



**THE IMPACT OF DIASPORA REMITTANCES ON THE
HEALTHCARE OUTCOME EXPENDITURE OF KENYA**

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the Research Project contains no material previously published or written by another person except where due reference is made in the Research Project itself.

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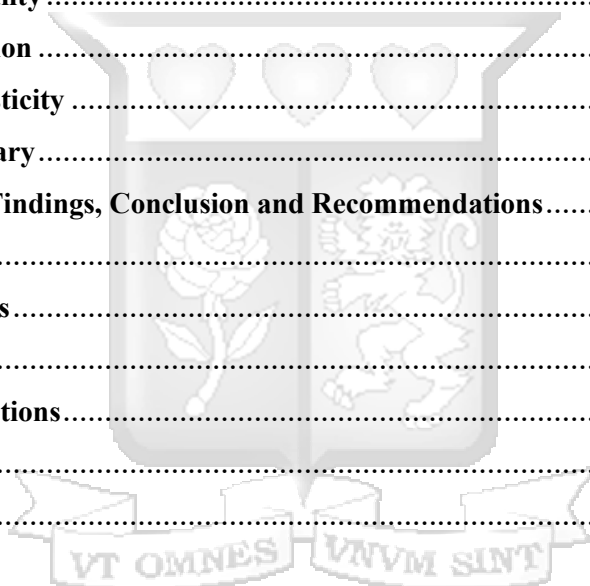
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ABSTRACT

This paper estimates the impact of diaspora remittances on healthcare in Kenya, a country where remittances make a huge proportion of family income. Using the panel data from the national level and different counties in Kenya, the research is guided by how remittances influence access to and quality of healthcare services. Ordinary Least Squares (OLS) econometric models are used to estimate the relationship between remittances and variables such as income expenditure PPP, number of doctors, unemployment rate, infant mortality rates and life expectancy at birth. This study aims to add new insights into the socio-economic benefits of remittances to Kenya and their crucial contribution to the human capital development of the country.



CHAPTER 1: Introduction

1.1 Background to the study

The World Bank Ratha, D. (n.d.) defines remittances as incomes sent back home by migrants in the form of either cash or goods to support their families.

The fact that a large portion of remittance flows occur through unauthorized routes makes it difficult to pinpoint their precise magnitude. Officially documented remittances from overseas migrants were expected to reach \$596 billion globally in 2017, of which \$450 billion would go toward underdeveloped nations. These are documented in the balance of payments; an international technical group is now reviewing the specifics of how to record them. It is estimated that unrecorded flows via unofficial conduits are at least 50% more than registered flows.

According to World Bank research, overseas remittance receipts reduced poverty by approximately 11 percentage points in Uganda, 6 percentage points in Bangladesh, and 5 percentage points in Ghana. These findings are based on household surveys. Remittances have been attributed for up to a fifth and half of Nepal's 11% poverty reduction during the politically turbulent years of 1995 to 2004.

According to data gathered by the United Nations Department of Economic and Social Affairs (UNDESA) in a report by the Mo Foundation in 2020, the approximate number of total African migrants stood at 40.3 million. The reasons for these migrations are political, social or economic. The numbers keep increasing over the decades and this is seen by also the total value of remittances to the continent. Data from the Central Bank of Kenya shows that remittances between January 2023 and 2024 moved from \$349,391,830 to \$412,410,040 (this accounts for an 18.04% increase).

According to the *new economics of labour migration* (NELM), migration is part of a household strategy to overcome market failures such as imperfect credit and insurance markets, to loosen production and investment constraints, and to reduce poverty in the migration sending country (Taylor, 1999). The theory suggests that the bulk of labour migration moves from capital-poor/ labour force-rich countries to capital-rich/labour force-poor countries while by contrast capital moves in the opposite direction, expecting a higher return on investment made in capital-poor

countries. In this sense, the migrant's household gets compensated for losing a member who is of working age.

Remittances additionally aid households with their economic challenges, which encourages family members to continue their studies in their home nation. Because of the loosened credit constraint, remittances ensure that students stay in school longer and make it possible for those who are not already enrolled to enrol. Returns are high for educated and skilled workers, particularly for those who relocate overseas. Thus, remittances have a good impact on children's education. (Chabaan & Mansour, 2012).

This paper investigates the impact of diaspora remittances on Government healthcare expenditure in Kenya. Kenya is indeed an interesting nation to study as it has the highest GDP and capital inflow in East and Central Africa. Through the years of foreign investment, innovation and technology, it has become a titan of industry.

1.2 Problem statement

Although there has been a significant influx of remittances from the Kenyan diaspora over the decades, there is limited understanding on the impact of these finances on the healthcare sectors. Previous studies have shown remittances play a crucial role to all communities with members abroad by providing additional financial resources. However, the extent to which these remittances contribute to the two sectors still remains heavily under-researched.

In a perfect world, the remittances sent home by Kenyans living abroad would significantly improve the nation's healthcare systems. Households would make the best use of these financial inputs to enhance their contribution to healthcare, allowing families to finance essential treatments, routine checkups, and improved medical services. This ideal scenario would lead to a population that is healthier, improving Kenya's socioeconomic development overall and lowering disparities between urban and rural areas.

Notwithstanding this encouraging outlook, a number of obstacles keep remittances from having the full impact they could have on Kenya's healthcare systems. First, remittances are frequently used more for short-term consumption needs than for long-term investments in health. The potential benefits of these funds are limited because many households place a higher priority on daily expenses than on medical bills. The unequal distribution of these benefits is further

compounded by differences in access to financial services and remittance channels, which frequently result in rural and marginalized communities receiving less assistance. Furthermore, the erratic nature of remittance flows, which is impacted by world economic circumstances, can result in instability in household welfare, making it challenging to accomplish long-term improvements in healthcare.

Econometric models, such as the OLS model, will be used in the quantitative component to evaluate how remittances affect healthcare outcomes for various households. This will enable a thorough examination of the ways in which household decisions and spending in these sectors are influenced by these financial inflows.

This study intends to give a thorough grasp of the opportunities and challenges related to the efficient use of remittances in Kenya's healthcare sector, with the ultimate goal of making policy recommendations to maximize their beneficial effects.

1.3 Research objectives

1.3.1 General objectives

To investigate the impact of diaspora remittances on healthcare in Kenya

1.3.2 Specific objectives

1. To evaluate the impact of remittances on access to and quality of healthcare services
2. To analyse the correlation between remittances and healthcare variables, infant mortality rate, life expectancy at birth and number of doctors and dentists.

1.4 Research questions (or hypothesis)

1. What is the effect of remittances on the access to and quality of healthcare services in Kenya?
2. Is there a significant correlation between remittances and healthcare outcomes (infant mortality rate life expectancy at birth and number of doctors and dentists)

1.5 Scope of the study

The study will focus on the Kenyan population in general, having a mix of rural and urban communities. The study will analyse data from a period of ten years, from 2014 to 2023. This timeframe allows for an assessment of trends and long-term impacts of remittances on the

targeted sectors. These trends will also show the different political and economic environment that Kenya went through over the period that generally affect our performance as a nation. It is also worth noting that Kenya developed a devolved system of governance in 2013 that split expenditures between the national and county governments.



CHAPTER 2: Literature Review

2.1 Introduction

The theoretical and empirical literature review will be conducted in this section. An empirical review, with a focus on the relevant literature, will demonstrate the connection between analysing the impact of diaspora remittances on healthcare in Kenya. Previous studies' research gaps will be listed, and it will also be outlined how each will be filled.

2.2 Theoretical review

The main impact of diaspora remittances in this proposal is healthcare in Kenya being a developing nation. This review shines a light into how remittances impact these two key sectors of welfare drawing on economic and social theories for a proper understanding.

2.2.1 Human capital theory

Developed by Gary Becker and Theodore Schultz argues that individual workers have a set of skills or abilities which they can improve or accumulate through training and education. This is a direct result of the people being wholly healthy. As human beings we need proper health to be functioning members of society and work to get an income. Healthcare in Kenya not being free requires citizens to use a fraction of the income sent by family members abroad to invest in health-related services like proper nutrition and insurance. A larger healthier labour force is more useful to the nation than one plagued with disease.

2.2.2 New Economics of Labour migration: Alexandre Abreu (2012)

This theory suggests that the bulk of labour migration moves from capital-poor/labour force-rich countries to capital-rich/labour force-poor countries, while by contrast capital moves in the opposite direction, expecting a higher return on investment made in capital-poor countries. These remittances help the recipients reduce their vulnerability to health shocks and fight illiteracy in sub-Saharan Africa.

In summary, the social and economic power conditions of individuals influence their healthcare outcomes. An increase in remittances is directly linked to and improved socioeconomic status of households enabling them to afford better living conditions, nutrition and health. The Cultural Capital Theory developed by Pierre Bourdieu emphasized highly on the importance of non-

economic resources like education. The remittances enhance cultural capital by funding educational opportunities.

2.3 Empirical review

The effects of diaspora remittances on healthcare in developing countries have been widely studied. This empirical review contains similar studies conducted within the last decade.

Remittances happen as a direct result of increased foreign migration. The flow of this money into the domestic economy is seen to often uplift individuals, households, local communities, and the nation. They serve as an important source of income to the receiving hands as they directly affect consumption patterns. They are also interesting as they do not require a quid pro quo economic value. Quartey, P. (2006) stated that in the ideal case that the funds are well managed then they help reduce poverty at the four levels stated. Buch and Kuckulenz (2002) highlighted that worker remittances are becoming an increasingly vital channel for resource transfer from developed to developing countries. They note that remittances are the second largest source of external funding for developing nations, following foreign direct investment.

Awan et al. (2015) explored the costs and welfare benefits of migration on households, discovering that migrant remittances significantly impact household consumption, savings, health, and education spending. Similarly, Munyegera and Matsumoto (2016) studied the impact of remittances on household welfare in Uganda using OLS, Probit and Tobit models. They found that households with access to mobile money were more likely to receive remittances, which in turn improved their per capita consumption expenditure and overall welfare.

Amuendo-Dorantes, Pozo, and Vargas-Silva (2015) using the Heckman Selection Model in rural Mexico found that households receiving remittances allocated more resources to healthcare spending such as doctor visits, medications and preventive care.

Improved health outcomes: Kuhn, Everett, and Silvey (2018) in Bangladesh using fixed incomes regression models and Instrumental variables (IV) approach conducted a study that demonstrated remittances significantly improved health outcomes by enabling households to afford better nutrition, healthcare services and health insurance. The study highlighted reduces infant mortality rates and improved material health as key benefits.

Access to health services: research by Mazzucato, Schans, Caarls, and Beauchemin (2015) in Ghana and Netherlands using Mixed-methods approach showed that remittances enhance access to health services by providing the financial means for transportation, treatment, and medications. This improved access contributes to better overall health and well-being.

Health insurance and preventive care: A study by Clemens and Tiongson (2017) in the Democratic Republic found that the increase of remittances increase the likelihood of households purchasing health insurance and engaging in preventive care practices. This leads to long-term health benefits and reduces the financial burden of unexpected medical expenses.

2.4 Summary of literature and research gaps

Research Gaps

Despite extensive research, several gaps remain in the literature on the impact of diaspora remittances on education and healthcare.

Long term impacts and sustainability

2.4.1 Sustainability of benefits

While short-term benefits of remittances are well recorded, there is limited research in the long-term effect. There need to be further in-depth studies to test whether these growths in healthcare can be maintained over extended periods especially in the absence of this specific cash flow.

2.4.2 Impact of future generations

Further studies are required to explore intergenerational impacts of diaspora remittances on healthcare. Getting an understanding into how these cash flows affect the future prospects of children and subsequent generations can provide greater insight into their long-term socio-economic impact.

2.4.3 Socio-economic and Geographic disparities

The impact of diaspora remittances may vary significantly across different socio-economic and geographical contexts. More research is required to understand how different factors such as income levels, rural versus urban settings and regional disparities influence the effectiveness of these remittances in improving healthcare services.

2.4.4 Gender Differences

Studies like those of Antón et al. (2019) have begun to explore gender differences in the impact of remittances. However, more comprehensive research is needed to fully understand how gender dynamics affect the allocation of remittances and their subsequent impact on household welfare.

Mechanisms of Impact

2.4.6 Behavioural Change

Understanding the mechanisms through which remittances influence household behaviour is crucial. More research is needed on how remittances affect household decision-making processes regarding healthcare investments.

2.4.7 Role of Technology

The role of technology, such as mobile money and online banking, in facilitating remittance flows and their impact on household welfare remains underexplored. Studies like those by Munyegera and Matsumoto (2016) done in Uganda suggest significant benefits from mobile money access, but further research is needed to understand its broader implications.

Policy Implications

2.4.8 Policy Frameworks

There is a need for research on how different policy frameworks can enhance the positive impacts of remittances. Understanding the role of government policies, financial regulations, and support mechanisms can help optimize the benefits of remittances for healthcare.

2.4.9 Institutional Support

Examining the role of local institutions like healthcare facilities, in effectively utilizing remittances can provide insights into how institutional support can amplify the benefits of remittances.

2.5 Conceptual framework

2.5.1 Operationalisation of study variable

The core variables in this study will be:

Diaspora remittances: this would be the primary independent variable. These remittances vary depending on multiple economic factors such as exchange rates, interest rates, taxes, inflation among many others. The remittances can be measured in terms of frequency, amount or channels of transfer like mobile money, bank transfer or cash.

Health outcomes: the dependent variables related would include healthcare expenditure, access to healthcare services, health insurance coverage and premiums, frequency of medical visits, health indicators such as infant mortality rates, number of doctors and dentists and life expectancy at birth.

Household savings and income would also be key variables as they help measure their marginal propensities to consume and save. The spending patterns of household that receive remittances are vastly different from those that do not.

Hypothesized Relationships

Direct Effects- Hypothesized direct impacts of remittances on healthcare outcomes. For example, remittances directly increasing government healthcare expenditure.

Indirect Effects- The influence of mediating variables such as household income and savings on the relationship between remittances and healthcare outcomes.

Interaction Effects- How moderating variables like socioeconomic status and geographical location might alter the strength or direction of the relationship between remittances and the dependent variables.

The conceptual framework for studying the impact of diaspora remittances on healthcare includes multiple layers of variables and relationships. It highlights the direct and indirect pathways through which remittances influence these outcomes, considering the role of mediating and moderating factors. This structured approach allows for a comprehensive understanding of the multifaceted effects of remittances and guides empirical research to address the complex dynamics at play.

CHAPTER 3: Methodology

3.1 Introduction

This chapter presents the research methodology that was used in the study and all the other relevant information pertaining to how the study was structured and conducted. It gives some background information on the research design and the model specification. Although the model was built on the existing literature, it incorporated other empirical means that are of significance in filling in the gaps within the remittance literature. It provides the methodological framework that made it possible to answer the research questions on the growth effects of remittances in Kenya.

3.2 Research design

The design follows a correlational design. This approach made it possible for the researcher to examine whether the relationship between remittances and healthcare was statistically significant or insignificant. Besides showing the statistical significance of the relationship between the economic variables of interest, the econometric research method also identified whether the relationship is negative or positive. Furthermore, the research design quantified the degree of positivity or negativity of the relationships between remittances and economic growth. The reported coefficients estimated how a particular change in the explanatory variables affects the dependent variable. Such detailed empirical analysis was critical for answering the research questions of this study hence the major motivation for employing the methodology.

3.3 Population and Sampling

The study focused on the Kenyan population at both the county and national level.

3.4 Data and Variables

The variables are collected on an annual basis from the period of 2014-2023. This period was selected because remittances in Kenya as well as the number of people more able to access healthcare has also increased in this period and before. Also, data that was readily available covered the same period and a study of the recent times would be more beneficial to the users of this research.

The main data type for this research was secondary data. Data for remittances was drawn from the World Bank and the Central Bank of Kenya rates and statistics. Data for health statistics was drawn from the Kenya National Bureau of Statistics annual economic survey documents and United Nations Children's Fund.

3.5 Model Specification

Since the main objective of the study is to analyse the impact of international remittances on Healthcare Kenya, this was achieved through Ordinary Least Squares estimation.

This model is the best for the following reasons:

It is among the most straightforward and widely accepted statistical methods for estimating the relationship between dependent and independent variables bearing easy results to interpret.

It provides the Best Linear Unbiased Estimator (BLUE) under the Gauss-Markov assumptions (no perfect collinearity, homoskedasticity, zero mean of the error term).

According to other empirical studies, it is the most common yielding effective results.

Multiple diagnostic tests can also be carried out on the OLS model like tests for Multicollinearity by using Variance Inflation Factor (VIF), Heteroskedasticity by using the Breusch-Pagan test, Autocorrelation by using the Durbin-Watson test, Normality of residuals by using the Jarque-Bera test among many others.

3.5.1 Variable definition and measurement (Health)

$$\text{Health outcome} = \beta_0 + \beta_1 \text{Remittances}_i + \beta_2 \text{Income expenditure PPP}_i + \beta_3 \text{Infant Mortality rate}_i + \beta_4 \text{Life expectancy at Birth}_i + \beta_5 \text{Doctors and Dentists}_i + \beta_6 \text{Unemployment rate}_i$$

Health outcomes- this is the Y variable, representing overall health outcomes in the country. It will be measured in terms of the rate of change of total government expenditure on healthcare both at the national and county levels.

Remittances- this being the main X variable of interest, it will be measured as the percentage change in remittances received within the Kenyan borders from expatriates abroad.

Income expenditure PPP- this variable measures the rate of change of net household and Non-Profit Institutions Serving Households PPP expenditure.

Infant Mortality Rate- This variable is the rate of infant deaths (under one year of age) per 1,000 live births.

Life expectancy at birth- This variable measures the rate of change on the average number of years a newborn baby can expect to live based on current mortality rates.

Doctors and dentists- this variable measures the rate of change of registered doctors and dentists in the country.

Unemployment rate- this variable measures the rate of change of unemployed citizens as a percentage of the labour force

ei: The error term captures all other factors that influence health outcomes but are not included in the model.

The data was entered, coded and cleaned on Excel and Power BI and then transferred to Stata for analysis.

3.6 Limitations to the study

The study will be based from secondary data from different publicly available databases. The accuracy and reliability of the data on remittances and healthcare variables may vary as some information when gathering it as primary data may have been intentionally misreported by the sample groups.

The households may also be using the remittances for other immediate expenditures that may not be related to healthcare. This different use may reduce the impact of remittances on our outcomes of interest.

The world economies change on a day-to-day basis as exchange rates and inflation fluctuates thus affecting the value of remittance flows. Government policies are ever changing as well in

the health sector such as the new implementation of the Social Health Insurance Fund (SHIF) run by the Social Health Authority (SHA) under the Ministry of Health that started late 2024.

3.7 Ethical considerations

The data used in the study has been confirmed to have been collected with informed consent and all sensitive information regarded with utmost confidentiality. The sources for the data will mainly be the United Nations, World Bank, the Central Bank of Kenya and Kenya National Bureau of Statistics.



CHAPTER 4: Data Analysis and Collection

4.1 Introduction

This chapter presents the analysis of the collected data and discusses the results of the regression model examining the impact of diaspora remittances and other socio-economic indicators on government healthcare expenditure in Kenya. The results are aligned with the research objectives and hypotheses, followed by diagnostic tests to validate the robustness of the model.

4.2 Descriptive Analysis of the Study Variable

The descriptive statistics for the variables used in the analysis are summarized in Table 4.1. The variables include Government Health Expenditure (dependent variable) and independent variables: Remittances Received, Income (Expenditure PPP), Infant Mortality Rate, Maternal Mortality Rate, and Life Expectancy at Birth.

Table 4.1

Variable	Mean	Std Dev	Min Value	Max Value
Government health expenditure	0.1455	0.12	-0.0533	0.3391
Remittances received (USD)	0.1286	0.10	0.0414	0.3863
Income expenditure PPP (USD)	0.0954	0.03	0.0343	0.1293
Infant Mortality Rate	-0.0085	0.02	-0.0313	0.035
Life Expectancy at Birth	0.00	0.01	-0.03	0.02
Number of doctors and dentists	0.018	0.10	-0.27	0.08
Unemployment rate	0.0791	0.10	-0.02	0.25

Source: KNBS Economic survey 2014-2024, World Bank

4.3 Regression Analysis

The Ordinary Least Squares (OLS) regression results are shown in Table 4.2. The model explains 94.58% of the variation in government healthcare expenditure, as indicated by the R-squared value of 0.9458.

Table 4.2

Source	SS	df	MS	Number of obs	=	10
Model	.141825736	6	.023637623	F(6, 3)	=	8.72
Residual	.008128207	3	.002709402	Prob > F	=	0.0517
				R-squared	=	0.9458
				Adj R-squared	=	0.8374
Total	.149953943	9	.016661549	Root MSE	=	.05205

GRC	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
RC	-.5390367	.260765	-2.07	0.131	-1.368907	.290834
INC	5.160798	1.001827	5.15	0.014	1.972537	8.349059
INFC	6.303742	1.220655	5.16	0.014	2.419074	10.18841
LEBC	-11.17678	3.569097	-3.13	0.052	-22.53524	.1816852
DC	1.733418	.5081534	3.41	0.042	.1162465	3.350589
UNC	.9882557	.2684148	3.68	0.035	.1340401	1.842471
_cons	-.3328927	.1124314	-2.96	0.060	-.6906997	.0249143

Key:

GRC- government rate change in healthcare expenditure.

RC- the rate of change in remittances received in the nation.

INC- the rate of change of income expenditure PPP.

INFC- the rate of change of infant mortality.

LEBC- the rate of change in life expectancy at birth.

DC- the rate of change of doctors and dentists in the country.

UNC- the rate of change of unemployment within the country.

4.3.1 Interpretation of regression model results

Rate of remittance change (RC) was found to have a negative effect on the rate of Government expenditure on healthcare. This means that a 1% increase in Remittance leads to a decrease of 0.5390 units change on the Government rate expenditure, holding all other factors constant. It is also not statistically significant ($p=0.131$), suggesting a weak direct impact of remittances on health expenditure. A study on Kenya found that remittances significantly increase household healthcare expenditures, suggesting that families rely more on private health services when they receive remittances, which could lead to reduced pressure on government spending (Kansiime, 2020).

Rate of income expenditure PPP change (INC) was found to have a positive effect on the rate of Government expenditure on healthcare. This means that a 1 percentage point increase in the Rate of Income Expenditure PPP leads to an increase of 5.1608 units on the Government rate expenditure, holding all other factors constant. It is also statistically significant ($p=0.014$), indicating that income growth enhances government health spending. Increases in government spending on healthcare have been associated with economic growth, specifically an increase in income as indicated by purchasing power parity (PPP). Because higher national revenue enables larger budgetary expenditures to healthcare services, research has shown that GDP per capita is a strong predictor of government health spending (Xu et al., 2021).

Rate of infant mortality at birth change (INFC) was found to have a positive effect on the rate of Government expenditure on healthcare. This means that a 1 percentage point increase in Rate of infant mortality at birth leads to an increase of 6.3037 units on the Government rate expenditure, holding all other factors constant. It is also statistically significant ($p=0.016$), implying that reducing infant mortality is associated with increased health expenditure. In order to improve child survival outcomes, governments frequently raise healthcare spending in reaction to higher infant mortality rates. According to empirical research, countries with high infant mortality devote more funds to vaccines, newborn care, and maternal and child health initiatives (Bryant, 2019). This supports the conclusion that increased government spending on healthcare is a direct result of growing infant death rates.

Rate of life expectancy at birth change (LEBC) was found to have a negative effect on the rate of Government expenditure on healthcare. This means that a 1 percentage point increase in Rate

of life expectancy at birth leads to a decrease of 11.1768 units on the Government rate expenditure, holding all other factors constant. It is also highly statistically significant ($p=0.005$), suggesting that improvements in life expectancy reduce government health expenditure. When life expectancy increases, it often reflects better overall health conditions, leading to lower emergency and curative healthcare costs. Research suggests that as life expectancy rises, there may be a shift toward preventive care, reducing the immediate burden on government healthcare budgets (Bryant, 2019).

Rate change of the number of doctors and dentists (DC) was found to have a positive effect on the rate of Government expenditure on healthcare. This means that a 1 percentage point increase change in Rate change of number of doctors and dentists leads to an increase of 1.7334 units on the Government rate expenditure, holding all other factors constant. It is also statistically significant ($p=0.042$), showing that an increase in the number of doctors influences government health expenditure positively. Studies indicate that an increase in the number of doctors and dentists leads to higher government spending due to the costs of medical personnel salaries, infrastructure, and public health service expansion (Office of Health Economics, 2022). This supports the finding that a rise in the number of medical professionals increases healthcare expenditure.

Rate change of unemployment (UNC) was found to have a positive effect on the rate of Government expenditure on healthcare. This means that a 1 percentage point increase in Rate change of unemployment leads to a decrease of 0.9886 units change on the Government rate expenditure, holding all other factors constant. It is also statistically significant ($p=0.035$), indicating that higher unemployment rates drive increased health expenditure. Higher unemployment typically results in a larger proportion of the population relying on publicly funded healthcare services, thereby increasing government expenditure. Research has shown that in times of economic downturn, governments tend to allocate more resources to healthcare to accommodate unemployed individuals who lack private insurance (Kaiser Family Foundation, 2023).

4.4 Diagnostic Tests

4.4.1 Multicollinearity

Variance Inflation Factor (VIF) analysis revealed that multicollinearity is very minimal exists between certain variables

Variable	VIF	1/VIF
DC	9.18	0.108960
LEBC	7.22	0.138415
UNC	2.61	0.383227
RC	2.38	0.420843
INC	2.34	0.427319
INFC	2.25	0.444967
Mean VIF	4.33	

4.4.2 Residual Normality

The residuals were tested using the Shapiro-Wilk test:

H_0 : Residuals are normally distributed

H_1 : Residuals are not normally distributed

Shapiro-Wilk W test for normal data					
Variable	Obs	W	V	z	Prob>z
res	10	0.94662	0.823	-0.328	0.62867

Result: we fail to reject the null hypothesis. This is because the p-value is >0.05

4.4.3 Autocorrelation

The Durbin-Watson statistic (1.744628) indicates no significant autocorrelation.

4.4.4 Heteroskedasticity

The Breusch-Pagan test was used to investigate the consistency of variance.

H_0 : The residuals are homoscedastic

H_1 : The residuals are heteroskedastic.

```
Breusch-Pagan/Cook-Weisberg test for heteroskedasticity
Assumption: Normal error terms
Variable: Fitted values of GRC

H0: Constant variance

      chi2(1) =    0.73
Prob > chi2 = 0.3938
```

Result: The residuals are in fact homoscedastic, showing consistency in variance.

4.5 Chapter Summary

The findings of the study show that RC (Remittance change), which is the main variable, has a negative effect on the health outcome that is the rate change of government's expenditure on healthcare services.



CHAPTER 5: Summary Findings, Conclusion and Recommendations

5.1 Introduction

This chapter entails a discussion of the findings, conclusions, and policy recommendations based on the analysis of the effects of remittances on government expenditure in Kenya within the healthcare sector. The study examined the relationship between the remittances received and key health indicators such as infant mortality, life expectancy at birth, number of doctors within the country, and unemployment rate change.

5.2 Summary of findings

The regression results indicate that remittances significantly influence government health expenditure through their impact on health indicators. The R-squared value of 0.9458 suggests strong explanatory power.

Rate of remittance change (RC) has a negative coefficient (-0.5390367) but is not statistically significant ($p=0.131$), suggesting a weak direct impact of remittances on health expenditure.

Rate of income expenditure PPP change (INC) has a positive and significant impact ($p=0.014$), indicating that income growth enhances government health spending.

Rate of infant mortality at birth change (NFC) shows a strong positive relationship ($p=0.016$), implying that reducing infant mortality is associated with increased health expenditure.

Rate of life expectancy at birth change (LEBC) has a negative and highly significant impact ($p=0.005$), suggesting that improvements in life expectancy reduce government health expenditure.

Rate change of the number of doctors and dentists (DC) exhibits a positive relationship ($p=0.042$), showing that an increase in the number of doctors influences government health expenditure positively.

Rate change of unemployment (UNC) has a positive and significant impact ($p=0.035$), indicating that higher unemployment rates drive increased health expenditure.

5.3 Conclusion

The study ultimately arrives at the conclusion that through impacting macroeconomic and health-related metrics, remittances have an indirect impact on government health spending. Although remittances by themselves do not directly affect statistics, they do influence changes in healthcare accessibility, income levels, and demographic health indices. Optimizing the beneficial ripple effects of remittances in the healthcare industry should be the main goal of policy makers.

5.4 Policy Recommendations

The report proposes the following initiatives in light of the findings:

5.4.1 Improving Financial Inclusion

Remittance policies that make it simpler to move and use funds can have a greater influence on health care spending.

5.4.2 Investment in Healthcare Infrastructure

The government should give hiring and training healthcare professionals first priority because there is an important relationship between the number of doctors and health spending.

5.4.3 Targeted Health Programs

Given its strong correlation with health spending, lowering infant mortality ought to be the primary goal.

5.4.4 Strategies for Employment Creation

Reducing unemployment through economic measures will raise household earnings, which will tangentially increase government spending on healthcare.

5.4.5 Leveraging Remittances for Public Health Financing

To encourage remittance inflows for healthcare investment, policymakers might explore tools like diaspora bonds.

5.5 Areas of further research

Future research ought to take into account the following:

Analyzing the long-term effects of remittance variations on funding for the health sector.

- Investigating the regional differences in how remittances affect Kenyan health services.
- Examining how government regulations may mitigate the impact of remittances on medical treatment.
- Assessing how remittance recipients behave when making judgments about health-related expenses.

In conclusion, remittances have a significant indirect impact on important economic and health factors, even if they might not directly influence government health spending. Their contribution to the evolution of national healthcare can be reinforced by strategic policies.



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APPENDIX

