos and Enugu states. *African Journal of Healthcare Services*, 10(2), 205-214.
* Obembe, T. A., Adebayo, A. O., & Afolabi, O. A. (2023). The effect of reliability on patient satisfaction in antenatal care services in Nigeria. *Journal of Nigerian Health Policy*, 13(2), 45-56.
* Okonofua, F. E., Odusote, K., & Akinyemi, O. (2020). Maternal health services and patient satisfaction in Nigeria: A critical review. International Journal of Reproductive Health and Medicine, 12(4), 112-118.
* Olaoye, S. O., Adegboye, D. A., & Afolabi, A. A. (2020). Assessing the role of empathy in patient satisfaction in Nigerian hospitals. *International Journal of Health Studies*, 14(5), 233-240.
* Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. Journal of Marketing Research, 17(4), 460-469.
* Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12-40.
* Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. Journal of Retailing, 64(1), 12-40.
* Parker, R., Choi, S. H., & Zhang, X. (2020). Patient satisfaction in maternal healthcare: A global review. Global Health Action, 13(1), 176-188.
* Raji, S. A., & Tijani, A. S. (2020). The role of responsiveness in the satisfaction of patients in public hospitals in Nigeria. *Journal of Healthcare Management*, 8(1), 43-51.
* Ravichandran, M., Rani, M., & Rajendran, S. (2020). The role of tangibles in healthcare satisfaction: Evidence from urban public hospitals. *International Journal of Service Industry Management*, 28(4), 175-185.
* Rosenstock, I. M. (1974). Historical origins of the health belief model. Health Education Monographs, 2(4), 328-335.
* Sadeghi, R., Zarei, E., & Ashrafi, A. (2018). Service quality and patient satisfaction in maternal healthcare: Evidence from Iran. BMC Health Services Research, 18(1), 209.
* Salihu, H. M., Aliyu, M. H., & Afolabi, S. (2022). Empathy and its impact on patient satisfaction during antenatal visits in Nigeria. *Maternal and Child Health Journal*, 26(1), 33-41.
* Sharma, S., & Shukla, R. (2020). Prenatal care and patient satisfaction: A study of public hospitals in South Asia. Journal of Health and Social Care, 23(2), 100-115.
* World Health Organization (WHO). (2021). Maternal health. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/maternal-health
* Zeithaml, V. A., Bitner, M. J., & Gremler, D. D. (2018). *Services Marketing: Integrating Patients Focus Across the Firm*. McGraw-Hill.