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# Determinants of Efficient Healthcare Service Delivery Among Public Hospitals in Kenya: A Case of Makueni County Referral Hospital

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## Abstract

**Purpose:** The primary goal of the study was to determine the factors that contributed to an efficient healthcare service delivery in Makueni County Referral Hospital, Makueni County. The study specifically aimed at establishing the influence of health infrastructure, the effects of human capital and organizational culture on the efficiency of healthcare service delivery in Makueni County Referral Hospital.

**Methodology:** The study employed a descriptive research design, targeting 132 outpatient department staff at Makueni County Referral Hospital. Stratified sampling and Likert-scale structured questionnaires were used to collect data. Data was analysed using descriptive statistics, including frequencies and percentages, and SPSS version 22 for multiple regression analysis.

**Findings:** Results were presented using charts and graphs. For healthcare infrastructure, a strong positive correlation was found ($r = 0.604^{**}$, $p < 0.01$), indicating that as infrastructure quality improves, healthcare service efficiency increases. The regression coefficient of healthcare infrastructure (Beta = 0.604, $p < 0.001$) reinforces the importance of investments. Regarding human capital, the Pearson correlation shows a robust positive correlation ($r = 0.588^{**}$, $p < 0.01$), indicating that a skilled workforce enhances efficiency. The regression coefficient (Beta = 0.588, $p < 0.001$) signifies the impact of education and training. For Pearson Correlation on organizational culture, a significant positive correlation was detected ($r = 0.526^{**}$, $p < 0.01$), highlighting its role in improving healthcare efficiency. The regression coefficient (Beta = 0.526, $p < 0.001$) emphasizes the importance of fostering a positive culture. The study concludes that inadequate healthcare infrastructure, storage deficiencies, and the absence of Quality Control Systems significantly hamper efficient healthcare delivery. The study also affirms the crucial role of human capital in efficient healthcare delivery, with staff training, teamwork, and competency directly influencing service efficiency. The study further establishes the vital role of organizational culture in efficient healthcare delivery, emphasizing the need for healthcare institutions to cultivate a culture prioritizing efficiency and quality to enhance service delivery.

**Unique Contribution to Theory, Practice, and Policy:** The study recommends improving medical storage capabilities through efficient inventory management and staff training can ensure the timely availability of essential supplies. Concerning human capital, fostering effective teamwork and collaboration among healthcare staff is critical for streamlined service delivery. Regarding organizational culture, the study recommends addressing concerns related to planning, cooperation, adherence to guidelines, and staff support.

**Key Words:** *Health Infrastructure, Human Capital, Organizational Culture, and Healthcare Service Delivery*

**Background of the Study**

Quality healthcare has become an increasingly predominant part of everyone's lives. Patients are constantly looking for quality products and services. This desire for quality has caused healthcare practitioners throughout the world to consider quality as a strategic goal to achieve competitive advantage in healthcare. If the quality of a good or service rises, costs fall, output rises, and patients receive better goods or services. This improves hospital performance and fosters long-term business ties for suppliers and employees (Boakye, 2018). Healthcare services are an intangible good. Quantitative measures are possible when producing physical products since they can be sampled and quality-tested both during production and after use. However, healthcare service quality, because of its intangibility, depends on service process, customer and service provider interactions. Some healthcare service quality dimensions, such as consistency, completeness and effectiveness are hard to measure beyond the customer's subjective assessment (Voyce, 2018).

High-quality services should be offered by all health systems in order to achieve Sustainable Development Goals (SDG). According to (Voyce, 2018) quality service delivery in the healthcare industry can be attained in a number of ways, including expensive service providing, quick service delivery, appropriate access to health facilities, and making sure that healthcare workers follow their service mandate. One of the essential foundations for ensuring the provision of high-quality services in the healthcare industry is the creation of universal health coverage (UHC) (WHO, 2018).

To achieve universal health coverage (UHC) by 2030, the Sustainable Development Goals (SDGs) reaffirm a worldwide commitment. This implies that no one should be denied access to the high-quality health treatments they require, whether they are preventive, curative, rehabilitative, or palliative, everywhere in the globe. Effective essential health service coverage and financial security (ensuring that no one falls into poverty due to illness) are the main ways we gauge progress in UHC. However, if services were of poor quality and were risky, health results would still be subpar even if the world attained essential health coverage and financial protection (WHO, 2018). For UHC, providing high-quality healthcare services is crucial. This report's main emphasis is on it. Evidence demonstrates that poor care wastes considerable resources, endangers public health, destroys human capital, and lowers productivity. Building trust in healthcare services depends on the quality of care, particularly patient safety. Additionally, it is crucial for local health security, which in turn depends on superior front-line healthcare services, and for global health security. In addition to preventing suffering and promoting healthier societies, quality health services also support stronger economies and human capital. Quality is too frequently seen as a luxury that only wealthy nations can afford (Tsofa, 2018)

The County Government of Makueni places a high priority on health and is dedicated to achieving the objectives set forth in Kenya's health development and realization plans. (Masaba , 2020)For the wellbeing of human health and for continued development, good health is crucial. It is crucial to have quick access to health services that combine promotion, prevention, treatment, and

rehabilitation. Makueni County has worked hard to carry out its health mission in a way that effectively promotes both individual growth and welfare as well as that of the county as a whole. The County has also worked to make it easier to provide gender-sensitive, high-quality, equitable, accessible, and affordable basic health care. (Mulwa, 2020). The study aimed to uncover the difficulties that the primary caregiver encounters when providing care. Data was gathered from the primary caregivers at the Makueni County Referral Hospital. This is the largest public hospital in Makueni County. To achieve quality healthcare service delivery, there is need to lower the high out-of-pocket costs for the people, management and leadership support to the healthcare service providers that will ensure curative and preventative care is maximized (Kaplan et al., 2022).

**Statement of the Problem**

Quality healthcare refers to the services provided to individuals and populations that increase the likelihood of desired health outcomes and are consistent with current professional knowledge. China's healthcare system reforms have led to numerous studies focusing on strengthening primary healthcare services, exploring the role of community health centers and clinics in delivering preventive care, health education, and early disease detection. However, further investigation is needed to understand the underlying causes and mechanisms of healthcare disparities. Socioeconomic determinants, regional disparities, and vulnerable populations, such as migrant workers, ethnic minorities, and those with lower socioeconomic status, are crucial factors in determining the quality of healthcare (Ford et al., 2021). Research by (Gill & White, 2019)) in the Journal of the American Medical Association and the British Medical Journal found a positive correlation between patient satisfaction and the quality of care. In Nigeria, only 10% of patients interviewed had been referred to their current place of care, and only 6% had been referred. Access and equity to healthcare are crucial factors in determining the quality of healthcare. Measuring patient satisfaction contributes to overall quality management by providing vital information on performance. In order to create solid institutions and to strengthen the social state, it is crucial to provide suitable and high-quality healthcare (Hudak & Wright, 2019). The quality of national healthcare delivery in Ghana was evaluated by Boakye and Blankson (2018), suggesting that healthcare quality has a substantial impact on satisfaction and perceived value of healthcare delivery. The relationship between perceived value and behavioral intention and satisfaction demonstrates that raising perceived advantages while lowering perceived costs encourages repetition of behavior and opens the door for retention strategies in healthcare management.

Decentralization has also been studied in Kilifi County, highlighting the potential for local level prioritizing and community involvement in health sector planning and budgeting. However, this opportunity was lost due to the transfer of responsibilities to counties before county-level capability was built. In Nairobi County, both rational and consensus strategic choices have a positive effect on devolved healthcare service delivery. Policymakers should embrace rational strategic choices, such as objective decision-making, logic, fact analysis, and a formal process for conflict resolution (Orwa et al., 2022). Mulwa, (2020) in his study found that technology is a

critical element in implementing universal health coverage in Makueni County, improving efficiency and productivity in hospitals. To maximize the advantages of decentralized health systems, factors such as decision space, organizational structure, capacity, and accountability should be considered. Masaba et al., (2020) in his study found that motivation accounts for 32% of variation in quality in healthcare provision in Kenya. Adoyo, (2021) in his study found that health information systems have improved acceptability, affordability, accessibility, reliability, relevance, and adaptability over the past five years, but quality has declined. However, even after devolution of the healthcare services in Kenya, statistics still demonstrate poor service delivery in the devolved healthcare units. Therefore, the purpose of the study is to gather information that will statistically narrow the research gaps in the healthcare sector. The data gathered would assist in resolving the provision of quality healthcare services among the public hospitals by examining the determinants of efficient healthcare service delivery among public healthcare facilities. The researcher aims to narrow the gap by following the research question: What are the determinants of efficient healthcare service delivery among public hospitals in Kenya?

**Objectives of the Study**

i To determine the effect of healthcare infrastructure on efficient healthcare delivery in Makueni County Referral Hospital.

ii To assess the effect of human capital on efficient healthcare delivery in Makueni County Referral Hospital.

iii To analyze the effect of organizational culture on efficient healthcare delivery in Makueni County Referral Hospital

**Literature Review**

**Health Infrastructure and Efficient Healthcare Service Delivery**

Financial factors consist of financial policies, financial positions and capital structure. It is an important internal factor that substantially impacts business functioning and performance. According to Ataguba and Kabaniha, (2022), financing health care refers to a way of resource mobilization to address the needs of health care groups of the population. Health financing provides the resources and economic incentives for the operation of health systems. It is a key determinant of health system performance regarding equity, efficiency, and health outcomes. A crucial component of health systems, health funding, can advance the goal of universal health coverage by enhancing efficient service delivery and financial security (Fylkesnes, 2019). Millions of individuals today avoid using services because they are too expensive. Even those who pay out of pocket frequently receive subpar services (Fjeldstad & Snow, 2018). The hospital equipment requires a routine maintenance and services such as calibration, repair and decommissioning of the equipment inside the hospitals. It is used for diagnosis, rehabilitation, monitoring and treatment of medical conditions and is mostly managed by biomedical engineers or health care technologists.

**Human Capital and Efficient Healthcare Service Delivery**

According to the human capital hypothesis, knowledge draws persons with higher intellectual skills, and developing activities should take this into account when determining productivity and efficiency (Lemieux, 2019). Previous studies have shown that organizational performance is consistently positively associated with the variables of human capital and social capital (Osiobe, 2019). According to(Fiano et al., 2022) understanding how to measure an organization's success while acknowledging the crucial role of the top executive's cognitive ability depends on an evaluation of how organizational performance is created. Although they do not directly affect organizational performance, the additional variables of human capital and social capital are crucial in providing the foundation for success. Organizational action is linked to important factors like prior entrepreneurial experience, managerial experience, and employment experience (Dimov and Shepherd, 2018). The management team of an organization must recognize that because modern institutions change so quickly, everything is contingent on the adaptability of its human capital (Osiobe, 2019). This suggests that the human capital present in the people who make up organizations affects even how well boards do their duties. It demonstrates how crucial human capital is to the achievement of the organization. Investments in the workforce's human capital may boost employee productivity and financial outcomes because human capital is an organization's most crucial resource for maintaining competitive advantage (Hitt et al., 2019). Researchers have advanced several perspectives that human capital is the knowledge, skills, and talents that organizational employees possess Felcio, Couto, and Caiado (2018). Therefore, according to (McCollum et al., 2019) it is crucial to measure and report on the stock, flow, and quality of human capital in order to manage the key resource effectively (Beattie & Smith, 2020).

**Organizational Culture and Efficient Healthcare Service Delivery**

Organizational culture, according to Galli, (2020), is a complex collection of shared concepts, symbols, and basic values that govern how an organization conducts its business. Therefore, it is crucial for strategic leaders to understand how the firm's culture affects their ability to perform, regardless of whether it is functioning or dysfunctional. Organizational culture influences the results of strategic leaders' work, and vice versa. Their leadership contributes to the development of an ever-evolving organizational culture (Parmelli et al., 2019). Strategic leaders are therefore impacted by both their work within the organizations and the organizational culture. The organization's culture influences how it conducts business and aids in regulating and controlling employee behavior and perception. Depending on how proactive it is, culture can be a source of competitive advantage. Tatarinov & Tatarinov, (2021) asserts that some corporate cultures function in a strict and competitive way that leaves little room for deviations and limited tolerance for the voicing of dissatisfaction. It is crucial to keep in mind that cultural norms can spread beneficial and constructive behavioral patterns. Every organization, according to (Fjeldstad & Snow, 2018), has a culture that helps to define and profile the circumstances in which a person's behavior is viewed and assessed. The organizational culture and the official and informal reward

structures that support it have an impact on the prominence a leader accords. Without being a member of the system, it is difficult to observe the most delicate and powerful components.

## Research Methodology

A descriptive survey research design was employed to describe the phenomena in its natural setting without interference. The target population consists of 132 staff members working at the outpatient department in Makueni County Referral Hospital. The researcher used Slovin's Formula to derive a sample size of 99 respondents. A questionnaire was employed to collect data from the hospital staff. The use of questionnaires is generally applied approach when respondents are accessible and are ready to respond appropriately (Shukla, 2020). Both quantitative and qualitative data were collected using questionnaires and observation respectively. Data from the questionnaires were coded and cleaned using SPSS. It was then analyzed by use of descriptive statistics (percentages, means, and standard deviation) and inferential statistics (correlations and linear regression) which was used to determine whether there is a significant association/linear relationship between the predictors and the outcome variable. The study used inferential statistics to help describe the relationship between the study variables. The inferential statistics methods that were applied in the study includes factor analysis, correlation analysis, Chi-square, one-way ANOVA, and regression analysis. Correlation analysis was used in the study to show the relationship between each of the independent variables with the dependent variable. The correlation analysis was conducted using the Pearson correlation analysis which shows the strength and direction of the relationship between the variables. Multiple linear regression was also be done, Where:

$$Y=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\varepsilon$$

Where;

$Y$= an efficient referral system

$\beta_0$= constant

$\beta_1 \ldots\ldots \beta_3$ =coefficients

$X_1$= facility and equipment

$X_2$ = human capital

$X_3$= organizational culture

$\varepsilon$ = error term

## Results

The sample size was 99 staff and 81 responded to the questionnaire giving 82% (out of the targeted 100) response rate indicates active participation by healthcare professionals at Makueni County Referral Hospital, likely due to trust-building by the research team, a well-designed survey

process, and the study's compelling objectives. This high response rate justified commencing data analysis, ensuring a sufficient dataset for the study.

**Descriptive Findings and Analysis**

**Efficient Healthcare Service Delivery**

In the assessment of efficient healthcare service delivery as shown in Table 3, the study found that respondents generally perceive the healthcare facility's commitment to customer satisfaction positively (Mean = 3.77, Std. Deviation = 0.93). This suggests that there is an acknowledgment of the facility's efforts to meet patient needs. Furthermore, the presence of policies and procedures related to quality assurance was also rated positively (Mean = 3.71, Std. Deviation = 0.84), indicating the establishment of standards to ensure quality healthcare provision. However, areas for improvement were identified. Respondents indicated that the hospital's focus on customer feedback (Mean = 3.30, Std. Deviation = 1.06) and staff motivation (Mean = 2.82, Std. Deviation = 1.02) were relatively lower. This highlights potential opportunities to enhance engagement with patients and motivate healthcare personnel. Additionally, the hospital's efforts to reduce patient waiting times (Mean = 3.40, Std. Deviation = 0.95) and implement efficiency mechanisms (Mean = 3.26, Std. Deviation = 1.10) received moderate ratings, suggesting room for improvement in streamlining healthcare processes. Another notable finding is that healthcare service delivery delays due to a high patient-to-healthcare provider ratio were perceived as a significant issue (Mean = 3.89, Std. Deviation = 0.86). This implies a need for staffing adjustments to ensure timely and efficient service delivery. Lastly, the hospital's utilization of regular satisfaction surveys to enhance staff productivity (Mean = 3.02, Std. Deviation = 1.04) and clearly defined promotion guidelines (Mean = 3.37, Std. Deviation = 1.08) received relatively lower ratings, indicating areas where organizational strategies could be refined. The composite mean for the assessment of efficient healthcare service delivery, as derived from the various surveyed items, is 3.543, with a standard deviation of 0.54825. This composite score reflects the overall perception of healthcare service efficiency among respondents. Overall, these findings underscore the importance of continuous efforts to optimize healthcare service delivery, focusing on areas such as patient feedback, staff motivation, process efficiency, staffing ratios, and organizational policies to ensure high-quality and efficient healthcare provision.

**Table 1: Rating of Efficient Healthcare Service Delivery**

| Variable Item | Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|
| The healthcare facility is keen on satisfying the customer needs" | 3.77 | 0.93 | -0.82 | 0.72 |
| The healthcare facility has policies and procedures regarding to its quality assurance | 3.71 | 0.84 | -0.69 | 0.67 |
| The hospital is keen on customer feedback | 3.30 | 1.06 | -0.52 | 0.01 |
| The hospital is keen on motivating its staff | 2.82 | 1.02 | -0.12 | -0.43 |
| The hospital has mechanisms for reducing the patients waiting time. | 3.40 | 0.95 | -0.63 | -0.05 |
| The hospital has embraced a system for clocking in patients to ensure efficiency in the process. | 3.26 | 1.10 | -0.53 | -0.47 |
| Healthcare service delivery is delayed as a result of a high patient to healthcare provider ratio | 3.89 | 0.86 | -0.50 | 0.32 |
| The hospital does regular satisfaction surveys to increase productivity among the staff | 3.02 | 1.04 | -0.25 | -0.61 |
| The guidelines on promotions are clearly defined in the organization | 3.37 | 1.08 | -0.48 | -0.19 |
| **Composite mean and Standard deviation** | **3.543** | **0.54825** | **0.064** | **0.381** |

**Healthcare Infrastructure and Efficient Healthcare Delivery**

The descriptive results regarding healthcare infrastructure's impact on efficient healthcare delivery offer valuable insights into the perceptions of respondents. The findings in Table 4.2 shed light on the critical aspects of healthcare infrastructure and their potential implications for service delivery. Firstly, respondents express significant concern regarding the impact of inadequate basic infrastructure on healthcare service delivery. With a mean score of 3.73 and a relatively low standard deviation of 0.94, it's evident that this issue is a prominent one. The infrastructure's quality and availability are crucial factors in ensuring efficient healthcare services. Secondly, while respondents acknowledge that an increase in referral cases can lead to service delays, the mean

score of 3.20 and a standard deviation of 0.96 indicate that this factor is perceived as less significant compared to infrastructure deficiencies. While still relevant, it may not be the primary driver of service delays in their eyes. Thirdly, the perception that deficiencies in medical storage capabilities contribute to service delays is evident, with a mean of 3.57 and a standard deviation of 1.03. The variability in responses suggests that some respondents feel more strongly about this issue than others, emphasizing its importance. Fourthly, concerns regarding the impact of insufficient basic infection control materials on healthcare service delays are reflected in the moderate mean score of 3.38 and a relatively high standard deviation of 1.16. This indicates that while respondents recognize this issue's significance, there is some variability in their views.

Fifthly, respondents express a substantial concern about the lack of Quality Control Systems contributing to referral service delays, as indicated by a mean score of 3.77 and a standard deviation of 0.93. This suggests that the absence of such systems is perceived as a critical issue affecting healthcare efficiency. Sixthly, inadequate medical supplies are considered a noteworthy factor causing service delivery delays, with a high mean score of 3.90 and a standard deviation of 0.84. This issue appears to be of significant concern among respondents, emphasizing its importance in healthcare settings. Seventhly, the lack of ambulances is perceived as a potential cause of referral service delays, with a mean score of 3.96 and a standard deviation of 0.88. This high mean score highlights that respondents consider this issue as a substantial concern. Eighthly, concerns about fuel shortages leading to delays in referral services are expressed, with a mean score of 3.90 and a standard deviation of 0.88. This issue is perceived as significant, indicating its potential impact on efficient healthcare delivery. Lastly, while respondents acknowledge that patients' financial capabilities might contribute to delays in referral cases and procedures, the mean score of 3.78 and a standard deviation of 0.93 suggest that it is somewhat less prominent in their considerations compared to other factors.

The composite mean for the descriptive results on healthcare infrastructure and efficient healthcare delivery is calculated at 3.64, with a standard deviation of 0.522. This composite mean represents an average perception of the various factors related to healthcare infrastructure and their impact on healthcare service delivery. Considering the individual items, it is evident that respondents express significant concerns about several aspects of healthcare infrastructure, such as inadequate basic infrastructure, deficiencies in medical storage capabilities, and the lack of Quality Control Systems. These factors are perceived as key contributors to service delays and inefficiencies. In contrast, while other factors like the increase in referral cases, patients' financial capabilities, and the lack of fuel are recognized as potential contributors to delays, they are perceived as somewhat less significant compared to the issues mentioned above. The high composite mean suggests an overall significant concern among respondents regarding the state of healthcare infrastructure and its role in efficient healthcare service delivery. It underscores the need for improvements and investments in infrastructure, such as facilities, equipment, and resources, to enhance the overall efficiency of healthcare services.

**Table 2: Descriptive Results on Healthcare Infrastructure and Efficient Healthcare Delivery**

| Variable Items | Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|
| Service delivery is delayed as a result of inadequate basic infrastructure. | 3.73 | 0.94 | -0.61 | -0.04 |
| Delays in the provision of services are caused by an increase in referral cases. | 3.20 | 0.96 | -0.49 | -0.07 |
| Medical storage capabilities deficiencies cause delays in healthcare services | 3.57 | 1.03 | -0.72 | 0.20 |
| Healthcare system service delays are a result of insufficient basic infection control materials." | 3.38 | 1.16 | -0.45 | -0.65 |
| Delays in the provision of referral systems services are a result of lack of Quality Control Systems." | 3.77 | 0.93 | -0.82 | 0.72 |
| Healthcare system service delivery is delayed as a result of inadequate medical supplies." | 3.90 | 0.84 | -0.32 | -0.54 |
| Referral system services are delayed since there are not enough ambulances." | 3.96 | 0.88 | -0.48 | -0.50 |
| Referral system services is delayed because of lack of fuel." | 3.90 | 0.88 | -0.80 | 0.72 |
| Referral cases and procedures may be delayed as a result of the patients financial capabilities." | 3.78 | 0.93 | -0.39 | -0.21 |
| **Composite Item** | 3.64 | 0.52 | -0.03 | 0.27 |

**Pearson Correlation between Healthcare Infrastructure and Efficient Healthcare Delivery**

The Pearson correlation coefficient ($r = 0.604^{**}$, $p < 0.01$) in Table 5 between healthcare infrastructure and efficient healthcare delivery reveals a strong and statistically significant positive relationship. This finding implies that as healthcare infrastructure quality and availability improve, there is a corresponding increase in the efficiency of healthcare service delivery. This suggests that investments in healthcare infrastructure, such as facilities, equipment, and technology, can have a significant positive impact on the overall efficiency of healthcare services.

**Table 3: Pearson Correlation between Healthcare Infrastructure and Efficient Healthcare Delivery**

| | | Efficient Healthcare Delivery | Healthcare Infrastructure |
|---|---|---|---|
| Efficient Healthcare Delivery | Pearson Correlation | 1 | .604** |
| | Sig. (2-tailed) | | .000 |
| Healthcare Infrastructure | Pearson Correlation | .604** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 82 | 82 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Regression Analysis of Healthcare Infrastructure against Efficient Healthcare Delivery**

**Model Summary**

In the regression analysis of healthcare infrastructure against efficient healthcare delivery, the model summary in Table 4.4 provides valuable insights. The R Square value of 0.365 indicates that approximately 36.5% of the variance in efficient healthcare delivery can be explained by healthcare infrastructure. The adjusted R Square, at 0.357, accounts for the same relationship while considering the number of predictors in the model. These values imply that healthcare infrastructure is a significant determinant of efficient healthcare delivery in this context.

**Table 4: Model Summary for Healthcare Infrastructure and Efficient Healthcare Delivery**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change | Durbin-Watson |
| 1 | .604[a] | .365 | .357 | .43958 | .365 | 45.999 | 1 | 80 | .000 | 1.199 |

a. Predictors: (Constant), Healthcare Infrastructure

b. Dependent Variable: Efficient Healthcare Delivery

**ANOVA**

Moving on to the ANOVA Table 7, the F statistic value of 45.999 is highly significant ($p < 0.001$), indicating that the regression model is a good fit for explaining the relationship between healthcare infrastructure and efficient healthcare delivery. This suggests that healthcare infrastructure makes a substantial contribution to predicting efficient healthcare service delivery.

**Table 5: ANOVA between Healthcare Infrastructure and Efficient Healthcare Delivery**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 8.888 | 1 | 8.888 | 45.999 | .000[b] |
| | Residual | 15.459 | 80 | .193 | | |
| | Total | 24.347 | 81 | | | |

a. Dependent Variable: Efficient Healthcare Delivery

b. Predictors: (Constant), Healthcare Infrastructure

**Regression Coefficients**

Examining the regression coefficients in Table 8, the coefficient for healthcare infrastructure (Beta = 0.604) is statistically significant ($t = 6.782$, $p < 0.001$). This indicates that for every unit increase in healthcare infrastructure, there is a corresponding increase in efficient healthcare delivery. In practical terms, this means that improvements in healthcare infrastructure, such as facilities, equipment, and technology, are positively associated with better healthcare service efficiency. The regression equation for this model can be expressed as:

Efficient Healthcare Delivery = 1.227 + (0.637 * Healthcare Infrastructure) + Error

**Table 6: Regression Coefficients for Healthcare Infrastructure against Efficient Healthcare Delivery**

| | | Unstandardized Coefficients | | Standardized Coefficients | | | 95.0% Confidence Interval for B | |
|---|---|---|---|---|---|---|---|---|
| Model | | B | Std. Error | Beta | t | Sig. | Lower Bound | Upper Bound |
| 1 | (Constant) | 1.227 | .345 | | 3.559 | .001 | .541 | 1.914 |
| | | .637 | .094 | .604 | 6.782 | .000 | .450 | .824 |

a. Dependent Variable: Efficient Healthcare Delivery

**Human Capital and Efficient Healthcare Delivery**

The descriptive findings on human capital and its implications for efficient healthcare delivery shed light on the way respondents perceive the critical facets of the healthcare workforce and how they intertwine with service quality. One striking observation in Table 4.7 is that respondents hold significant concerns about the impact of staff training, or rather, the lack thereof, on healthcare service delays. This is evidenced by the item "Healthcare system service delivery is delayed as a result of inadequate staff training," where the mean score of 3.85 and a standard deviation of 0.92 underline the perceived magnitude of this issue. It suggests that inadequate training is a major factor contributing to service inefficiencies. Another noteworthy concern is the role of nursing staff deficiencies in causing delays in healthcare services. The mean score of 3.83 with a standard deviation of 0.95 indicates that respondents see this as a substantial issue. This implies that addressing shortcomings in nursing staff may have a notable impact on improving healthcare service efficiency. A lack of teamwork among healthcare professionals in the referral system is seen as a critical factor in service delivery delays, as indicated by the mean score of 3.94 and a standard deviation of 0.87. This underscores the importance of collaborative efforts among healthcare professionals to streamline service delivery. While the issue of poor collaboration among healthcare staff is acknowledged (mean = 3.67, std. deviation = 0.84), it doesn't carry the same weight as some of the other factors. Nevertheless, the moderate mean score still highlights the significance of fostering teamwork in healthcare settings. Respondents recognize the shortage of surgeons as a potential cause of delays in referral services, although opinions vary, as suggested by the standard deviation of 1.09. This issue may be particularly relevant to certain respondents, emphasizing the diversity of concerns within the healthcare workforce. The absence of support staff is considered a possible cause of delays in referral services, with a mean score of 3.04 and a high standard deviation of 1.19, suggesting differing viewpoints on its importance among respondents. Insufficient communication among staff is seen as a contributing factor to delays in referral services, with a relatively high mean score of 3.62, indicating the significance of effective communication channels within healthcare teams. The lack of cooperation among medical staff is perceived as a potential cause of delays in the referral system, with a high mean score of 3.67. This highlights the importance of fostering a collaborative environment among healthcare professionals. Lastly, respondents express concerns about delays in referral services resulting from a lack of planning by the referral team. While this issue isn't perceived as overwhelmingly critical (mean = 3.59), it still underscores the importance of efficient planning in the referral process. Taken together, these findings illuminate the multifaceted nature of human capital's influence on healthcare service delivery. They suggest that addressing training, staffing deficiencies, teamwork, communication, and collaboration among healthcare professionals can collectively lead to substantial improvements in healthcare service efficiency. The composite mean for human capital's influence on efficient healthcare delivery, as indicated by the mean score of 3.69 with a standard

deviation of 0.49, suggests that collectively, the various aspects of human capital, including staff training, teamwork, communication, and collaboration, hold a moderately significant influence on healthcare service delivery. While individual factors within human capital may vary in their perceived importance among respondents, the composite mean signifies an overall recognition of the role that healthcare workforce dynamics play in shaping the efficiency of healthcare services. It suggests that addressing these human capital-related issues collectively can lead to meaningful improvements in healthcare service delivery.

**Table 7: Descriptive Results on Human Capital and Efficient Healthcare Delivery**

| Variable Item | Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|
| Healthcare system service delivery is delayed as a result of inadequate staff training | 3.85 | 0.92 | -1.08 | 1.36 |
| Nursing staff deficiencies cause delays in healthcare services." | 3.83 | 0.95 | -0.70 | 0.47 |
| A lack of teamwork among the professionals in the referral system can cause delays in the healthcare service delivery | 3.94 | 0.87 | -0.47 | -0.42 |
| Healthcare service delivery is delayed as a result of the health staff's poor collaborations | 3.67 | 0.84 | 0.04 | -0.66 |
| Referral services are delayed since there are inadequate surgeons. | 3.34 | 1.09 | -0.43 | -0.51 |
| Referral services is delayed because of a lack of support staff. | 3.04 | 1.19 | -0.25 | -0.90 |
| Referral services may be delayed as a result of insufficient communication among the staff | 3.62 | 0.90 | -0.32 | -0.59 |
| An efficient referral system and cases may be delayed as a result of the medical staff's lack of cooperation. | 3.67 | 0.94 | -0.65 | 0.32 |
| Delays in the provision of referral services are caused by a lack of planning on the part of the referral team." | 3.59 | 1.11 | -0.78 | -0.06 |
| **Composite mean and Standard Deviation** | 3.69 | 0.49 | -0.07 | 0.27 |

**Pearson Correlation between Human Capital and Efficient Healthcare Delivery**

The Pearson correlation coefficient ($r = 0.588^{**}$, $p < 0.01$) in Table 4.8 between human capital and efficient healthcare delivery demonstrates a robust and statistically significant positive

correlation. This finding indicates that as the quality and skill level of human capital within the healthcare workforce increase, there is a corresponding improvement in the efficiency of healthcare service delivery. It underscores the pivotal role of well-trained and skilled healthcare professionals in contributing to efficient healthcare services. This insight has critical implications for healthcare organizations, emphasizing the importance of continuous training, education, and professional development for healthcare personnel to enhance overall service efficiency and quality in public hospitals.

**Table 8: Pearson Correlation between Human Capital and Efficient Healthcare Delivery**

| | | Efficient Healthcare Delivery | Human Capital |
|---|---|---|---|
| Efficient Healthcare Delivery | Pearson Correlation | 1 | .588** |
| | Sig. (2-tailed) | | .000 |
| Human Capital | Pearson Correlation | .588** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 82 | 82 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Regression Analysis of Human Capital against Efficient Healthcare Delivery**

**Model Summary**

In the regression analysis of human capital against efficient healthcare delivery, the model summary reveals important information. The R Square value of 0.345 in Table 11 indicates that approximately 34.5% of the variance in efficient healthcare delivery can be explained by human capital. The adjusted R Square, at 0.337, accounts for the same relationship while considering the number of predictors in the model. These values suggest that human capital plays a significant role in determining efficient healthcare delivery within the context of the study.

**Table 9: Model Summary between Human Capital and Efficient Healthcare Delivery**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change | Durbin-Watson |
| 1 | .588[a] | .345 | .337 | .44633 | .345 | 42.217 | 1 | 80 | .000 | 1.412 |

a. Predictors: (Constant), Human Capital

b. Dependent Variable: Efficient Healthcare Delivery

**ANOVA**

The ANOVA Table 4.10 shows that the F statistic value is 42.217, and it is highly significant ($p < 0.001$). This indicates that the regression model is an excellent fit for explaining the relationship between human capital and efficient healthcare delivery, reinforcing the importance of human capital in predicting healthcare service efficiency.

**Table 10: ANOVA between Human Capital and Efficient Healthcare Delivery**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 8.410 | 1 | 8.410 | 42.217 | .000[b] |
| | Residual | 15.937 | 80 | .199 | | |
| | Total | 24.347 | 81 | | | |

a. Dependent Variable: Efficient Healthcare Delivery

b. Predictors: (Constant), Human Capital

**Regression Coefficients**

Examining the regression coefficients in Table 4.13, the coefficient for human capital (Beta = 0.588) is statistically significant ($t = 6.497$, $p < 0.001$). This signifies that for every unit increase in human capital, there is a corresponding increase in efficient healthcare delivery. In practical terms, it implies that enhancing the knowledge and skills of healthcare professionals positively impacts the efficiency of healthcare service delivery. The regression equation for this model can be expressed as:

Efficient Healthcare Delivery = 1.149 + (0.657 * Human Capital) + Error

**Table 11: Regression Coefficients between Human Capital and Efficient Healthcare Delivery**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | | | Lower Bound | Upper Bound |
| 1 (Constant) | 1.149 | .372 | | 3.091 | .003 | .409 | 1.889 |
| | .657 | .101 | .588 | 6.497 | .000 | .456 | .859 |

a. Dependent Variable: Efficient Healthcare Delivery

**Organizational Culture and Efficient Healthcare Delivery**

The descriptive findings regarding the impact of organizational culture on efficient healthcare delivery shed light on how respondents perceive the influence of various cultural aspects on service delivery within healthcare settings. Based on Table 14, one recurring concern is the belief that inadequate planning within the referral team can lead to delays in service provision. Respondents express this concern with a mean score of 3.59 and a relatively high standard deviation of 1.11, indicating that while this issue is seen as significant by many, there are varying degrees of emphasis on it among respondents. A similar sentiment is echoed by another item with a slightly higher mean of 3.67 but a lower standard deviation of 0.82, suggesting a more consistent perception among respondents regarding the impact of insufficient planning within the referral team on service delays. Furthermore, respondents expressed concerns about a lack of cooperation from emergency response teams contributing to service delays, with a mean score of 3.72. This item indicates that this issue is seen as significantly influential in healthcare service delivery.

Deficiencies in healthcare system guidelines are also perceived as causing delays in referral services, with a mean score of 3.72 and a relatively high standard deviation of 0.97. This suggests that respondents vary in how strongly they feel about this issue, but overall, it is considered noteworthy. Respondents acknowledge the role of long waiting times in healthcare service delays, although this factor receives a lower mean score of 3.54. This implies that while waiting times are recognized as a contributor to delays, they may be seen as less significant compared to other factors. Inadequate support from other staff is recognized as a potential cause of service delivery delays, with a moderate mean score of 3.57. This suggests that respondents consider this issue as having some significance in the context of healthcare service efficiency. Management's unwillingness to offer support is also noted as a potential cause of delays in referral system services, with a mean score of 3.59. This finding indicates that this issue is perceived as having some importance in healthcare service efficiency. Insufficient communication from the referral team is recognized as a factor that may contribute to delays in healthcare service delivery, with a

mean score of 3.51, indicating a moderate impact. Finally, negligence from the emergency response team is perceived as a potential cause of delays in the referral system, with a mean score of 3.57, suggesting that this issue is considered moderately important.

**Table 12: Descriptive Results on Organizational Culture and Efficient Healthcare Delivery**

| Variable Items | Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|
| Delays in the provision of referral services are caused by a lack of planning on the part of the referral team." | 3.59 | 1.11 | -0.78 | -0.06 |
| Delays in the provision of referral services are caused by lack of cooperation by the emergency response teams." | 3.72 | 0.89 | -0.37 | -0.51 |
| Healthcare service system guidelines deficiencies cause delays in referral services. | 3.72 | 0.97 | -0.73 | 0.27 |
| Healthcare system service delays are a result of long waiting times." | 3.54 | 0.96 | -1.10 | 1.15 |
| Healthcare service delivery is delayed as a result of inadequate support from other staff." | 3.57 | 0.92 | -0.32 | -0.24 |
| Referral system services are delayed as a result of the management's unwillingness to offer support." | 3.59 | 0.94 | -0.62 | -0.25 |
| Healthcare services are delayed because of lack of communication from the referral team." | 3.51 | 0.84 | -0.43 | 0.17 |
| The referral system procedures and referral cases may be delayed as a result of negligence from the emergency response team. | 3.57 | 0.90 | -0.79 | 0.47 |
| Referral cases and procedures may be delayed as a result of lack of a mechanism to handle the referral cases. | 3.73 | 0.77 | -0.49 | 0.12 |
| **Composite mean** | 3.61 | 0.53 | -0.42 | 0.27 |

**Pearson Correlation between Organizational Culture and Efficient Healthcare Delivery**

The Pearson correlation coefficient in Table 15 ($r = 0.526^{**}$, $p < 0.01$) between organizational culture and efficient healthcare delivery reveals a strong and statistically significant positive correlation. This finding indicates that as organizational culture within healthcare institutions becomes more conducive to efficiency, there is a corresponding improvement in the efficiency of healthcare service delivery. It underscores the critical role of a positive, efficient, and supportive organizational culture in shaping the overall effectiveness of healthcare services. Healthcare administrators and policymakers should recognize the significance of fostering a culture that promotes efficiency and quality within public hospitals, as it can lead to substantial improvements in healthcare service delivery.

**Table 13: Pearson Correlation between Organizational Culture and Efficient Healthcare Delivery**

| | | Efficient Healthcare Delivery | Organizational Culture |
|---|---|---|---|
| Efficient Healthcare Delivery | Pearson Correlation | 1 | .526** |
| | Sig. (2-tailed) | | .000 |
| | N | 82 | 82 |
| Organizational Culture | Pearson Correlation | .526** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 82 | 82 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Regression Analysis of Organizational Culture against Efficient Healthcare Delivery**

**Model Summary**

In the regression analysis of organizational culture against efficient healthcare delivery, the model summary provides essential insights. The R Square value of 0.276 in Table 16 indicates that approximately 27.6% of the variance in efficient healthcare delivery can be explained by organizational culture. The adjusted R Square, at 0.267, accounts for the same relationship while considering the number of predictors in the model. These values suggest that organizational culture is a significant determinant of efficient healthcare delivery within the context of the study.

**Table 14: Model Summary between Organizational Culture and Efficient Healthcare Delivery**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change | |
| 1 | .526[a] | .276 | .267 | .46931 | .276 | 30.541 | 1 | 80 | .000 | 1.366 |

a. Predictors: (Constant), Organizational Culture

b. Dependent Variable: Efficient Healthcare Delivery

**ANOVA**

The ANOVA Table 17 shows that the F statistic value is 30.541 and is highly significant ($p < 0.001$). This indicates that the regression model is a good fit for explaining the relationship between organizational culture and efficient healthcare delivery, emphasizing the critical role of organizational culture in predicting healthcare service efficiency.

**Table 15: ANOVA between Organizational Culture and Efficient Healthcare Delivery**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 6.727 | 1 | 6.727 | 30.541 | .000[b] |
| | Residual | 17.620 | 80 | .220 | | |
| | Total | 24.347 | 81 | | | |

a. Dependent Variable: Efficient Healthcare Delivery

b. Predictors: (Constant), Organizational Culture

**Regression Coefficients**

Examining the regression coefficients in Table 18, the coefficient for organizational culture (Beta = 0.526) is statistically significant ($t = 5.526$, $p < 0.001$). This implies that for every unit improvement in organizational culture, there is a corresponding increase in efficient healthcare delivery. In practical terms, it underscores the importance of fostering a positive and efficient organizational culture within healthcare institutions to enhance healthcare service efficiency. The regression equation for this model can be expressed as:

Efficient Healthcare Delivery = 1.563 + (0.545 * Organizational Culture) + Error

**Table 16: Regression Coefficients between Organizational Culture and Efficient Healthcare Delivery**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | | 95.0% Confidence Interval for B | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. | Lower Bound | Upper Bound |
| 1 | (Constant) | 1.563 | .362 | | 4.318 | .000 | .843 | 2.284 |
| | | .545 | .099 | .526 | 5.526 | .000 | .348 | .741 |

a. Dependent Variable: Efficient Healthcare Delivery

## Conclusion

The results unequivocally demonstrate that inadequate basic healthcare infrastructure, deficiencies in medical storage capabilities, and the absence of Quality Control Systems are substantial concerns among respondents, significantly impacting efficient healthcare service delivery in the studied setting. These findings underscore the pressing need for immediate and targeted interventions to address these critical issues. It is evident that investments in infrastructure improvement, enhanced storage practices, and the establishment of quality control mechanisms are imperative to mitigate service delays and enhance overall healthcare efficiency. In categorical conclusion, the results unequivocally affirm the pivotal role of human capital in efficient healthcare delivery. Respondents' concerns regarding staff training, nursing staff deficiencies, teamwork, and other aspects of human capital underscore the direct impact of healthcare professionals' knowledge, skills, and collaboration on service efficiency. The statistical analyses further confirm a robust and highly significant positive correlation between human capital and efficient healthcare delivery. This leaves no room for doubt that investments in improving the quality and competency of healthcare professionals are imperative for enhancing the efficiency and effectiveness of healthcare services in the studied context. In conclusion, the results unequivocally affirm the critical role of organizational culture in efficient healthcare delivery. The statistically significant and strong positive correlation between organizational culture and efficient healthcare delivery leaves no room for doubt about the importance of a conducive culture in shaping the effectiveness of healthcare services. The regression analysis further confirms that organizational culture significantly influences healthcare service efficiency, explaining a substantial proportion of the variance. This underscores the pivotal role of organizational culture in predicting and improving healthcare service efficiency in the studied context. It is imperative for healthcare institutions to recognize and actively cultivate a culture that prioritizes efficiency and quality to achieve substantial improvements in healthcare service delivery.

## Recommendations

To enhance healthcare service delivery based on the findings, it is crucial to invest in the improvement of basic healthcare infrastructure, including facilities and equipment, with a focus on immediate repairs and upgrades. Simultaneously, medical storage capabilities should be enhanced through the implementation of efficient inventory management systems and staff training, ensuring the timely availability of essential supplies. Establishing dedicated Quality Control Systems within healthcare facilities, complete with standardized protocols and ongoing monitoring, is vital for maintaining and improving service quality. Additionally, allocate resources strategically, prioritizing critical infrastructure and quality control issues while seeking external funding if necessary. Incorporate feedback mechanisms from patients and staff for continuous improvement, and establish a dedicated monitoring team to track progress and report results regularly, thus ensuring tangible and sustained improvements in healthcare service efficiency. In recommendations, addressing the concerns related to human capital, including staff training, teamwork, communication, and staffing deficiencies, can collectively lead to substantial improvements in healthcare service efficiency. The findings emphasize the need for continuous training, education, and professional development to enhance the skills and quality of healthcare professionals. Moreover, fostering effective teamwork and collaboration among healthcare staff is crucial for streamlining service delivery. These strategic measures should be a priority for healthcare organizations seeking to optimize service efficiency in public hospitals. In Recommendations, the findings suggest that fostering a positive and efficient organizational culture within healthcare institutions is paramount for enhancing healthcare service efficiency. Addressing concerns related to planning within the referral team, cooperation from emergency response teams, adherence to healthcare system guidelines, waiting times, support from staff, management's willingness to offer support, communication, and negligence from the emergency response team can collectively contribute to improvements in healthcare service delivery efficiency. Healthcare administrators and policymakers should prioritize initiatives aimed at promoting a culture that values efficiency and quality within public hospitals to achieve these improvements.

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