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Brain-Drain in Health Sector: Towards Sustainable Healthcare Development in Nigeria: A Study of Selected State Hospitals in Ogun State.

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Abstract: This study investigates the impact of brain drain in the health sector on sustainable healthcare development in Ogun State, Nigeria, focusing specifically on selected state hospitals. The research was conducted across several state hospitals with the entire medical staff forming the target population. Utilizing a random sampling strategy, data were collected from a sample of 278 healthcare professionals, determined through Taro Yamane sampling techniques from a population of 912. Data collection was facilitated through a systematically designed containing 26-item questionnaire employing a four-point Likert scale. The reliability instrument was confirmed with a Cronbach alpha statistic, while its validity was assessed using component factor analysis. Descriptive statistics summarized the data, and inferential statistics were derived using simple linear regression analysis. The findings reveal a significant brain drain phenomenon, driven by factors such as inadequate remuneration, subpar working conditions, and limited professional growth opportunities. This has resulted in a critical shortage of healthcare providers, negatively impacting the quality and accessibility of healthcare services in Ogun state. The regression analysis further illustrates a strong correlation between brain drain and the deterioration of healthcare service delivery, which in turn hampers the region's progress towards sustainable healthcare development. The study recommends that the level of poverty must be reduce in the country; high pay incentives must be adequately provided by the government; initiatives that support youth in realizing their full potential must be developed; and a sound macroeconomic plan must be Implemented.

Keywords: Brain Drain, Sustainable Development, Healthcare Delivery

I Introduction

The brain drain of trained healthcare workforce is one of the main issues emerging countries are facing. Developing countries like Nigeria are not immune to this misfortune, particularly in the domains of health and education sectors. Over 50% of Nigerian physicians were employed and resided overseas.

A trained and stable workforce is essential to the delivery of high-quality healthcare, which is why the healthcare industry is so important to a country's general well-being. But Nigeria, like many other developing nations, has to deal with the ongoing issue of "brain drain" in the health sector. This phenomenon is the exodus of highly qualified healthcare workers to other nations, frequently in search of better possibilities.

The global migration of health professionals has led to an uneven distribution of medical personnel worldwide. "Brain drain," the term used to describe the exodus of medical professionals from some developing nations, has an impact on the health care system on several levels, affecting all health personnels. Both push and pull factors are causing medical professionals to leave their home nations. Better pay and working conditions, job satisfaction, and opportunities for additional education are pull factors. Push factors include lack of education opportunities, poor working environment, poor infrastructure, insufficient enumeration, and lack of diagnostic equipment. In addition to push and pull considerations, medical professionals' relationships to the receiving nations have an impact on their movement. Along with a scarcity of medical personnel, the exporting country has higher rates of morbidity and mortality as a result of this medical professional exodus. In the event of an illness, prompt diagnosis and intervention are impossible without medical personnel. The presence of competent healthcare workers is critical to the efficient operation of the global health system, especially in Nigeria. [1]

The country is losing a large number of skilled medical personnel and other vital healthcare workers. This depletion has resulted in a substantial healthcare personnel deficit, decreased access to excellent healthcare services, and impeded attempts toward sustainable development [2]. Poor infrastructure and inadequate resources for our health system have also increased brain drain among Nigerian medical staff. This study aims to produce findings that will help to alleviate the distressing crisis and improve the stability of the health-care system.

One of the most major barriers to upgrading Nigeria's and other African countries' health-care systems is a shortage of health workers. The global workforce issue can be addressed if there is global responsibility, political will, financial commitment, and public-private partnerships to support country-led and country-specific actions that look outside the health sector. Only by

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training, sustaining, and retaining enough health workers in underdeveloped nations will the area be able to meet the Millennium Development Goals [3].

This research is critical for policy makers, healthcare administrators, and stakeholders when developing focused interventions to address the difficulties caused by brain drain in the health sector. This project intends to improve healthcare services and overall well-being in Ogun state, and by extension, Nigeria, by establishing long-term strategies for maintaining and attracting qualified healthcare personnel.

The main objective of this study was to examine the effect of brain drain in health sector on sustainable development of health care delivery in Ogun state. The specific objectives were the following: (i) to investigate the effect of brain drain in health sector on environmental sustainability in Ogun state hospitals; (ii) to examine the effect of brain drain in health sector on economic sustainability in Ogun state hospitals; (iii) to determine the effect of brain drain in health sector on social sustainability in Ogun state hospitals.

II Conceptual Review

Brain Drain

Global trade and investment opportunities have been fuelled by the emergence of the globalized economy, the information explosion, social networking, and technological advancement. This has led to an acceleration of the brain drain from developing to developed countries worldwide [4]. This circumstance heightened the aspirations of developed countries worldwide to raise their standards of living and draw in more foreign workers, especially medical professionals with training from developing nations, to augment their human resources. Most industrialized nations worldwide have enacted robust policies associated with reforms pertaining to ethical democratization of society, openness in the development of their economies and infrastructure, and strong autonomous institutions that strengthen good governance inside their country [4].

The topic of brain drain in the healthcare sector has posed a persistent challenge for many developing countries, including Nigeria. Brain drain refers to the emigration of qualified healthcare personnel, which has a significant influence on the country's ability to provide healthcare services.

[5] characterized brain drain as a migration of employees or professionals seeking better living conditions, higher salaries, access to modern technology, and stable political situations in a variety of locations around the world. This is a continuing occurrence that has an impact on the quality and quantity of the labor force, as well as the quality of human capital development.

[6] defined brain drain as the preponderance of the migration of highly skilled and educated persons from poor, developing and less industrialized countries to richer, more developed ones. Another way to define brain drain is the phenomenon of highly educated, skilled workers leaving a country for other countries to pursue specialized careers. As brilliant workers leave their country and use their skills to boost the economies of other countries, brain drain is primarily seen negatively.

[4] identified three types of brain drain that commonly occur or are prevalent in various countries around the world. The first is observed in wealthy countries around the world. Citizens of developed countries move to developed countries to establish, investigate, or upgrade their skills in one or more areas. Brain drain also occurs when the citizens of developing countries travel to other developed countries to seek a better job opportunities and improve their living conditions. Moreover, among developing countries around the world, citizens interact or travel to other developing countries to help each other improve in areas where developed countries excel or perform well. However, these travels or migrations are decreasing as information communication technology (ICT) advances, allowing citizens from all over the world to work or be hired to provide services [4].

Sustainable Healthcare Development

[7]) define sustainable development as a form of human development in which the resources employed are aimed at satisfying human needs while guaranteeing the sustainability of the environment and natural systems, so that these needs can be satisfied not only for the present but also for future generations.

According to [7], in order to meet the growing demands of the future, the interconnections between social, economic, and institutional processes must be continuously maintained via the development process. It follows that sustainability is viewed as a model of a future in which social, economic, and environmental challenges interact harmoniously to advance and raise living standards [8]. Raising standards in Nigeria's health sectors necessitates finding a durable solution to the brain drain issue that characterizes the country's lethargic development.

Sustainable development is described as a development that meets the needs of the present without compromising the ability of future generations to meet their own needs according to Brundtland Commission's 1984 report, which was quoted in [6]. This definition of sustainable development is the most widely used and acknowledged. It is also thought to be the most common and concise definition of sustainable development. It believes that intergenerational equity is a key component of sustainable development.

Addressing the underlying reasons of brain drain and putting policies in place to draw in and keep healthcare professionals are necessary to achieve sustainability in the delivery of healthcare. A balance between the availability of human resources, the

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caliber of services, and the flexibility to adapt to the changing healthcare demands of the populace defines sustainable healthcare. This calls for all-encompassing policies that prioritize long-term retention and capacity-building activities over short-term fixes.

The conceptual framework needs to take into account how brain drain affects Nigerian healthcare delivery both directly and indirectly. The exodus of qualified personnel worsens the current scarcity of workers in the healthcare industry, leading to lower-quality services, longer wait times, and worse patient outcomes. The overall viability of the healthcare system may also be impacted by burnout and low morale among the surviving healthcare workers.

III Theoretical Review

Change Theory

Lewin developed the Push-Pull hypothesis, also referred to as the Change hypothesis, in 1947. It is one of the theories explaining brain drain. According to the hypothesis, the conflict between social environment satisfaction and irritation leads to behavioural intention. According to this idea, there are two types of elements that might impact a situation: push factors, or forces, and pull factors, or helping factors, which direct and propel movements toward a goal.

Theory of World Systems

Immanuel Wallerstein created the world systems theory in 1970. According to the theory, there are two sides to the economic system: the giver (the exploited) and the taker (the benefiter). It goes on to say that the existing global system functions according to a limited framework with a variety of rules that serve to unite the various subgroups that make up the system as a whole (society). It is larger than a single juridical political unit and sees the entire system as a network of global capitalism.

IV Empirical Review

[9], this study investigates whether workplace safety, compensation, and equipment contribute to brain flight among Nigerian health professionals. A survey research design was applied. The majority of the study strategy was quantitative, with fewer qualitative elements included to allow participant recommendations. The statistical analysis of the data using linear regression revealed that the factors that most strongly caused brain drain among health professionals were compensation, worker safety, and working equipment. The report recommended important legislative changes, among other things, to address the inadequate working conditions in both public and commercial institutions.

[11], the study looked at the factors that contribute to health workers in Ekiti state's public teaching hospitals leaving the field. The study used a descriptive survey research design. The 3274 employees of Ekiti state's public hospitals made up the population. 356 employees were used as sample size, which was determined using the Taro Yamane formula. Multiple regression was used to examined the study project's data. The research findings indicated that brain-drain among health personnel in public teaching hospitals in Ekiti State was positively influenced by factors such as career growth, autonomy, low earnings and salaries, and political instability. It was suggested that the government support the expense of education for Nigerian health workers and guarantee that there are sufficient infrastructures and facilities to support career growth.

[12] used a diagnostic research design to survey public health staff in government hospitals in an effort to promote understanding of the impact of the issue known as brain drain. Using a probability sampling method, the study employed a battery of modified research scales of various measurements to validate the variables of interest. To obtain relevant data, 450 staff of four government institutions in the public healthcare sector were questioned for the study. The study analyzed the data using artificial neural networks (ANNs) and structural equation modeling (SEM). The study found that the brain-drain effect and subpar healthcare delivery were the main causes of the low work-life quality that Nigerian medical professionals faced.

[13], the study investigated the rising causes of brain drain of Nigerian medical doctors abroad with country's implications. Secondary sources of information were used. Utilizing a mixed method research approach that combined quantitative and qualitative techniques, descriptive and explanatory study designs were employed. The findings showed that some of the driving forces behind doctors leaving their home nations include their unappealing pay, an unpleasant work atmosphere, and a lack of opportunity for career progression. In accordance with the 2001 Abuja Declaration to enhance health infrastructure and the welfare status of healthcare professionals, the Nigerian government should increase its annual budget allocation for healthcare financing to 15% as a policy response.

A research conducted in [14] examined the effects of brain drain on Nigeria's health and educational systems. According to this survey, the majority of industrialized nations frequently favor competent and educated laborers from emerging nations, particularly Nigeria. Secondary sources provided the data for the study, which was then analyzed using content analysis. The investigation was conducted in relation to the push-pull theory. The research concurs that both push and pull variables account for the rising rate of migration in Nigeria's health and education systems. The report made several recommendations, one of which was that the Federal Government of Nigeria make investments in the crucial sector of the economy since it is still essential to the nation's long-term economic growth and development.

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V Methodology

The study was conducted in Ogun State Hospitals. The whole medical staff in the hospitals (Abeokuta, Ota, Isara-Remo, Ijebu ode, Ifo and Ilaro) make up the target population for this study. A random sampling strategy was adopted. A systematic questionnaire was used to obtain the data for the investigation. The data were summarized using descriptive statistics, and regression analysis was utilized to get inferential statistics. The population of the study was 912 and sample size of 278 was determined by Taro Yamane sampling techniques. The instrument for data collection was questionnaire titled "Brain Drain and Sustainable Healthcare Development Questionnaire (BDSHDQ)". The questionnaire was gathered using a 26-item questionnaire with a four-point Likert scale. Cronbach's alpha statistic was used to evaluate the reliability of the instrument, whereas component factor analysis was used to evaluate its validity. To assess the data, simple linear regression was employed. To aid in analysis and act as a guide, the model was defined as follows:

SHD = f(BD)

$SHD = \beta_0 + \beta_1 X + \ldots\ldots\ldots et\ldots\ldots$ i

$SHD = \beta_0 + \beta_1 X + \ldots\ldots\ldots et \ldots\ldots$ii

$SHD = \beta_0 + \beta_1 X + \ldots\ldots\ldots et \ldots\ldots$ iii

Where:

SHD = Sustainable Healthcare Development

BD = Brain Drain

ECS= Economic Sustainability

EVS= Environmental Sustainability

SOS = Social Sustainability

B_0 = Constant

B_1, B_2, B_3 = Coefficient of correlation

VI Result and Discussion

Table I Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.859	.858	20

Source: Field Survey, 2024.

A result of 0.859 in Table 1 indicates that there is a high degree of internal consistency across the scale's items. An alpha of 0.859, therefore, suggests that the items are consistently measuring the same underlying construct.

Table II Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.171	30.854	30.854	6.171	30.854	30.854
2	4.685	23.423	54.277	4.685	23.423	54.277
3	3.534	17.671	71.948	3.534	17.671	71.948
4	2.471	12.353	84.300	2.471	12.353	84.300
5	1.517	7.584	91.884	1.517	7.584	91.884
6	.614	3.070	94.954			

Source: Field Survey, 2024

Significantly, five components (91.884%) explain the whole variation. This implies that these five elements can provide a good dimensionality reduction by summarizing the data efficiently. This analysis offers a trustworthy and thorough comprehension of the consistency of the measured constructs and the structure of the dataset.

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Table III Descriptive Statistics

	BD	SD	EVS	ECS	SOS
Mean	17.3957	52.2086	17.3094	17.3705	17.5288
Std. Deviation	2.02018	5.50021	1.79187	1.87212	2.17739
N	278	278	278	278	278

Source: Field Survey, 2024

Table 3, with BD (17.3957), SD (52.2086), EVS (17.309), ECS (17.3705), and SOS (17.5288) as the average values for each variable. The following values are used to calculate the degree of variation or dispersion: BD (2.02018); SD (5.50021); EVS (1.79187); ECS (1.87212); SOS (2.17739).

Table IV Correlation Coefficient

Table 4: Correlation Coefficient						
		BD	SD	EVS	ECS	SOS
Pearson Correlation	BD	1.000	.857	.774	.781	.858
	SD	.857	1.000			
	EVS	.774		1.000		
	ECS	.781			1.000	
	SOS	.858				1.000
Sig. (1-tailed)	BD	-	.000	.000	.000	.000
	SD	.000	-			
	EVS	.000		-		
	ECS	.000			-	
	SOS	.000				-
N	278	278	278	278	278	278

Source: Field Survey, 2024

The linear connections between BD and the following variables are displayed in Table 4 along with their intensity and direction: BD and SD (0.857); BD and EVS (0.774); BD and ECS (0.781); and BD and SOS (0.858). This demonstrates the high positive correlation that exists between all the variables. The correlations' significance levels are 0.000, which means that they are statistically significant.

Table V Model Summary

	SD	EVS	ECS	SOS
Model	1.	1.	1.	1.
R	.857	.774	.781	.858
R Square	.735	.599	.610	.735
Adjusted R Square	.734	.597	.609	.734
Std. Error of the Estimate	2.83555	1.13693	1.17119	1.12222
R Square Change	.735	.599	.610	.735
F Change	766.231	412.063	431.766	766.794
df 1	1	1	1	1

A. Predictors: (Constant), BD

Source: Field Survey, 2024

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The following correlation coefficients show the relationship between the expected and actual values: SD (0.857), EVS (0.774), ECS (0.781), and SOS (0.858). Out of the dependent variable (BD), the following proportion of variation can be predicted: SD (73.5%), EVS (59.9%), ECS (61.0%), and SOS (73.5%). The prediction error standard deviations are as follows: SD = 2.83555; EVS = 1.13693; ECS = 1.17119; SOS = 1.12222).

Table VI ANOVA

Dependent variable	Model		Sum of Squares	Df	Mean Square	F	Sig.
SD	1.	Regression	6160.762	1	6160.762	766.231	.000[b]
		Residual	2219.137	276	8.040		
		Total	8379.899	277			
EVS	1.	Regression	532.636	1	532.636	412.063	.000[b]
		Residual	356.760	276	1.293		
		Total	889.396	277			
ECS	1.	Regression	592.250	1	592.250	431.766	.000[b]
		Residual	378.588	276	1.372		
		Total	970.838	277			
SOS	1.	Regression	965.682	1	965.682	766.794	.000[b]
		Residual	347.588	276	1.259		
		Total	1313.270	277			

Predictors: (Constant), BD

Source: Field Survey, 2024

High F values show that a substantial portion of the variance is explained by the model. The models are statistically significant, as indicated by the p-value, which revealed that all p-values are 0.000.

Table VII Coefficients[a]

DV	Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
SD	1	(Constant)	11.599	1.477		7.854	.000
		BD	2.334	.084	.857	27.681	.000
EVS	1.	(Constant)	5.369	.592		9.066	.000
		BD	.686	.034	.774	20.299	.000
ECS	1.	(Constant)	4.779	.610		7.835	.000
		BD	.724	.035	.781	20.779	.000
SOS	1.	(Constant)	1.451	.585		2.482	.014
		BD	.924	.033	.858	27.691	.000

Source: Field Survey, 2024

For every unit change in the independent variable (BD), the following are the actual projected changes in the dependent variable: For SD, the BD coefficient is 2.334; for EVS, it is 0.686; for ECS, it is 0.724; and for SOS, it is 0.924. The coefficient's standard errors are SOS (0.033), EVS (0.034), SD (0.084), and ECS (0.035). The following are the coefficients in their standardized form: SD (0.857), EVS (0.774), ECS (0.781), and SOS (0.858). The relevance of each predictor was shown by the t-statistics and p-values for the coefficient. P-value = 0.000 indicates that all predictors are very significant.

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VII Conclusion

The results show that brain-drain significantly influences environmental sustainability, making it an important factor to take into account in environmental policy and planning efforts. There is a significant relationship between brain-drain and environmental sustainability in State hospitals in Ogun state. The significant F Change (p-value = 0.000) highlights that the model, which includes brain-drain as a predictor, greatly improves the prediction of environmental sustainability compared to a model without predictors.

The economic sustainability of state hospitals in Ogun State is significantly correlated with brain-drain. The statistical significance of the association is indicated by the significance level of 0.000, which is significantly lower than 0.05. According to the research, brain-drain has a substantial impact on economic sustainability, which means that economic policy and planning must take it into account.

In state hospitals, there is a strong correlation between brain-drain and societal sustainability. The concept that brain-drain has a favorable impact on societal sustainability is strongly supported by statistical evidence. The statistical significance of the association is indicated by the significance level of 0.000, which is significantly lower than 0.05. The results imply that brain-drain is an important area of focus for policy and strategic planning since it is a crucial component in anticipating and improving societal sustainability.

In summary, there is a significant positive relationship between the brain drain and development of sustainable healthcare. In this study, brain-drain is a significant predictor for all forms of sustainability, with high R values signifying robust models. While the coefficients indicated that rises in brain drain are connected with increases in sustainable healthcare development, the ANOVA tables validate that the regression models are statistically significant.

Recommendation

The mass exploration of Nigerians must be taken seriously immediately. Nigerians with advanced degrees and other talents would keep moving to developed countries as long as there is poverty in the country.

Initiatives that support youth in realizing their full potential must be developed by the government, particularly in regions with strong concentrations of information technology innovation. It should also provide access to specialized education for its residents and encourage the production of local content.

The report makes it clear that in order for migrants and their families to invest their remittances in capital-building projects that help the Nigerian economy as a whole, the government needs to offer sufficient incentives.

The report suggests that there should be more high-paying occupations available in Nigeria and fewer educational visas that allow young Nigerians to study abroad. Implementing a sound macroeconomic plan and outlaw nepotism and corruption at all levels of government are necessary.

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