

How to Cite:

Castillo, Jr., F. G., Nonde, L. K., & Tawdrous, M. I. (2022). Factors influencing satisfaction of antenatal service quality in public and private hospitals in Lusaka, Zambia: An expectant mother's perspective. *International Journal of Health Sciences*, 6(S5), 1220–1260.
<https://doi.org/10.53730/ijhs.v6nS5.8852>

Factors influencing satisfaction of antenatal service quality in public and private hospitals in Lusaka, Zambia: An expectant mother's perspective

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Abstract---Almost all maternal deaths occurring in developing countries are due to complications arising during antenatal, intra-partum and immediate postnatal period. Of these deaths more than half of them occur in sub-Saharan Africa and one third occur in South Asia. Most causes of these deaths are easily preventable through antenatal care in pregnancy, skilled care during childbirth, and care and support in the weeks after childbirth. In many African countries the coverage antenatal is increasing but the coverage alone does not provide information on quality of care, and poor quality in antenatal, clinics, correlated with poor service utilisation, is common in Africa. The purpose of this study was to assess factors influencing antenatal service quality in public and private health facilities in Lusaka District, Zambia, focusing on expectant mothers' perspectives. A cross-sectional, descriptive, correlational design was used to examine the relationships between expectations, the quality of antenatal, personal characteristics and the type of provider with overall satisfaction, as well as with satisfaction with each of the following dimensions: Tangibility, reliability, responsiveness, assurance and empathy. A convenience sample of 400 pregnant women from diverse

socioeconomic backgrounds was surveyed using self-administered questionnaires for mothers attending antenatal, services in both public and private health facilities. Multiple linear regression analyses were used to identify predictors of satisfaction. Perceived quality of care was a significant predictor of overall satisfaction and all the satisfaction subscales. Findings indicate that there was a significant gap between client perceptions of quality of antenatal, services in the public and private sector as expectant mothers from private health facilities were found to be more satisfied with the quality of antenatal, services offered compared to their counterparts utilising public healthcare facilities. Findings also indicate significant gaps in all five service dimensions regarding client perception while empathy was the most important dimension in client satisfaction in antenatal, for both sectors. The study concludes that service quality perceptions vary between expectant mothers receiving antenatal, health services from private and public facilities as evidenced by considerable gaps in all dimensions especially in public health facilities. Therefore, identifying clients' perceptions to satisfy their expectations is critical in particularly the public sector despite the limited resources and equipment. It is also recommended that service providers from public facilities need to improve on all the dimensions of service quality through learning from their private counterparts. Effort should be put into learning more about the system characteristics that are found to be more satisfactory in private antenatal, so they can be emulated as much as possible in the public sector.

Keywords--- antenatal care, quality of care, focused antenatal care, maternal mortality, service quality.

Introduction

Antenatal care (ANC) is the care that a woman receives during pregnancy, which helps to ensure healthy outcomes of women and newly born babies (Abou-Zahr, Carla & Wardlaw, 2003). It is also a key entry point for pregnant women to receive a broad range of health promotion and preventive health service (USAID, 2017). Evidences showed that over 70 percent of women worldwide have at least one antenatal visit with a skilled provider during pregnancy (UNICEF, WHO, 2012). In the industrialised countries coverage is extremely high, with 98 percent of women having at least one visit. But in Sub-Saharan Africa, the coverage was lower than other regions with 68 percent of women reports at least one antenatal visit in addition to this, the region has the highest maternal mortality rate, reaching levels of 686 per 100,000 live births (Yared & Mekonnen, 2015). Almost all maternal deaths (99%) occurring in developing countries are due to complications arising during Antenatal, Intra-partum and immediate postnatal period (WHO, 2019). Of the deaths more than half of them occur in sub-Saharan Africa and one third occur in South Asia.

Most causes of these deaths are easily preventable through antenatal care in pregnancy, skilled care during childbirth, and care and support in the weeks after

childbirth (WHO, 2017). However, in many African countries the coverage ANC is increasing. But the coverage alone does not provide information on quality of care, and poor quality in antenatal care clinics, correlated with poor service utilisation, is common in Africa. This is often related to an insufficient number of skilled providers (particularly in rural and remote areas), lack of standards of care and protocols, few supplies and drugs, and poor attitudes of health providers (Ornella *et al.*, 2018). In Zambia, the 2016 DHS results show that only 34 percent of women received antenatal care from a trained health professional at least once for their last birth, while in Lusaka District, 50 percent of the women received the care from skilled providers (WHO, 2017). Despite the fact that maternal health care quality is essential for further improvement of maternal and child health, little is known about the current perceived quality of the service and factors influencing in Ethiopia including in study area. Therefore, the purpose of this study is to understand the current status of perceived quality of antenatal care services provision among pregnant women attending antenatal care in Lusaka District, Zambia. The results will also help the policy makers' on understanding of the quality of antenatal care and it may serve as evidence for intervention aimed at improving the quality of maternal health care provided at health settings in the country.

Antenatal care offers a superb opportunity to inform and educate pregnant women on important health issues including health promotion activities, screening and diagnosis (WHO, 2017). Antenatal care is also an important platform to communicate with and support women, families and communities at a critical time in a woman's life. This is especially important for sensitive health matters (e.g. intimate partner violence, IPV) that may otherwise be overlooked. It is known that violence during pregnancy may endanger maternal and foetal health, as well as mental health (Campbell, 2002). The perpetrator is usually the husband or partner and we have previously shown that partner violence is common and may increase during pregnancy among Rwandan women (Rurangirwa *et al.*, 2017). Furthermore, antenatal care attendance increases the chances of better management and outcome of the most common complications (e.g. infection, pregnancy-induced hypertensive disorders and severe bleeding) associated with maternal morbidity and mortality in low-income countries (Bauserman *et al.*, 2015; WHO, 2017).

Identifying pregnant women at risk and timely referral practices are known to reduce maternal and neonatal morbidity and mortality Chukwuma *et al.*, 2017). Thus, antenatal care is an essential component of the Birth Preparedness and Complications Readiness (BPCR) matrix that encompasses all the responsibilities, actions, practices and skills needed to ensure the safety and well-being of the pregnant woman and her newly born throughout pregnancy, labour, childbirth and postpartum period (Ballard *et al.*, 2016). Since 2002, there has been a progressive increase in the use of antenatal care services among pregnant women in low and middle-income countries, leading to marked improvements in maternal and child health (Bucher *et al.*, 2015; Uganda Bureau of Statistics, 2017). Nevertheless, maternal and perinatal mortality remains high (Gaffey, Das & Bhutta, 2015), suggesting that there is still a need to improve the quality of care given in the ANC clinics and during delivery. Antenatal care services should be provided by skilled health professionals who can identify inter-current diseases of

significance and risk factors associated with pregnancy and childbirth complications. Of particular importance is to provide relevant education and counselling, to identify signs of the most dangerous conditions and formulate a delivery plan such that emergency situations can be avoided or handled successfully (WHO, 2017).

Studies from low-income countries have revealed significant gaps and weaknesses in knowledge and practices of antenatal care providers regarding provision of essential elements of the antenatal care package including counselling pregnant women on danger signs (Villadsen *et al.*, 2014; Pembe *et al.*, 2010). If women and their families were thoroughly informed about danger signs and advised to seek health care immediately if any occurs, maternal morbidity and mortality could be reduced dramatically (Zepre & Kaba, 2017). Antenatal care services in Rwanda are typically provided at health centres with district hospitals as the first referral units. District hospitals are generally well equipped and have the capacity to perform surgical procedures, but more serious cases are referred to the national referral hospitals (Rurangirwa *et al.*, 2017). The maternal mortality ratio has been improving after the devastating effects on the country's health infrastructure during the 1994 Genocide against the Tutsi. This improvement is mainly due to increased attendance at antenatal care services and that more women today are delivering at a health facility (Rurangirwa *et al.*, 2017). However, maternal and neonatal mortality rates remain high: 210 maternal deaths per 100,000 live births and 20 neonatal deaths per 1000 live births (Zepre & Kaba, 2017).

Using a mobile platform can be a good option in the delivery of service with as the platform may transmit data and information that is vital for the organization (Tawadrous *et al.*, 2016). Thus, access to quality antenatal care services is crucial to achieve the 2030 agenda for Sustainable Development Goals (SDGs). Little is known about the practices of antenatal care providers in Zambia (of which most are nurses). Available data, however, suggest that inadequate care stemming from a lack of knowledge and skills to perform interventions or counsel women on important aspects of maternal and neonatal health may be an issue (Baig, Ryan & Rodriguez, 2012).

Significance of the study

Improvement of quality of antenatal is a major strategy used by hospitals and healthcare facilities to reduce maternal death and morbidity. The study was aimed at assessing satisfaction of expectant mothers in service quality of antenatal in public and private hospitals in Lusaka District of Zambia. This was meant to identify gaps and barriers in the provision of quality antenatal in both public and private maternal child care facilities, which when addressed will go a long way in strengthening the capacity and credibility of antenatal. This will result in improved client satisfaction, sustained use of services and improved outcomes of care. Women presenting themselves for antenatal services will be empowered to make informed decision on their health and that of their infants, and reap maximum benefits from care. Increased still births and mortality rates are a concern to governments throughout the world; this study may help bring back to the hospitals those disgruntled mothers who were now utilising unhygienic home based mid-wives for their deliveries. It was getting difficult for

policy makers and planners to plan for a holistic health delivery system knowing very well there were some mothers who were avoiding healthcare facilities in the district, this study may help centralised planning for sustainable development in the health service sector. With increased hospital and clinic attendances these health Care service providers will generate more revenue which will help improve the generality of health standards in the Lusaka District.

Stakeholders such as Non-governmental organisations in healthcare will benefit in knowing the gaps that exist and funding opportunities that they can take advantage of to improve service quality. For academics and researchers, this study will bring about hypothesis that may need to be tested further. The information from this study will work as foundation for further studies in service quality in the health services sector.

Poor service in hospitals and clinics in the public health care facilities have led to reduced attendances by pregnant mothers who desperately need antenatal services at hospitals and clinics. Therefore, this may help antenatal as this will help stem the tide against home based deliveries. As already said pregnant mothers were shunning standard World Health Organisation recommended based deliveries due to bad service quality at the hospitals and clinics (Castillo, 2009).

Literature Review

Review of Theoretical Literature Health Belief Model

The Health Belief Model is a modification of Becker and Maiman (1977) and Rosenstock (1974). Health Belief Model was adopted in this study to explain the concepts pinned in the research, because quantitative studies need to be based on existing body of knowledge or theory. The Health belief model emanated from a foundation of cognitive theories of behaviour. Theorists of cognitive belief believe that behaviour is contingent upon; the value that an individual places on a desired outcome, and the belief that behaviour, if performed well, will result in the desired outcome (Bandura, 1977). Furthermore, the model explains that a range of health behaviours can be predicted based on information from determinants such as perceived susceptibility, perceived severity, perceived benefits/barriers and modifying factors associated with engaging in a behaviour.

In the context of this study, willingness of pregnant mothers to utilise Focused Antenatal Care would depend also on personal evaluation of the seriousness of the consequences associated with pregnancy complications for example, death of the foetus. Perceived benefits/barriers: Individuals choice of behavioural options depends on their perception of benefits and barriers. Therefore, a cost benefit analysis allows an individual to evaluate the outcome expectations and assess whether the expected benefit of a behaviour outweigh the perceived expenditure incurred by engaging in the behaviour.

To ensure its sustainability, professional development programs must focus on and benefit the institution which includes both teaching and non-teaching staff. It is common in many hospitals they started to established their own schools

therefore involving the non-teaching staff in the healthcare and hospital can be a good opportunities. It is very important that nonteaching staffs should also be knowledgeable with their role and participation in the process (Antiado, D.F., Castillo, F.G., Reblando, JR. & Tawadrous, MI, 2020).

Compliance with recommended health seeking behaviour is impeded to the extent that perceived barriers outweigh perceived benefits that would result from engaging in the health behaviour (Rosenstock, 1974). For example, inconveniences such as long waiting time at antenatal clinic, distance to the health facility would act as barriers to utilisation of Focused Antenatal Care. A pregnant woman would opt not to go to the clinic if she sees no benefit in doing so. Furthermore, health care workers negative attitude towards Focused Antenatal Care, inadequate resources both material and human, inadequate equipment and supplies, lack of knowledge regarding benefits of Focused Antenatal Care would also impede utilisation of Focused Antenatal Care (Simkhada et al., 2008). There are also modifying factors which may include socio-cultural factors as well as demographic aspects such as age, parity, religion, educational status, social values, beliefs and practices of pregnant woman in relation to utilisation of FANC (Chivonivoni et al., 2008).

Aldhanhani & Castillo (2018) mentioned that leadership is very important piece in any organization. Furthermore, during difficult moment it shows how they react to the situation. Another case study (Alzaabi et al, 2018) mentioned that "Leadership, power and politics remains to be in any organization whether it's neither public nor private. Leadership provides power and authority to any leader to accomplish his goal whatever it takes. This is very important in any hospital administration because the politics game is rampant in both public and private enterprise.

Technical and Functional Quality of Nordic Model or Approach

Gronroos (1982, 1984) was one of the early researchers to conceptualise service quality. He defined service quality as a technical process of service encounter (i.e., what the consumer received) and functional or process related to how the consumer received the service as well as the build-up of image through the technical and functional quality and how these are affected by other factors (marketing communication, word of mouth, tradition, ideology, customer needs and pricing). The technical-functional model is based on the disconfirmation paradigm which compares perceived performance and expected service. Gronroos model was the first attempt to measure service quality and was general and did not offer any technique on measuring technical and functional quality. Rust and Oliver (1994) tried to refine Gronroos model and came up with the Three-Component Model which suggested three components of service quality: service product (i.e., technical quality), service delivery (i.e., functional quality), and service environment but they did not test their model, and few support have been found.

Lead by example in compensation and benefits to health care professionals is their top priority in retaining and sustaining competitive staff (Khaleifah et al, 2017). In many cases hospitals and healthcare pay is below the standard pay in

many countries not only in Africa. This is perhaps one of the reason why many opted to other discipline.

Gronroos (1984) asserts that a customer's perception has two components namely: What the consumer receives referred to as technical quality, resulting from their interaction with the service firm. This is crucial to the consumer and their evaluation of the quality of services and results from the consumer's interaction with the service firm (Yousapronpaiboon & Johnson, 2013). According to Gronroos (1984), the second component which is functional quality is assumed to be more important than technical quality. Additionally, a third component, image, can be added to Gronroos' model. The image is very important to service firms and thus can be expected to be built up as a result of a combination of technical and functional quality of service including other factors such as tradition, ideology, word of mouth, pricing and public relations. According to this model, in order for a firm to compete successfully, it should understand consumer perceptions of service quality and understand what influences service quality. A firm will have managed perceived service quality when that firm matches service expectations with service perceptions resulting in consumer achieving satisfaction. According to this model, there are three components of service quality. These are technical quality; functional quality; and image.

Technical quality is defined as the quality of what a consumer eventually receives as a result of interacting with the service firm. This is crucial to the consumers' evaluation of the quality of service they received. Functional quality is the technical outcome the consumer gets from the service encounter how the consumer gets the service is the technical outcome. This is important to him and to their views of the service they have received. The image also plays an important role in the service sector and mainly builds up through the quality of technical and functional service encounters. Other influencing factors include ideology, tradition, pricing, word of mouth, and public relations.

According to Gronroos (2007), the expected service has many components such as marketing, communication, sales image and word of mouth. The experienced service and expected service determine the perceived service quality. The customer has a good perception of service quality when the experiences meet the expectations. For a customer to have a positive experience, the experienced quality must be higher than the expected service quality in order to close the gap. The perceived service quality is not a result of the technical and functional, quality dimensions only but a result of the gap or differences between the expected quality and experienced quality.

The SERVQUAL Model

The SERVQUAL model is one of the most often used approach for measuring service quality and has been used to compare customers' expectations before service and their perceptions of the actual service delivered (Gronroos, 1982; Lewis & Booms, 1983; Parasuraman et al., 1985). Parasuraman et al. (1988) further modified the model and used it to identify the gap between expectations and determined the level of service quality. In their study, they stressed six areas

for measuring quality perception including: Tangibles, reliability, responsibility, responsiveness, assurance and empathy.

In their analysis, Parasuraman et al. (1988) postulated that the SERVQUAL model looks specifically at service quality and not customer satisfaction and emphasises on perceived service quality. Parasuraman and co-authors further asserted that perceived service quality is a global judgment or an attitude concerning the superiority of services in which satisfaction is related to a specific transaction. They concluded that the scale had a reliability rating of 0.99 and stated that the five dimensions of service quality could be ranked in order of importance as follows: reliability, assurance, tangibles, responsiveness, and empathy. Their findings revealed that highest gap scores were for Reliability and Responsiveness which was the source of concern and provided a starting point for improvement for service.

Due to the high expectation scores and higher than normal standard deviations on several questions, the authors later revised the SERVQUAL scale (Parasuraman et al., 1991). Additionally, they added a relative dimension importance section to weight each dimension appropriately. The initial SERVQUAL scale featured 22 expectations questions and 22 perception questions on a 7-point Likert scale with 5-point allocation questions. Empirical evidence indicates that the scale has a reliability of between 0.80 and 0.93, good trait validity and predictive/concurrent validity. Despite this attempt, the model has received serious critiques suggesting further improvements. For instance, Asubonteng et al. (1996) argue that the SERVQUAL model lacks generalisability and specificity characteristics in terms of scales.

To provide lasting solutions to the problems of the SERVQUAL model, researchers agreed on a possible modification of the SERVQUAL instrument to suit a variety of service industries. While the SERVQUAL measuring tool is argued to be the most complete attempt to conceptualise and measure service quality (Ramez, 2012) many researchers are slowly tilting in favour of a modified version of the SERVQUAL model. Several researchers such as Babakus and Boller (1992), Bolton and Drew (1991), Brown, Churchill and Peter (1993), and Carman (1990) emphasised the need to develop a scale that was methodologically more precise. The SERVPERF scale that was developed by Cronin and Taylor (1992) provides a crucial variant of the SERVQUAL scale and focuses on the perceptions of consumers only. It has been conceptually and methodologically tested to be a better scale than the SERVQUAL scale which has its origin in the disconfirmation paradigm (Cronin & Taylor, 1992).

Critics argue that the SERVQUAL scale is based on the expectation's disconfirmation paradigm and not an attitudinal scale of measuring the quality of service. It was pointed out by Cronin and Taylor (1994) that the SERVQUAL was "hesitant to call perceived service quality as an attitude". Thirdly, according to Buttle (1996), the SERVQUAL instrument failed to capture the dynamics of changing expectation. Therefore, performance-minus expectations were viewed as being not a suitable measure of service quality. Cronin Jr. and Taylor (1994) and Teas (1993) argue that the expectation concept has discriminant validity shortcomings and does not measure service quality as well as it is supposed to.

As a result, the perceptions-minus-expectations service quality measurement framework could be a misleading indicator of service quality through customer perception. Thus, he recommended that by eliminating the expectations measure; the SERVQUAL model could be improved, by relying solely on the perception component (Teas, 1993).

SERVPERF Model

Cronin and Taylor (1994) argued for the superiority of the performance based-only measure of service quality as compared to the "perceptions - expectations (SERVQUAL). They discoursed that the expectation component of the SERVQUAL model be discarded and instead be replaced with the performance measure only. A new scale called the 'SERVPERF' scale was instead proposed. They provided empirical evidence in the banks, pest control, dry cleaning, and fast-food industry to corroborate the superiority of their 'performance-only' scale over the disconfirmation-based SERVQUAL model. The SERVPERF scale is a variant of the SERVQUAL scale and contains perceived performance component alone that is composed of 22 items only compared to the 44 items of the SERVQUAL scale.

Methodologically, the SERVPERF scale represents an improvement over the SERVQUAL and is considered a more efficient scale and has a reduced number of items to be measured from 44 to 22 items. According to (Babakus & Boller, 1992; Bolton & Drew, 1991), the scale also gives greater variance explanation in overall service quality by using the single item scale. Even though the SERVPERF scale is still lagging in terms of being used, researchers are increasingly using the performance-only measure of service quality (Andaleeb & Basu, 1994; Cronin et al., 2000; Cronin & Taylor, 1992). When applied in conjunction with the SERVQUAL measure, the SERVPERF measure has outperformed the SERVQUAL scale (Babakus & Boller, 1992).

Empirical Review

Empirical review in global context

Kahn (2018) conducted a comparative study of service performance in Saudi Arabia focusing on private and public health care facilities. The study was an evaluation of service performance of public and private health care institutions in Saudi Arabia and used the SERVPERF model. The study found that there were differences in perceptions of quality in public and private health care institutions. Private health care performed better than public health care facilities on all service dimensions considered in the study. This suggests that private health care facilities offer better service quality than their public counterparts.

Aagja and Garg (2010) developed a scale for measuring perceived service quality for one multi-speciality public hospital in Ahmedabad (India) from the user's (patients) perspective. The objective was to measure perceived service quality of public hospitals. PubHosQual was developed to measure the five dimensions of hospital service quality: admission, medical service, overall service, discharge process and social responsibility. Duggirala *et al.* (2008) in their study in India proposed that healthcare service quality consisted of seven dimensions, namely, infrastructure, personnel quality, the process of clinical care, administrative

processes, safety indicators, the overall experience of medical care and social responsibility.

In India, Kumaraswamy (2012), attempted to evaluate service quality in healthcare centres between January and March of 2007 using the SERVPERF. More specifically, this service quality perception study was undertaken in two corporate and two non-corporate hospitals in Madurai, Tamilnadu. Data were collected from 100 patients from each healthcare centre. Kumaraswamy used the well-documented service quality model of SERVPERF as a conceptual framework to assess the level of health quality. In particular, the study focused on the identification of discriminant SQFs among the two groups of healthcare. The corporate healthcare centres were more highly rated than non-corporate healthcare centres regarding all service quality factors. Kumaraswamy (2012) argued that the perception of service quality factors in health care centres has a significant and positive impact on the patients' perception of the overall performance of the healthcare centres. It was discovered that atmospherics and the supportive staff was among the most important discriminant service quality factors among the two type of healthcare centre. This study suggests that improvement across all service quality factors and the formulation of suitable strategies for enhancing patients' satisfaction.

Another study by Eleuch (2011) assessed Japanese patients' healthcare service quality perceptions through a nonlinear approach. The study relies on a nonlinear approach to assess patient overall quality perceptions in order to enrich knowledge. Furthermore, the research was conducted in Japan where healthcare marketing studies were scarce owing to cultural and language barriers. Japanese culture and healthcare system characteristics are used to explain and interpret the results.

Shaikh *et al.* (2008) employed the SERVPERF tool with five dimensions (reliable, empathy, responsiveness, assurance, and tangibility) to assess the quality of services at a rural health facility in Pakistan. The main objective of using this tool was to assess the level of patient satisfaction with the services by tracking these dimensions of service quality. The independent variables were the five dimensions of service quality and patient satisfaction as the dependent and outcome variable. This study was a cross-sectional facility-based survey for over a period of one year, from March 2004 to March 2005. A questionnaire translated into the local language was administered to patients aged 18 years and above who were resident in the catchment area of the hospital for the previous six months. Over a period of one year, the study helped to identify gaps in the service with regard to quality of care and thus gives an indication of the performance of the health care system.

Empirical studies in Africa

Fagbamigbe and Idemudia (2015) in a study conducted to assess quality of ANC services in Nigeria found that less than 5 per cent of ANC users in Nigeria received desirable quality of ANC services with about one tenth receiving minimum acceptable quality. In the same study, it was revealed that although most attendees made four visits, it was very striking that about one per cent did

not receive any of the ten ANC components considered in that study. This study revealed further that the commonest component of ANC offered in Nigeria are measurement of blood pressure and distribution of iron supplement as they were offered to nearly all the attendees while other important components of ANC such as health education on PMTCT, IPT and urine testing were reported to be low.

A study by Wijesinghe and Fernando (2014) adopted a method developed by Devellis to develop an instrument to measure abstract constructs such as maternal perceptions of antenatal care quality. This method consisted of both the qualitative and quantitative component of assessing the quality of antenatal health care. Furthermore, it employed three qualitative data collection methods (in-depth interviews, key informant's interviews, and focus group discussions) for item generation. The target population for this study was antenatal mothers with periods of amenorrhea selected from two medical health office areas. A consecutive sample of 170 mothers attending antenatal clinic was selected within a period of two months. The findings from this study were employed to make amendments to ANC with a view of improving the quality of service being offered.

Another study by Polsa *et al.* (2011) in Nigeria compared the perceived quality of private and public health services using the SERVPERF. In most developing countries, this is a scarcely researched area, as he focused on the consumer perceptions of private versus public hospitals. This study was motivated by similar studies that indicated problems with the quality of private hospitals, an issue that this study also sought out to examine. Of the 220 questionnaires administered among the hospital patients, 141 were on the primary, 54 on the secondary, and 25 on the tertiary level. There were 23 hospitals altogether, including 12 primary, nine secondary, and two tertiary hospitals. The questionnaires were personally handed to and collected from the patients. The results from this study indicated that there is very little if any difference in how people perceive service quality in private and public hospitals.

Boller *et al.* (2003), sought to compare the quality of antenatal care between private and public in Dar-es-Salaam, Tanzania. The quality of antenatal care in this study was assessed on two fronts; thorough the patients or users and care provider personnel such as medical doctors and nurses. The study employed a systematic random sampling strategy to select 16 care providers; 166 and 188 women from public and private health facilities respectively. Data were collected over two days from seven public-service and nine private-sector providers. Differences in the overall score between the two types of facilities were compared using the Kruskal-Wallis test, a non-parametric test for independent samples. The findings revealed that both the private and public health care provided reasonably good services in the structural and interpersonal aspects of health care. On the contrary, they both scored poorly in the technical aspects of service quality. The study suggests that regular reviews and assessment of antenatal quality provided will lead to an improvement of the service itself.

Empirical studies in Zambia

Nicholas *et al.* (2012) conducted a study by using the 2005 Zambia Health Facility Census and Zambia Demographic and Health Survey 2007 datasets to assess the

quality of ANC services in Zambia. They found that 45 of the 1,391 facilities fulfilled the standard criteria to optimum ANC services while the remaining provided inadequate services to clients. Their findings also revealed that 94 per cent of pregnant women reported to receive at least the first ANC visit with a skilled health worker and 60 per cent at least four or more visits (Nicholas *et al.*, 2012). However, the two studies were a bit limited in that no reasons were established on the perceptions of respondent with regards to the services provided despite being representation of the nation population. Notwithstanding this limitation, findings of the two studies are important as they suggested the significance of considering the quality service particularly ANC in delivering a service as well as in assessing health facilities. Recent studies done on similar research topic area yielded similar findings richer than those found by the surveys. For example, Ali *et al.* (2018) carried out a study where they assessed the factors affecting utilisation of antenatal services among pregnant women. The study indicated that women were reported to initiate ANC late owing to perceived bad quality of service at the health facility. Further, the findings of their study revealed that criticisms were related mainly to services, citing reasons as being sent home without receiving services to insufficient staff and having to purchase drugs, cards, diagnostic tests, even though the service was supposed to be free. From this pivotal study, the findings are critical especially to the current study which is also considering assessing perceptions of service in ANC. Moreover, the findings suggest a link between quality of service and satisfaction of these services to the recipients.

The current thinking or approach to be used in the study does not discount the findings of these studies but simply builds on them to apply the service performance model, the SERVPERF model to assess the service quality perceptions of expectant mothers' perceptions of antenatal care. From these studies, there seem to be a strong link between quality of service and clientele satisfaction. This relationship has motivated a lot of interest to focus on the content and quality of services provided to customers. Although researchers have frequently highlighted the importance of quality of service in order to attract business, the health sector has received insufficient studies particularly in Zambia and other sub-Saharan African countries.

A review of literature of service quality research done in Zambia revealed few studies, especially in the healthcare. The review of literature revealed that Mwiya *et al.* (2017) used the SERVPERF in his study to assess higher education quality and student satisfaction in Zambia. The SERVPERF model was used to examine the influence of each of the five service quality dimensions on overall service satisfaction and behavioural intentions. Based on a quantitative correlational design, primary data were collected from 656 final year undergraduate students at a public university. The findings indicate that service quality performance dimensions (tangibility, reliability, responsiveness, empathy and assurance) are each significantly positively related to overall customer satisfaction which in turn affects behavioural intentions. The study proved that the service performance scale is a useful framework for assessing and monitoring how students form their service quality perceptions and behavioural intentions.

Similarly, a study conducted in Zambia by Kyei *et al.* (2012), revealed inadequacies with regard to services provided during ANC. For example, while foliate/iron supplementation, tetanus vaccination and IPT of malaria were provided by the vast majority of ANC facilities, detection and prevention of mother-to-child transmission of HIV was only available at a third of ANC facilities. Most screening tests were not commonly available: only 16 per cent of ANC facilities provided haemoglobin testing which is helpful in diagnosing anaemia, and only half provided syphilis testing. Urine protein testing, which is important for detecting hypertensive complications of pregnancy such as pre-eclampsia, was performed by less than a quarter of ANC facilities. With this background, the present study sought to evaluate the quality of antenatal care services from the pregnant women's perspectives in selected healthcare facilities in urban and peri-urban areas of Lusaka district of Zambia.

Conceptual Framework

The conceptual framework forms the basis of research and describes the inter-linkages or connections between the research concepts (Saunders *et al.*, 2012). In order to solve the research problem and questions of the study, this approach will advance a realistic model and provide the necessary answers.

Independent variable

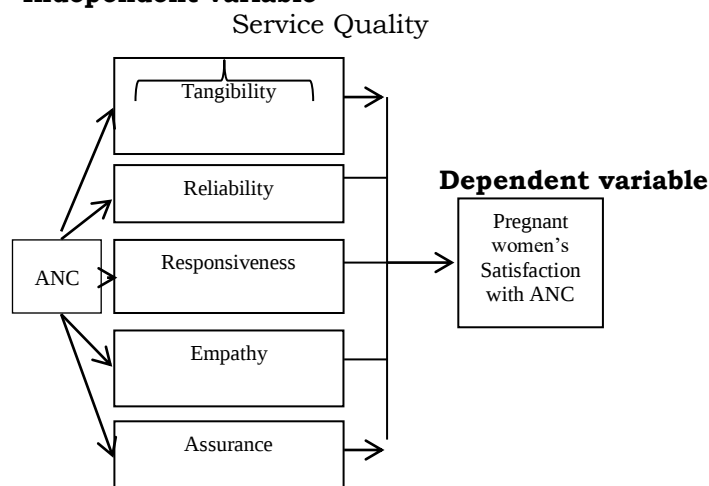


Figure 1: Conceptual Framework

As Saunders *et al.* (2012) have suggested; the implemented model attempts to offer a clarification of fundamental issues, such as key components and variables, as well as the relationship between them, whether graphically or in narrative form. The sensible system relies on the theoretical ideas gathered from the script analysed and associated with the speculations used in the analysis. The conceptual framework, as shown in Figure 1, was based on a synthesis of the related literature. The study adopted a modified conceptual framework that is the SERVQUAL model with five dimensions consisting: Tangibles, Reliability, Responsiveness, Assurance, and Empathy to be independent variables and clients' satisfaction (Pregnant women's satisfaction) as dependent variable.

SERVQUAL Model is a suitable for measuring service quality and customer satisfaction in any service industry.

Both reliability of service and customer satisfaction are calculated in the same dimensions as the researcher (Parasuraman *et al.*, 1988). SERVQUAL combines two buildings and claims that perceived customer satisfaction results in service quality. The model aims at figuring out whether the customer meets the customer's needs and achieves the overall service value.

Understanding the clients and provider perspectives on the factors influencing the quality of ANC is important in improving the quality of services provided. Proper constellation of services (facility factors) coupled with good provider and client behaviours are necessary to achieve better ANC outcomes. When care is provided by motivated providers in well-equipped health facilities, accessibility, acceptability and satisfaction among women is enhanced. Increased knowledge among women will promote better behaviours and practices regarding ANC which will ensure that services are sought in a frequent and timely manner. Delays in seeking and receiving care will be addressed enabling women to receive maximum benefits from care. Ultimately, pregnancy related morbidities and mortalities will be reduced leading to healthy mothers and society which can positively contribute to its development agenda.

Research Methodology

Research Design

This study was a descriptive cross-sectional study design employing quantitative parameters. While a cross sectional study allowed information about the target population to be obtained at that point in time, a descriptive study allowed collection of data that would provide answers on the current status of care. This design was suitable because it explored all the necessary information regarding the study objectives and covered a good number of the target population to allow generalisation of the information. This quantitative component of the study makes full use of the primary data collected from expectant mothers within the study site. Moreover, a standardised questionnaire like other the one used in studies comprising closed-ended questions and each question has five response options (i.e., Strongly Disagree, Disagree, Neutral, Agree and Strongly Agree).

Target Population

According to Saunders *et al.* (2012), the sample population is a series of individuals, items or groups of people from which the analysis is to be collected. The sample population is a collection containing all the interesting measurements of the study (the compilation of all responses, measurements, or counts of interest). This study aims to assess the satisfaction of ANC by service seekers such as pregnant women. The target population in this study consisted of all expectant mothers from selected public and private health facilities within Lusaka district. Further, it is important to note that only expectant mothers who were recipients of ANC services from the selected healthcare facilities of age range 18 to 49 years were considered included in the study. This group of women, therefore, formed the unit of analysis for the study. Further, it is important to note that all

women within the reproductive age group (18 to 49) who were seeking ANC services at the selected health facilities constituted the study population. Data was collected using a designed questionnaire with SERVPERF dimensions from the units. The tool obtained data under main categories of selected demographic characteristics; client perceived quality of ANC and overall satisfaction levels of expectant mothers.

Sampling Technique and Sample Size

The study found no readily available sampling frames for both health facilities and respondents. Therefore, the researcher decided to obtain sampling frameworks of health facilities from the Lusaka District Health Office (LDHO) from which the selection of both public and private health centres and respondents was done. The sampling framework obtained from the LDHO consisted of 85 public and private health facilities offering ANC with an estimated population of 115,318 expected to seek ANC services within Lusaka District.

The sampling strategy involved using a combination of probability and non-probability sampling techniques. This mix of sampling strategies was dictated by the situation on the ground. Initially, the researcher wanted to randomly select only few (less than 10) health facilities within the district. Then from each selected facility, a targeted number of expectant mothers were to be interviewed, with the same number from both public and private. However, after consultations with physicians and the considerations given as well as after the pilot study field work progression, the researcher discovered that the use of this approach was not yielding the numbers of respondents that was targeted. This problem was compounded by the fact that some of the health facilities appearing on the sampling frame from the LDHO were not offering ANC while some of them comprised of women below the eligibility age. This, in effect, meant that it was going to be very difficult for the engaged data collectors to get the required sample size.

It is in consideration of these problems that the researcher decided to combine convenience sampling with probability sampling. This meant replacing any health facility not offering ANC in the sampling frame with those found in the same area offering such services. Specifically, to sample health facilities for inclusion in the study, the facilities were stratified into two groups, namely; those from the public and the ones from private sectors.

This research's sample size 400, made up of 200 expectant mothers from public health facilities and 200 respondents from private facilities. The sample size was determined using the formula for populations greater than 10, 000 (Kothari, 2004) and the study obtained a sample of 400 respondents. The research team managed to visit 23 health facilities with 10 public and 13 private ones from the total of 85 facilities with ANC services in Lusaka. The discrepancy in capturing the number of health facilities was because public health facilities were receiving a greater number of women compared to the private facilities. To ensure that a smooth distribution was captured on number of respondents, an addition of three (3) health facilities from the private sector was selected. This was deemed to control over-sampling and reduced bias.

From the 23 healthcare facilities, a total sample of 400 expecting mothers were selected to participate in the survey, and they all successfully completed the survey questionnaires during the data collection. These respondents were selected using purposive sampling method. One of the criteria was that a woman should be pregnant, have had a child before and accessed ANC from the same health facility; attended at least two ANC visits with assistance from a qualified health provider. In this regard, respondents were selected one at the same time, independent of each other and without replacement. Noting the sampling method's limitation, the researcher supported the purposive sampling method with the convenience sampling method. This was done to obtain respondents who were most conveniently available in order to obtain a large number of completed questionnaires quickly and for economic reasons as well as considering the geographic study area. In addition, the researcher trained the research assistants to ensure that the selected woman was in the facility registers. The core purpose was to confirm that every respondent had the knowledge of the services the facility offered.

Principal Research Tools

Structured questionnaires were used as tools for data collection. There was a questionnaire for respondents and those who were unable to fill the questionnaires were interviewed. According to Orodho (2009), questionnaires are instruments used to gather data which allows the measurements for or against a given view point. The advantage of questionnaires is that they can be administered to a large number of people at the same time (Fraenkel & Wallen, 2003). A test instrument modified and adapted from Boller *et al.* (2003) was used. The quality of antenatal care questionnaire (QACQ) from the developer was modified, within the original questionnaire; some of the questions were not related to current study's setting and cultural norms.

Data Collection Methods

Primary data was obtained using a standardised survey questionnaire developed at three different stages. The survey instrument primarily consisted of 22 observed items (see Appendix) under the SERVPERF model, in which 20 items were divided into five components of service quality: Tangible, Reliability, Responsiveness, Assurance, and Empathy and the two (2) remaining variables were used to measure overall customer satisfaction. The questionnaire comprised of closed-ended questions utilising a Likert scale whose rating ranged from 1 to 5. The scale rating indicated the level to which the respondent agreed or disagreed with a question on the five quality dimensions namely, tangibility, reliability, empathy assurance and responsiveness. The survey instrument also included questions to determine a demographic profile and the variables to measure overall satisfaction levels within the framework of the Likert scale. Data for the actual survey was collected from the sampled participants through a face-to-face interview, meaning the respondent was interviewed by the research assistant and questionnaires were collected immediately after the interview. Out of the 400 respondents successfully answered the questionnaire Data collection occurred from December 2017 to January 2018 for a period of 45 working days.

Data Analysis and Presentation

Owing to the fact that there is no survey that is free of error, the collected data may have some shortcomings. These shortcomings may affect interpretation of results and significantly influence the estimates and responses of respondents. This study comprised of questions which required study participants to recall their responses retrospectively. Retrospective surveys may have sampling errors, under-coverage errors and misreporting of vital events. It is also possible to omit eligible respondents (18-49) because some eligible women may just refuse to be interviewed. In terms of age, there can be misreporting of the age of eligible women in this case, expectant mothers who attend antenatal care. This could be due to age heaping as a result of digit preferences especially digits 0, 2 and 5. In other instances, the respondents may not know their exact ages. In other cases, there is a distortion of the age distribution of women by the interviewers themselves. This can be distortions with regards to eligibility. Some interviewers try to reduce workload by not interviewing these women and sometimes some women are pushed into the 50-54 age groups in order to make them not eligible.

In line with these shortcomings, it is always important to ensure that the data being used is of good quality such that the characteristics represent that of the population of interest in order to make inferences. In doing this, consistency checks were made use of, and the collected data was checked with regards to the distributions of the women in the reproductive age groups also by verifying health facility records. Moreover, the data on the age of the respondent was coded in the class of ten intervals. This was done to prevent age heaping, digit preference and accommodate those participants who could not remember their exact age. To facilitate data entry, the following preliminary steps were undertaken immediately after training of the field team as follows:

- a. A data entry interface was created on the computer using the software, Microsoft Excel. The preparation of the data interface coincided with the finalization of the questionnaires. At this stage, a data entry person was recruited and trained. To test the performance of the data entry interface, some trial data entry was done on the basis of the questionnaires from one health facility. Modifications and improvements of the interface were done on the basis of the initial tests.
- b. The data entry program consisted of one entry screens for the questionnaires that were used for the enumeration. Besides, the system was also designed to generate backup files for each of the records the screen.
- c. Once the interface had been tested and was working well, all questionnaires received from the field were edited first and then entered.

The primary data collected were analysed using STATA 14.0 software. The first stage of analysis was to conduct some descriptive analysis to explore the perceptions about ANC service quality between private and public facilities from the respondents. The second stage was to run an exploratory and reliability analysis and lastly, multiple logistic regression analysis was performed to determine whether a service quality of ANC varies between those that access services from public facilities and those that access them from private facilities. The regression analysis also served to determine whether there is a relationship

between service quality and each of the different dimensions in the SERVPERF model respectively. This technique also helped to identify the dimensions which have much influence on service satisfaction between the two sectors. Probit model regressions were used to estimate two regression models outlined below to: Determine whether there is a difference in service quality of ANC delivery between private and public facilities, and establish if there is a significant relationship between service quality and the different dimensions in the SERVPERF model.

Results and Discussion

Summary of descriptive statistics on the selected factors by type of health facility

Table 1 below presents information on the summary descriptive statistics on the factors/dimensions that were being considered in determining differences in customer satisfaction. Differentials in terms of agreeing or disagreeing on whether the factors have any influence on customer satisfaction are clear. Although the results show a similar proportion in terms of responses, it is clear that those respondents from public institutions were more likely to agree or strongly agree that the selected factors have more influence on customer satisfaction. This evidenced by mean overall mean rating score between public and private hospitals with 3.9 and 3.5 respectively.

Table 1: Customer satisfaction by type of health facility

Type of Health Facility	Public	Private	Public	Private
Measure of customers satisfaction	M	M	SD	SD
Tangibility	4.90	3.89	1.78	1.56
Responsiveness	3.00	2.95	1.23	1.67
Reliability	4.25	4.00	0.68	1.78
Assurance	3.50	2.89	0.13	1.89
Empathy	4.56	4.12	-0.42	2.00
Total	3.93	3.52	0.13	1.89

Source: Researcher's computations from primary data

Note: M=Mean and SD=Standard Deviation

Bivariate Analysis with Chi-square tests (χ^2)

In order to test the association between the dependent and independent variables, cross tabulations with Chi-square tests were conducted. The table below contains the results of the association between selected background variables and the dependent variable (customer satisfaction) without controlling for the effects of the respondents' selected characteristics in bivariate analysis. Under this level of analysis, the only variable that was significantly associated with customer satisfaction was employment status ($p=0.022$) at 95% confidence.

This could have been that those mothers who were seeking service and were working could have more knowledge on the quality of services expected. The results, however, indicate that there was no association between age, marital status, education level and the dependent variable.

In general, results show that expectant mothers are satisfied with the quality of services from the health facilities. Further, results in Table 2 below show that majority (72%) of the expectant mothers who get satisfied with the services offered from public health facilities were in the age group 26-35 while highest proportions of their counterparts from private facilities who reported to be satisfied with the services were 36-45 of age.

Table 2: Cross-tabulations between customer satisfaction and background variables

Variable	Public Health Facility			Private Health Facility (%)			
	NS	N	S	NS	N	S	P-value
Age							
18-25	5.2	28.6	66.2	4.4	21.7	73.9	
26-35	2.9	25	72.1	3.3	8.2	88.5	
36-45	10.7	28.6	60.7	2.1	2.1	95.8	
46+	3.7	37	59.3	0	6.5	93.5	0.164
Marital status							
Never married	6.1	36.4	57.6	2.1	4.3	93.6	
Currently married	4.4	26.3	69.4	2.7	10.9	86.4	
Formerly married	14.3	42.9	42.9	0	16.7	88.3	0.727
Education level							
Primary	2	29.4	68.6	11.1	33.3	55.6	
Secondary	1.8	21.8	76.4	15.4	15.4	69.2	
Higher [College &	8.5	31.9	59.6	1.1	7.9	91	0.173
Employment status							
Working	1.5	33.8	64.7	1.5	7.6	90.8	
Not working	6.8	25.8	67.4	4.4	13	82.6	0.022**
Overall total	5	28.5	66.5	2.5	9.5	88	

Key: NS – Not satisfied; S-Satisfied; N-Neutral

Source: Primary Data (2018)

P-value in the parenthesis; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Results in Table 2 above further indicate that there was no association between the age of the respondent and customer satisfaction. By marital status, it is shown that the never married mothers from private facilities were more likely (93.6%) to get satisfied with health services offered to them than those from public health facilities (57.6%). A similar trend is observed across another marital status [Currently married or living together and formerly married (Separated/Widowed)]. On the other hand, among women from public health facilities, most (69.4%) of the women who reported getting satisfied were either married or living together.

Correlation analysis

Before conducting exploratory factor analysis, correlation analysis was performed in order to assess the relationship of each dimension. Pearson correlation coefficients “r” were generated and used to determine the strength of the relationship among the independent variables. In quantitative research methods, if the value of the coefficient “r” is above 0.5, the relationship between two variables is considered highly correlated, and this may require controlling (removing) one variable with least probability value in order not to distort the relationship with the dependent variable during analysis (Creswell, 2003). Furthermore, correlation analysis was performed to test multicollinearity. At the first level, the correlation was performed among background variables and the five dimensions of service quality. In this regard, multicollinearity was tested considering its importance in explaining the variation that may be caused by independent variables to the dependent variable as presented in Table 3 below.

Table 3: Correlation matrix among background variables and service quality dimensions

	Age	Marital	Education	Employment	Tan.	Rel.	Res.	Ass.	Empa
Age	1								
Marital Status	0.33	1							
Education Level	0.22	-0.108	1						
Employment status	-0.3	-0.048	-0.381	1					
Tangibility	0.34	0.056	-0.123	0.006	1				
Reliability	0.03	0.076	0.203	-0.146	0	1			
Responsive	0.22	-0.049	0.294	-0.221	0.01	0.4	1		
Assurance	0.11	-0.07	0.158	-0.15	-0.3	0.38	0.41	1	
Empathy	0.11	-0.094	0.159	-0.126	0.02	0.29	0.3	0.48	1

The results in Table 4 below indicate that none of the dimensions [Tangibility, Reliability, Responsiveness, Assurance and Empathy] was correlated (>0.5). This implies that all the dimensions were statistically independent. However, Reliability dimension seemed to have a moderated ($r= 0.4013$) relationship with Responsiveness. Similarly, Responsiveness tends to have a moderate ($r= 0.4101$) relationship with Assurance dimension and Assurance with Empathy dimensions ($r= 0.4856$).

Table 4: Correlation matrix among service quality dimensions

	Tangibility	Reliability	Responsiveness	Assurance	Empathy
Tangibility	1				
Reliability	0.3486	1			
Responsiveness	0.3109	0.4013	1		
Assurance	0.3519	0.3805	0.4101	1	
Empathy	0.2652	0.2906	0.3096	0.4856	1

Note: If the value of r is greater than 0.5, then one factor must be controlled

Table 5 below provides statistics of Cronbach’s alpha for the five dimensions. This was done in order to check whether respondents’ score on any item statement tends to be related to their scores on others. The Cronbach alpha values were

computed using STATA 14.0 after conducting correlation analysis. It is shown that all the dimensions have Cronbach alpha values greater than 0.5 indicating that the questionnaire utilised was reliable. Further, the results in Table 5 indicate that Reliability dimension had the lowest Cronbach alpha value while Assurance recorded the highest value.

Table 5: Cronbach's alpha for each dimension for SERVPERF

Service Dimensions	Cronbach's alpha
Tangible (Component 1)	0.703
Reliability (Component 2)	0.657
Responsiveness (Component 3)	0.767
Assurance (Component 4)	0.805
Empathy (Component 5)	0.739

Multiple Regression Model Results

Table 6 presents results from the multivariate binary logistic regression analysis. The model estimates presented are the net effects of selected independent background variables [age, education level, marital status, employment status and the five service quality dimensions] on customer satisfaction by type of health facility. Under this level of analysis, all independent variables were put together using the enter method in the regression model against the dependent variable. The enter method was chosen because of its simplicity and used on the nature of data. The results generated are presented in the table below.

Based on Nagelkerke's R^2 , the percentage of variance of the dependent variable was identified by Cox and Snell test explained equalled = 36.1 %, while the Nagelkerke explained 43.5 % of the variance. This proportion of variation explained by the selected independent variables (background and selected dimensions) is quite too low for estimation of the parameters. The model further shows overall, 94 per cent of the predictions in the model are correct and the model is significant. Results in Table 6 below show that expectant mothers between 26-35 years have higher odds ($\beta = 1.046$, $p > 0.05$) of getting satisfied with the services they get public facilities compared to women 18-25. The results indicate a 5% difference in service satisfaction between young women (18-25) and older ones (26 to 35).

Similarly, results reveal that women of the same age group (26-35) who get services from private facilities were 6.180 times higher of getting satisfied with services than those aged 18-25 and this difference is statistically significant ($p < 0.05$).

Table 6: Multivariate Logistic regression models on the effect of background variables and service dimensions on customer satisfaction [Expectant mothers] by health facility

Variable/ factor	Public Health Facility				Private Health Facility			
	Exp(β)	SE	Sig.	C.I for Exp(β)	Exp(β)	SE	Sig.	C.I for Exp(β)
Age								
18-24 (RC)								
26-35	1.046	0.47	0.92	[0.433- 2.525]	6.18	5.587	0.044**	[1.051- 7.353]
36-45	0.9	0.514	0.853	[0.293- 2.758]	3.682	1.1	0.006**	[2.782- 4.316]
46-49	0.669	0.413	0.515	[0.199- 2.244]	2.463	1.099	0.026**	[1.357- 3.436]
Marital status								
Never married (RC)								
Currently Married	2.186	1.165	0.142	[0.769- 4.212]	0.129	0.139	0.057	[0.016- 1.066]
Formerly Married	0.577	0.68	0.641	[0.057- 2.812]	0.293	0.509	0.48	[0.009- 1.834]
Education Level								
Primary (RC)								
Secondary	1.801	0.92	0.249	[0.662- 3.902]	0.283	0.352	0.31	[0.025- 3.239]
Higher	0.766	0.37	0.581	[0.297- 1.974]	0.964	0.983	0.971	[0.131- 1.114]
Employment status								
Working (RC)								
Not working	0.974	0.404	0.95	[0.432- 2.196]	2.328	1.78	0.269	[0.520- 3.416]
Tangible								
Not satisfied (RC)								
Satisfied	1.343	0.521	0.448	[0.627- 2.872]	1.153	0.762	0.829	[0.316- 2.208]
Reliability								
Not satisfied (RC)								
Satisfied	1.147	0.723	0.828	[0.333- 3.947]	3.176	2.942	0.212	[0.517- 4.511]
Responsive								
Not satisfied (RC)								
Satisfied	0.231	0.011	0.234	[0.013- 1.923]	4.385	2.077	0.202	[0.454- 6.402]
Assurance								
Not satisfied (RC)								
Satisfied	3.776	2.108	0.017**	[1.265- 5.276]	5.553	3.196	0.023**	[1.263- 6.428]
Empathy								
Not satisfied (RC)								
Satisfied	2.039	2.776	0.000***	[2.453- 7.869]	2.381	1.749	0.007**	[2.286- 4.685]
Constant	0.4	0.303	0.035**	[0.091- 1.766]	0.69	1.097	0.042**	[0.031- 2.562]

Source: Primary data (2018)

P-value in the parenthesis; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; RC= Reference Category, SE= Standard Error & C.I=Confidence Interval

Further, the results clearly show a very big gap (1.046 vs. 6.180) in service satisfaction between women seeking health service from private facilities and those from public facilities. This is a clear indication that private health facilities offered better health services to expectant mothers than public health facilities. This may be due to the fact that service providers in private health facilities receive better benefits which may be a motivating factor. On the contrary, results show that the odds of getting satisfied with services offered in private health facilities among older women (36-49) were reducing. Even so, it is shown that expectant mothers between ages 36-45 were 3.7 times higher of getting satisfied with services than

the women in the reference category (18-25). However, results indicate that the level of satisfaction among women of the age group who sought services from public health facilities was 10% less when compared to those women in the reference category. Further, the odds of being satisfied with health services among women 46-49 years from private facilities were 2.46 times higher. This indicates a 46% difference in service satisfaction between the 46-49 years and 18-25 year olds.

To the contrary, results show that by age, older women who sought health services from public institutions had lower odds (<1.0) of getting satisfaction with the offered services. This is evidenced in the table where it shows that women in the age group 26-35 years and 46-49 years were 10% and 33% less likely to get satisfied with the health services offered from these institutions. Overall, multivariate regression results indicate that older women (36-49 years old) who sought these services from the private institution were more likely to be satisfied than younger ones (18-25 years old) when compared to their counterparts from public health facilities. On this level of analysis, the age of the respondent was not significantly associated with customer satisfaction. This may indicate that the age of respondent did not influence with regards to customer satisfaction.

The other variable used in the analysis was marital status. It was used to determine customer satisfaction among women by type of health facility. Marital status was grouped into three categories namely, never married, currently married or living together and formerly married which composed of those who have been divorced, separated or widowed. The never-married women were used as the reference category in determining the difference in service satisfaction. Results show that among women seeking medical services from public health facilities, the currently married were more likely ($\beta = 2.186$) to be satisfied than the never married. These results indicate that married women were 2.18 times higher to be satisfied with the services obtained public health facilities when compared to the never married. This may entail that married women perceived services as better than the never married. On the contrary, women from the private health facilities reported to have less satisfied regardless of their marital status. Results reveal that there was no statistical association between marital status and being satisfied or not with service quality.

Education level was another variable considered. This variable was categorised into three groups with "primary education" being the reference category. As expected, expectant mothers from public health facilities who reported to have attained secondary education were more likely ($\beta = 1.801$) to report service satisfaction when compared with those who have primary education. Results from the table below indicate 80% difference in service satisfaction between expectant mother from the public and private facilities. However, results show that those expectant mothers with higher [University or College] education level were less likely ($\beta = 0.766$) to be satisfied with services offered from public facilities. On the other, results indicate that expectant mothers with secondary and higher education level who got health services from private health facilities were less likely to be satisfied with the quality of services than those with primary education level. Conversely, it is interesting to observe that multivariate regression analysis did not indicate any statistical relationship between education

level and service quality satisfaction. The results imply that the level of education may not have any influence on service quality among expectant mothers seeking medical services either at public or private facilities.

Furthermore, the study findings under multivariate analysis revealed no relationship between employment status and quality of service. Despite employment status not being statistically significant, results show that expectant mothers who were not working were 2.328 times higher to be satisfied with the quality of service offered in private health facilities while their counterparts from public facilities were less likely to be satisfied. This finding suggests that private health facilities seem to offer quality services to unemployed mothers than those from public health facilities. In terms of the difference in service satisfaction, mothers who sought ANC services from private health facilities had 33% chance of being satisfied with the services they received from these facilities when compared to their counterparts who sought from similar services from public institutions.

In multivariate regression analysis, the five service dimensions were also analysed together with the selected background. This was done in order to test whether the selected background variable interacted with these dimensions to influence the outcome variable. It is interesting to observe that the influence of these background variables was at a minimum level as they seemed to have altered the relationship between service quality and customer satisfaction. Table 7 below provides multivariate regression results for the five service quality dimensions (Tangibility, Reliability, Responsiveness, Assurance and Empathy).

As indicated in the results, assurance and empathy were the only dimensions of service quality which had an influence on customer satisfaction from both public and private health facilities. These results may be suggesting that the two factors are the most influential on among the selected service factors. Though not statistically significant, under Tangibility dimension it is shown that the odds of expectant mothers being satisfied with quality of service from public health facilities were increasing by 1.343 while those from private, the odds were increasing by 1.153. These findings suggest that a 19% service satisfaction difference between the two groups.

Expectant mothers seeking health services from private facilities were more likely ($\beta=3.176$) to be satisfied with quality of service than those from public ($\beta=1.147$) under the reliability dimension. This means that mothers who went received ANC services from private health facilities were 18% more likely to state that all the state that components under the reliability factors were being fulfilled by the service providers. However, those who got their ANC from public health facilities were only 14% more likely to state that components under this factor dimension were satisfying. The results also show a 3% difference in service satisfaction between the groups of mothers under this factor dimension. These findings may be confirming that components under reliability dimension were major factors which needed to be addressed especially among services providers from public health facilities.

Furthermore, results on responsiveness factor dimension indicate that the quality of service among expectant mothers from private health facilities was increasing by 4.4 while those from public health facilities were 77% ($\beta=0.231$) less likely to get satisfied with quality of service. Similar findings were observed under Assurance dimension where the quality of service among expectant mothers from private facilities was increasing by odds of 5.5 whilst their counter counterparts from public facilities the odds were increasing by 3.8. The results show that the odds of quality of services among expectant mother were increasing by 2.0 and 2.4 from public and private health facilities respectively under the Empathy dimension. Generally, multivariate regression analysis results demonstrate the difference in service quality and that most quality of service is mostly found in private health facilities particularly when one considers the five dimensions of service quality.

Multivariate regression analysis on five dimensions of service quality with customer satisfaction

Table 7 below contains results obtained from multivariate logistic analysis on customer satisfaction and service quality dimensions.

Table 7: Multivariate regression analysis on five dimensions of service quality with customer satisfaction

Factor/ Covariates	Public Health Facility				Private Health Facility			
	Exp(β)	SE	Sig.	C. I for Exp(β)	Exp(β)	SE	Sig.	C. I for Exp(β)
Tangible								
Not satisfied (RC)								
Satisfied	1.095	0.39	0.035**	[0.545- 2.200]	1.155	0.664	0.021**	[0.378- 3.566]
Reliability								
Not satisfied (RC)								
Satisfied	1.013	0.046	0.043**	[0.316- 3.249]	1.932	0.456	0.182	[0.4413.465]
Responsiv e								
Not satisfied (RC)								
Satisfied	na	Na	Na	Na	2.677	0.477	0.025**	[0.882- 4.840]
Assurance								
Not satisfied (RC)								
Satisfied	4.601	2.467	0.004** *	[1.609- 5.161]	2.658	0.673	0.16	[0.774- 3.128]
Empathy								
Not satisfied (RC)								
Satisfied	5.693	2.515	0.000** *	[2.395- 7.532]	7.283	0.949	0.002**	[3.409- 8.309]
Constant	0.755	0.187	0.057	[0.465- 1.227]	0.879	0.383	0.043	[0.374- 2.064]

Source: Primary data (2018)

P-value in the parenthesis; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; RC= Reference Category, SE= Standard Error & C.I=Confidence Interval.

NB: na = implies that data was not enough to generate the required statistics on that particular group

The service quality dimensions presented in the table below are those extracted from the second factor loading under factor analysis. During the second factor loading, the model dropped all attributes which had scored below 4.00. Under Tangibility dimension, only three attributes were retained which include; Modern looking equipment in X Hospital, Materials associated with the service are visually appealing, and the physical facilities at X Hospital are visually appealing while in the Reliability dimension, the component of; “X Hospital gets things right the first time” was dropped. However, all the attributes (questions) under Responsiveness, Assurance and Empathy dimensions were retained in the model. It is also worth noting that there were few observations to generate statistics for responsiveness dimensions among respondents from public health facilities.

Interestingly, results show that after controlling for background variables and those attributes which had lower scores, the multivariate regression analysis showed that Tangibility, Reliability Assurance and Empathy dimensions were the major predictors of service quality in public health facilities. On the other hand, for private health facilities, the major predictors of quality of service included; Tangibility, Responsiveness and Empathy. The results seem to be unique in the sense that none of the studies conducted has generated such findings. It is, therefore, important to investigate further on these dimensions of service quality even in other sectors. Moreover, this may help generate findings which may help service providers and decision makers to improve in service delivery specifically in developing nations.

The results in Table 7 above show that in public health facilities, expectant mothers (customers) were 9% more likely to be satisfied with the quality of service they got when compared to those who may have reported not to be satisfied. Similarly, those from private health facilities were 15% times higher of being satisfied with the quality of service. Moreover, results indicate that a 6% difference (9% versus 15%) in service satisfaction between public and private health facilities. As indicated in Table 7 above, the Tangibility dimension is positively related with the quality of service. This implies that, for quality of services to be recognised by customers, the attributes retained under this dimension should be present or preformed. These include modern looking equipment, neat looking personnel and environment and visually appealing materials. Under Reliability dimension, it is indicated that the chance of service satisfaction among those expectant mothers from public health facilities were increasing by 1% while their counterparts from private health facilities, service quality satisfaction was increasing by 93%. On the shocking side, this dimension was found to be statistically significant on public health facilities. This finding may be suggesting that for service quality to present in public facilities and the identified attributes or components under this dimension should be practiced.

Results reveal that another predictor of service in private health sector was Responsiveness. This dimension was found to be statistically significant with

quality of service in private health facilities. In addition, it is shown that service satisfaction was increasing by a factor of 2.7 compared to those who reported not being satisfied with the quality of service they had received. Surprisingly, the odds of getting satisfied with service quality among those mothers who received ANC services from public health facilities were 4.6 times higher while those from private health facilities their odds were 2.7 times higher under assurance dimension. The results are suggesting that this dimension was a strong predictor of quality of service in public health facilities than private facilities, quality of services were guaranteed even without assurance. Further, the results indicate that, among expectant mothers who had received ANC services from public facilities were more likely satisfied with the services when compared to those from private health facilities.

Empathy was another dimension considered under multivariate regression analysis. Results in Table 7 reveal that Empathy dimension is a very strong predictor of quality of service both in public and private health facilities. As can be seen in the table below, this dimension was significantly related to service quality in this study. Further, results suggest that if respondents from public health facilities had all the four attributes of empathy, their service satisfaction were to be increasing by a factor of 5.7 while those from private health facilities the odds were to be increasing by 7.3 compared to those who indicated not to be satisfied with type services offered.

Binary Logistic Regression Analysis on the Five Dimensions of Service Quality

This section uses the binary logistic regression analysis in order to determine the influence of the predictors (five dimensions of SERPERF model) on customer satisfaction among expectant mothers from the public and private health facilities. When using this model, the dependent variable (customer satisfaction) was regressed with all the selected independent variables (Tangibility, Responsiveness, Reliability, Assurance and Empathy) in the study at once. The logistic regression examined the influence/effect of all the independent variables by using Backward Stepwise (elimination) (Small number of explanatory variables) where independent variables were entered so that the model could remove variables with least change in R-Squared (R^2) until change becomes significant in coming up with the model. This means that all variables that have insignificant effects on the dependent variable are automatically eliminated from the model. In this case, all background variables were eliminated from the model. The following variables: Tangibility, Responsiveness, Reliability, Assurance and Empathy factors were retained in the binary logistic regression model based on the dataset.

Table 8: SERVQUAL Factors affecting customer satisfaction among public and private respondents based on Logistic Regression

Covariates (Factors)	Category	B	S.E	Wald	df	Sign.	Exp(β)	C.I for Exp(β)
Tangibility Factor	Private (Ref. C)	0	-----	-----	1	-----	1	-----
	Public	-0.25	0.1	6.27	1	0.01***	0.782	0.644-0.948
Reliability Factor	Private (Ref. C)	0	-----	-----	1	-----	1	-----
	Public	-0.08	0.201	0.158	1	0.691	0.923	0.622-1.370
Responsiveness Factor	Private (Ref. C)	0	-----	-----	1	-----	1	-----
	Public	0.253	0.076	3.238	1.15	0.07*	0.978	0.988-1.330
Assurance Factor	Private (Ref. C)	0	-----	-----	1	-----	1	-----
	Public	-0.08	0.201	0.158	1	0.051*	0.922	0.622-1.370
Empathy Factor	Private (Ref. C)	0	-----	-----	1	-----	1	-----
	Public	0.253	0.102	6.156	1	0.013**	1.288	1.055-1.573

Significance values: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, RC: Reference Category

Based on Nagelkerke's R^2 , the percentage of variance of the dependent variable was identified by Cox and Snell test explained equalled = 32.1 %, while the Nagelkerke explained 63.5 % of the variance. This proportion of variation explained by the selected independent variables is quite good for estimation of the parameters. The model further shows overall, 96% of the predictions in the model are correct and the model is significant.

Quality of service differentials in terms of contributing to customer satisfaction is clear; Table 8 below shows that institutions (health institutions either public or private) with bad Tangibility attributes have lower odds 0.782 ($p < 0.05$) of satisfying customers in the services they offered compared to those health facilities with these attributes. This implies that institutions/health care facilities which practice the attributes are about 22% less likely to lose customers when compared to those where the attributes are not practised. In terms of Reliability factors/dimensions, the results in Table 8 below show that the odds ratios are lower (0.923). Results from table confirm that Reliability factors do not influence customer satisfaction among expectant mothers. However, results indicate that whether one seeks health services from public or private health facilities, they are likely not to be fully satisfied. Responsiveness factors/dimension determined on how service providers were likely to respond to customers and for this reason; it is important to consider this factor in determining customer satisfaction among expectant mothers. Results in the table below show lower odds 0.923 ($p < 0.1$) of responsiveness on customers. This means that good Responsiveness has higher chances of maintaining customers compared to bad responsiveness. With regard to reliability dimension, health facilities/ institutions which have clear policies on promoting responsibility among workers are expected to be reliable and also to have better workers compared to those that have no policies at all.

Table 8 further shows that the odds of a public health facility is about 1.2 ($p < 0.1$) times higher of not satisfying customers compared to the private facility due to its workers not being reliable. Results confirm that Reliability is an important factor to consider in ensuring customers satisfaction. Assurance is another factor which was considered in this study to determine its influence on customer satisfaction. Results based on logistic regression show that the odds ratio for this factor is lower 0.9 ($p < 0.1$) in public hospitals compared to the private ones. This means that one's satisfaction to service in terms of assurance is 10 per cent compared to when one is not assured of quality service.

With regard to empathy, the results show a lower odds ratio of 0.8 ($p < 0.05$) for this factor in terms of influencing customer satisfaction among mothers. The logistic model was used to determine the difference in terms of customer satisfaction between public and private health facilities. These five factors including Tangibility, Reliability, Responsiveness, Assurance and Empathy were taken as an independent variable. The overall chi-square test value for the model was significant ($\chi^2 = 137.2$, $p = 0.0001$). The test result indicates that a significant difference exists between two groups of public and private health care facilities. Results revealed that of the selected factors, out of five all of them were retained by the model and only four were found to be significant at that level of analysis. The results in the table also indicate that customers who sought health services from private healthcare facilities were more satisfied with regards to service quality. On the other hand, the expectant mothers from private healthcare facilities were comparatively more satisfied by other factors such as assurance and empathy compared to mothers who attended ANC services in public health care facilities.

Discussion of Findings

The results from the descriptive analysis show that in general, expectant mothers were more likely to be satisfied with the service offered at antenatal care centres regardless of where they get ANC services from. Over 50% of the surveyed respondents either agreed or strongly agreed with each item under the selected five dimensions of SERVPERF model. This generally implies that; the respondents were satisfied with each of the five service quality dimensions that were offered at the healthcare facilities. Although the sample was confined to only health facilities within a district, the findings are crucial in that they may be suggesting that the respondent who accessed services from a private or public facility were satisfied with the ANC services.

These results are different from other studies that have been done from elsewhere concerning perceptions of service quality in other countries. For instance, Pramanik (2016) found that health care service quality dimensions were unsatisfactory. Similarly, Mohebifar *et al.* (2016) evaluated service quality from patients' perceptions and found that there was a significant gap between importance and performance in all five dimensions of service quality. The two findings may be different due to variations in study settings and variables considered in the analysis.

Difference between ANC service qualities offered in public and private health facilities

The study findings indicate that there was a significant difference ($p < 0.05$) in service quality between private and public health facilities. This is demonstrated through expectant mothers from private health facilities were found to be more satisfied with the quality of services offered than those from public health facilities. The finding implies that private health facilities offer a better quality of services compared to public facilities.

The concept of service quality varies across service and industry which needs to be measured in order to see the satisfaction of customers just like in a hotel settings (Aggabao and Castillo, 2016). In order to fill this gap comprehensive information on the service quality is relevant but we see there is huge difference in public and private. Another interesting part is the manpower resources as the trend globally started to shift into multi-cultural diversity. In a study conducted by Al Naqbi and Castillo (2017) Cultural diversity at workplace is an emerging trend and this has significant impact on the performance of any business organization. This can also be apply in a medical or hospital center as we may learn from different nationalities across diverse background.

Findings from this are in tandem with the findings in a study conducted by Khan (2018) in Saudi Arabia on service performance of public and private hospitals which revealed that the government healthcare fails to impress the patients in service. These results have confirmed the research objective which tries to find out whether the gap existed in service quality between public and private health facilities in Zambia. Additionally, the results in the study by Khan (2018) further revealed that universal healthcare program launched in the Saudi Kingdom covered everyone but failed to delight them and revealed that while the public sector was growing at a rapid pace, the citizens appeared less satisfied with the Government healthcare systems. Even though the findings may be pointing out a significant difference in service quality between the two types of institutions, it is also important to bear in mind about the study subject especially when making inferences

One plausible reason could be that private sector invests in developing their services and have profit motive which places great importance in satisfying their customers. Additionally, it is also interesting to note that private facilities perform better in providing services despite public facilities receive huge funding mostly through government. While the sector is growing at a fast rate, the citizens appear less satisfied with Government health care system. Even if government is spending on health care has increased and so has general access to healthcare, the quality of the services provided by health care providers have not substantially improved over the years. On the contrary, the private healthcare industry, a relatively new entry into the healthcare has been perceived quite positively by the respondents in this survey. The results indicate that universal healthcare program launched in Zambia has increased access to healthcare for its citizens but fails to delight them. Several reasons can be ascribed for this dichotomy.

Consistent with previous studies (Andaleeb, 1998), one of the reasons for low satisfaction level with the government healthcare system is the patient overload, while private healthcare caters to a specific clientele; Government healthcare system is accessed by a vast majority of people. Additionally, the Zambian public healthcare system is facing an acute shortage of health professionals leading to long waiting times and therefore less than happy patients (Arasli *et al.*, 2008). Another reason for patient unhappiness with the Govt. healthcare system is an inadequate response to changing infrastructure and medical technology. Private healthcare system aptly upgrades its system and infrastructure due to quick decision making and a lean bureaucracy, the government sector faces massive bureaucratic bottlenecks to get clearances for up gradation and fresh investment. In a nutshell, Zambian healthcare sector looks promising for the private sector players as it is expanding at a rapid rate. At the same time, the public healthcare also has to rise to the emerging challenges if it has to stay relevant; after all, health is the government's obligation.

Dependence of antenatal service on the five dimensions of quality

At multivariate regression analysis level with background variables, findings of this study revealed that Assurance and Empathy dimensions are the major predictors of customer satisfaction in public health facilities while in private facilities, age and two of the service quality dimensions; Assurance and Empathy, were the major factors of service satisfaction. Since satisfaction was used as a proxy indicator to measure perception, the implication of the findings on perception may be that the two (Empathy and Assurance) dimensions are important dimensions to measuring customer and /or client perception. On the other hand, results from multivariate regression analysis without background characteristics showed that in public health facilities the service dimension which determined customer satisfaction were Tangibility, Reliability, Assurance and Empathy whereas, in the private sector Tangibility, Responsiveness and Empathy were identified as the main predictors of quality of service satisfaction.

In general, the findings have revealed that the Tangibility and Empathy are the major determinants of service quality both in public and private sector. The study discovered that healthcare workers' attitude (Empathy) is an important consideration if the uptake of ANC services was to improve. The explanations given by respondents were that bad attitude by healthcare workers towards clients discouraged some of them from accessing the services. The findings of this study are different from those conducted in Malaysia by Sohail (2003) and another one by Strawderman (2005). This difference may be due to differences in environmental setups, work culture among service providers and work conditions. The findings of this study have also shown that the variability of quality service between public (91.6%) and private (97.7%) exits. This is confirmed under exploratory factor analysis level. Further, this study has highlighted that for public health facilities to provide high service quality, equipment found in the facilities must be modern, and materials associated with the service must be appealing in order to attract customers.

This finding is critical in that similar findings were observed in another study by Strawderman (2005) where these attributes scored highest both in public and

private facilities. The study has also noted that there is a lack of medical personnel with genuine interests and willingness to help clients when there is a problem, and also health facilities seem not to provide services at the promised time. This may be as a result of lack of incentives, poor monitoring of workers and lack of commitment among workers in public health facilities than in private health facilities.

In multivariate analysis, the most important dimensions of service quality both in public and private sectors were Assurance and Empathy when combined with the background factors. However, after controlling for the effect of selected background variables in the model, the study findings indicated that the most important predictors of customer satisfactions are tangibility and empathy. These findings may be pointing out that the managers of such public and private facilities should consider all attributes that scored above 0.4 under these service dimensions.

The indicators of this multivariate analysis can be compared to other studies. For example, a study in Malaysia by Sohail (2003) found that all the dimensions of service quality were predictors of service quality. Another study which found similar findings with the Malaysian study was by Strawderman (2005). Generally, the results of this research have opposing findings with regards to predictors of service quality. The distinction observed in this study may be attributable to a different number of background variables and study settings. However, it is also worth noting that several types of research that have applied the SERVPERF model have several limitations that should be acknowledged.

Based on the presented findings, the multivariate regression model can be considered to have strong evidence on the perception and level of satisfaction. By type of health facility and dimension, this study highlights that the greatest important predictors of quality of service on customer satisfaction in public sector is Empathy among strong predictors. The implication of this finding on the dimension is that if service providers or those managing these facilities want to improve and increase the level of customer satisfaction, they should emphasise on providing reliable and accessible services delivered by empathetic and competent staff or medical personnel in a visually appealing facility. In addition, they should also ensure that facilities are operating with times that are convenient to patients and persons attending to these clients should be able to understand the specific problem of the client.

According to the type of health facility, empathy and assurance dimensions turned out to be the most important predictors of customer satisfaction in public health facilities. This is in line with the study carried out by Curry *et al.* (2000) who used the SERVQUAL model to measure service quality in physiotherapy services in Dundee Scotland. Using the 5-evaluation criteria Tangibility, Reliability, Responsiveness, Assurance and Empathy, they proved that assurance and empathy were importance predictors of service quality.

This means that if the public sector were to increase customer satisfaction, service providers should continue to have good behaviour to instil confidence in customers; they should be courteous with clients and have the knowledge to

answer questions from their clients. Tangibility appeared to be the third important predictor of customer satisfaction in this study while Reliability was fourth among the predictors of customer satisfaction in the public sector.

This study concludes that generally expectant women have a positive perception of four of the five dimensions of service quality investigated in this study. The study also concludes that private facilities tend to have better ANC service quality compared to public facilities and lastly that service quality is significantly influenced by Tangibility, Responsiveness, Assurance and Empathy. Empathy was found to be the strongest predictor of customer satisfaction in both public and private health facilities. Further, tangibility was the second strong predictor. However, Responsiveness dimension was only significant in the private health facility.

These dimensions also clearly affect the perceptions of the people who seek services from medical facilities and in particular, expecting women who seek antenatal services. This implies that Tangibility, Assurance and Empathy play a big role in improving service quality in both the private and public healthcare facilities. Additionally, the results imply that customers rate the service better if the variables that make up these dimensions such as timely operations by personnel at a medical facility, convenient operating hours, safety and hospitality and so on are improved upon. These results are consistent with Kitapcia *et al.* (2014) who found that these SERVPERF dimensions positively influence customer perceptions of service quality and are antecedents of customer satisfaction.

Factors that influence the satisfaction of ANC service quality in public and private health facilities

Among the selected background variables that were selected, employment status of the study participants was the only variable associated with customer satisfaction at the bivariate level. This finding is different from other study findings where it has been found that age, marital status and education level were also associated with customer satisfaction. Such studies where the age, marital status, education and employment status of respondents were positively associated with customer satisfaction were conducted by Mpembeni *et al.* (2007) and Kitapcia *et al.* (2014).

Differentials in terms of agreeing or disagreeing on whether the factors (dimensions of service quality) have any influence on customer satisfaction are clear. Although the results show a similar proportion in terms of responses, it is clear that those respondents from public institutions were more likely to agree or strongly agree that the selected factors have more influence on customer satisfaction. This is evidenced by mean overall mean rating score between public and private schools with 3.9 and 3.5 respectively. Results have demonstrated that there is a positive relationship between perceived quality and customer satisfaction based on the five service quality dimensions. This is clear from the statistical p-value ($p < 0.05$) in the Multiple Binary Regression analysis. These study results are in line with the findings by Khan (2018) in Saudi Arabia, Mwiya *et al.* (2017) in Zambia and Yousapropaibo *et al.* (2013) in Thailand whose findings revealed a positive relationship between the five service quality

dimensions and customer satisfaction. However, unlike these studies which revealed a significant positive relationship between overall customer satisfaction and reliability, this study revealed an insignificant but positive relationship between overall customer satisfaction and reliability.

Conclusion and Policy Implications

The major predictors of customer satisfaction in public health facilities include: Tangibility, Reliability, Assurance and Empathy while in private health facilities it is Tangibility, Responsiveness and Empathy. Furthermore, this study has noted that Empathy is the greatest predictor of customer satisfaction among all the service dimensions. On the other hand, this study has demonstrated that background variables have little or no influence on customer satisfaction in ANC services in health facilities. However, the background variables may interact at a minimal level with dimensions of service quality which may alter the relationship between service dimension and customer satisfaction. The study concludes that difference in service quality between public and private healthcare facilities exist and Tangibility and Empathy dimensions drive this. It has also been noted that there are different dimensions of service which influence the quality of service in public and private facilities.

In this study, it is notable that the perception of service quality is not dependant on all the dimensions of services that were considered in this study. Moreover, the findings of this research have made it clear that the amount of influence on customer satisfaction is different by service dimension. Though not a significant result, Reliability also shows a positive influence on customer satisfaction, implying that customers are more satisfied when medical facilities are reliable in terms of prompt services and attention to requests. Overall, it can be deduced that service quality dimensions influence customer satisfaction.

However, the present research has several limitations which range from the sampling procedure, geographic coverage, the study population and the structural of the health facilities that were included in the study. Further, this study used the perception paradigm only to analyse this problem. Additionally, the findings of this study cannot be generalised due to the limitations. Despite these limitations, the study has provided deeper understanding and updated the existing knowledge on the factors associated with service quality and customer satisfaction in health sector by comparing private and public sector using a reliable model. It established a generalizable base for antenatal service quality that will be relevant to many public and private health facilities. It also established a simplified model for ANC service quality, to give insights for hospital managers from both the public and private healthcare setting, helping them in figuring out which dimensions matters to expectant mothers from the private and public health sector. The study also provided a basis for managing and improving certain level of services in areas within ANC from an expectant mother's perception.

In view of the identified limitations, future studies may consider extending the geographical coverage, sample size and covering other sectors such as education transport, tourism in order to have a better understanding of how these dimensions of service quality may affect the market structures.

Given the findings of this study, more attention needs to be given to the development of care delivery models that support quality prenatal care, interpersonal processes of care, and patient-centred decision-making to improve women's satisfaction. The following recommendations are made:

- a. Physician remuneration models, for example, create disincentives to quality. The scheduling and workload pressures result in women spending more time in the waiting room and physicians having less time with pregnant women in their prenatal visits. Both of these issues have been identified in this study and in the literature as creating greater dissatisfaction with prenatal care among women receiving ANC from a public facility as compared to women who receive care from a private service provider. Lusaka District Health Office (LDHO) should work towards enhancing staff motivation through introduction of incentives and better working environment as this will address staff turnover rates. An environment of responsibility in delivering quality care among providers should be emphasized and a system of monitoring delivery of quality services established.
- b. Consideration should be given to developing more community-based sites for the delivery of prenatal care. The results of this study indicate that having a midwife as a provider of prenatal care is a predictor of satisfaction with system characteristics. Effort should be put into learning more about the system characteristics that are found to be more satisfactory in midwifery care so they can be emulated as much as possible in other settings. As identified earlier, information technology is one system characteristic that could be improved. The lack of information technology to support an electronic prenatal record and efficient and flexible scheduling may be contributing to the dissatisfaction observed with system characteristics.
- c. As the participants who received care from a midwife identified that they perceived greater quality of prenatal care, experienced interpersonal processes of care more frequently, and were more satisfied, there are important policy recommendations that need to be made regarding midwifery. It is important that midwifery education become sustainable in Lusaka in order to ensure an on-going supply of midwives.
- d. As in other provinces, the demand for ANC services is fast outstripping the supply of trained healthcare staff. This is particularly true in Lusaka, where women are being turned away because of overflowing case-loads (UNDP, 2012). It is recommended that LDHO ensures a sustainable midwifery education program and fund additional midwifery positions to ensure an on-going supply of midwives and promote the growth of midwifery in the district.
- e. The LDHO should work towards enhancing facility preparedness for quality care for women with complications as this will improve access to adequate care during complications and ease congestion in tertiary facilities. All areas of delays in referral for women with complications should be addressed.

Acknowledgement

Special thanks to my Supervisor Dr. Fermin Castillo, Jr. from Binary University for all the guidance and help throughout the process of doing my thesis. Without your help, I would not have completed this thesis. I would also like to thank the ERES local Ethics board and the National Research Authority of the Ministry of Health for the thorough review and for all the valuable comments and inputs that improved the quality of this thesis. I am also grateful to the Lusaka Medical District Office team for approving the request to undertake this research in their Jurisdiction, Lusaka District. Special thanks also go to the respondents for their willingness to participate in this study. To my fellow DBA students, thank you for sharing with me a great learning journey and providing me with the support and motivation. Many thanks also go to Claude Kasonka, David Mulemena, Bupe Chitumbo, Mutale Mubanga, Esther Zulu, Collins Muntanga and Danny Leza for helping with the data analysis and peer reviews throughout the process. Special thanks go to Naomi Mwanza as well for all the logistical help given.

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