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RESEARCH ARTICLE

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ACCESS ISSUES: TRANSPORTATION CHALLENGES AND HEALTHCARE DELIVERY IN RURAL SETTINGS

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ABSTRACT

The aim of the work in this paper is to present the results from a study of how the quality of life in remote locations and rural settings of Bayelsa State, Nigeria can be enhanced through improvement in healthcare accessibility. The methodology comprised desktop study, questionnaire survey, participant observations and interviews. A survey comprising 2,000 distributed questionnaires was conducted between July 2016 and July 2017 within seven selected states in the Niger Delta region of Nigeria. A total of 1,800 questionnaires were completed and returned. Informal interviews were conducted with respondents from the public and health sectors within Bayelsa State; the focus state for the study. Data from most of the respondents revealed that physical barriers such as nature of terrain and transportation significantly influenced health services accessibility. Further analysis of the data revealed that lapses in the health policies and lack of initiatives were paramount drivers to the challenges around accessibility. Based on these findings a guide was developed to aid improvement on access to healthcare services. The guide provides recommendations for development of better transportation mechanisms that will resolve the long-standing logistics challenges that have impacted the healthcare needs of the rural population. Government action or involvement is a key influence on the actual outcomes from execution of the guide.

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INTRODUCTION

Good health is a fundamental human right (WHO, 2008). The responsibility rests with every nation's healthcare system to provide access to appropriate services, and individuals to have a sense of personal obligation and consciousness for healthy living (Agbenyo *et al.*, 2017; Strasser, 2003). Accessibility in the context of healthcare delivery can be considered from two different perspectives, namely access to appropriate health services, and/or the geographic distance between destination points [e.g. social service points and health centres] (Allan, Ball and Alston, 2007). Access to destination points or locations are a function of travel distance and transportation systems which can be challenging in rural communities (Shalini *et al.*, 2014). Transportation modes link individuals (e.g. potential patients) and health facilities (Syed, Gerber and Sharp, 2013; Gregory, Adrian, 2000).

Without an appropriate transportation mode, even short distances to healthcare facilities/services can become an insurmountable problem, particularly in rural settings (Agbenyo *et al.*, 2017; Atuoye *et al.*, 2015; Stephen and Nutley, 2003; and Parkhurst and Ssengooba, 2009). To establish the nature of accessibility constraints and transportation systems in rural settings, a study in Bayelsa State within the Niger Delta region of Nigeria explored access to healthcare services, travel distance and transportation. These are contemporary challenges impacting negatively on efficient delivery and availability of health services. In this regard, the objective of this article is to present an analysis of the transportation challenges impeding access to health services in the remote locations and to develop a guide to manage the identified challenges. The findings can serve as key factors for ensuring better quality of life in rural settings of Bayelsa State through improvement of healthcare accessibility.

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Study context: The data for the study came from the views of people from the public and health sectors from selected communities in the districts of Bayelsa State and some districts of the other selected Niger Delta states.

MATERIALS AND METHODS

Description of study area: Bayelsa State is in the South-south geopolitical zone of the Niger Delta region of Nigeria. Its capital is Yenagoa which was delineated on October 1, 1996, out of Rivers State (Gabriel and Zuofa, 2004). A significant part of the state is covered in water and the local population engage in fishing on a subsistence and commercial level. There are many streams of varying volumes and velocities in the state such as Rivers Nun, Ekoli, Brass, Koluama. It has one of the largest crude oil and natural gas deposits in Nigeria supporting the economy in the growing petroleum sector (Bayelsa State Portal, 2015; Oviasuyi and Uwadiae, 2010). The geographical location of the state is within latitude $4^{\circ}15'$ North and latitude $5^{\circ}23'$ south with longitudes of $5^{\circ}22'$ West and $6^{\circ}45'$ East (Central Intelligence Agency, 2016). The state shares a common boundary with Delta State on the north, Rivers State on the east and the Atlantic Ocean on the western and southern parts (Oviasuyi and Uwadiae, 2010). The State comprised a population of 2,216,029 in the year 2015, however, it has been projected that by 2018, the population would have increased to 2,278,000 (Worldmeters, 2018). It is mainly a rain forest with an area of 21,110 sq.km and comprises eight local government areas or districts (Hingi, 2015). The datasets were collected from the list of districts detailed in Table 1 making up the state.

Bayelsa is a lowland state characterised by tidal flats and coastal beaches, beach ridge barriers and floodplains. The state lies between the high and lower Delta plain of the Niger Delta which suggests a low-lying relief (Oviasuyi, Uwadiae, 2010). The population concentration among districts is: Southern Ijaw - 23.8% (largest district with more challenging topography); Ogbia - 14.2%; Ekeremor - 11.1%; Yenagoa 9.3%; and Kolokuma/Opokuma - 6.0%. The geographical difficulties within the state, and factors such as infrastructural provision and environmental degradation, have limited ease in movement to healthcare facilities on a large scale within the state. The primary modes of transport are the waterways and roads, however, transport problems have not only hindered accessibility to healthcare but also economic development. The state is navigated by a network of River Niger tributaries in extensive swampland thus water transport (canoes and motorboats) is the primary means of movement in the rural. This terrain has posed constraints such as settlement development, access to settlement sites, exploitation of natural resources for economic purposes as well as human settlement and land use.

METHODOLOGY

Achieving the proposed objective, which is to present an analysis of the transportation challenges impeding access to health services in the remote locations and to develop a guide to manage the identified challenges, required understanding the study area through data sourcing. Statistical Package for the Social Sciences (SPSS) and NVivo Analytical Software tools were used to analyse the collected data.

Quantitative method: This method uses a systematic, empirical approach to collect numerical data (Bryman, 2004). In this research, semi-structured questionnaire was employed to gain information and comprehend the perceptions and feelings of individuals with respect to how transport and

access issues impacted on healthcare in the communities with the ultimate goal of proposing possible solutions in form of a guide. The developed questionnaire (both for public and health personnel) comprised both closed and open-ended questions, grouped under the themes: travel time to health centres and mode of transportation to health centres; transport systems in communities to generate information; and perceptions and feelings of individuals in line with the study objective. The Likert scale (5- point scale) was adopted to rate the strength and degree of responses. This rating scale was to help measure the opinions of respondents on issues relating to transport concerns in healthcare and to make information gathered amenable to analysis. The scale is a valuable tool that ascertains the degree of sensitivity and variation of responses represented by numbers (Maina-bukar and Boso, 2018).

Table 1. Districts and capitals of Bayelsa State

S/no	Districts	Capitals
1	Brass	Twon-Brass
2	Ekeremor	Ekeremor
3	Kolokuma/Opokuma	Kiama
4	Nembe	Nembe
5	Ogbia	Ogbia
6	Sagbama	Sagbama
7	Southern Ijaw	Oporoma
8	Yenagoa	Yenagoa

With Likert scaling, a large quantity of data is collected with less amount of time and effort. SPSS (Pearson's chi-square) was used to analyse the collected quantitative data because of its robustness, ease of computation, flexibility in handling multiple data and the intended use for testing the association between the variables gathered during this study.

Qualitative method

This is a systematic and subjective approach used to describe life experiences and give them meaning as stated by Burns and Grooves (2003). This method produces non-numerical and descriptive data, which is often in-depth of data required. The study adopted the semi-structured qualitative approach because of its flexibility and the fact that different categories of participants (the public and health personnel) on selected locations were involved. The method was to aid in better understanding of the problems within the context under study and to gain additional information to complement data from the questionnaire survey. The different categories of 13 participants included individuals from the public sector (3 community chiefs), health sector (2 medical doctors, 3 nurses and 3 pharmacists) and the government (2 government workers under the ministry of health). Coding, a method of converting data obtained on a participant or component into values presented in a numeric form for data storage, management and analysis was used to discrete the names of respondents as acknowledged by Holosko and Thyer (2011) in Maina-bukar and Boso, (2018), Table 2. Qualitative analysis using NVivo10 was employed to analyse gathered data and aid in identifying the transportation challenges impeding access to health services in the remote locations, an objective of the study.

RESULTS AND DISCUSSION

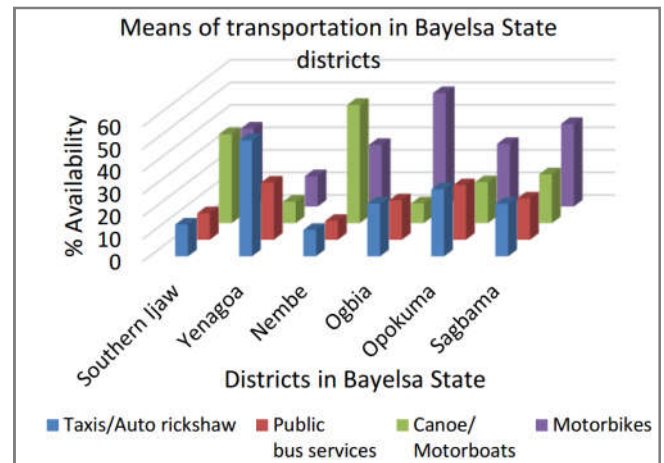
Available transport means in the rural settings: Effective modes of transport are critical in any community and in the rural settings.

Table 2. Details of Interview Code

S/N	Interviewee ID	Code prefix	Sector	Main Issues of Interview
1	DA	DA-00-O	Health	<ul style="list-style-type: none"> • Critical barriers to effective healthcare delivery. • Measures to better healthcare delivery. • Flexible healthcare services. • Types of prevalent health problems. • Accessible health insurance scheme.
2	N1.	N1-01-O	Health	
3	DW	DW-00-Y	Health	
4	P3	P3-03-N	Public	
5.	C2	C2-02-S	Public	
6	NB	NB-01-N	Health	
7	CB	CB-02-S	Public	
8.	NC	NC-01-Y	Health	
9	PC	PC-03-N	Public	
10	PA	PA-04-N	Health	
11	PB	PB-04-N	Health	
12	CC	CC-02-O	Public	
13	DD	DD-00-Y	Health	

They can improve access to the health facilities around and within the communities. However, poor transportation is a well-recognised problem in these rural areas under study. The effect cuts across all areas in the lives of the people and much prevalent in health services utilisation especially in areas where there are no appropriate road or waterways networks to access the facilities. To achieve effective rural healthcare delivery, access routes and transportation concerns are critical areas that need further investigation. Figures 1 and 2 provide graphical representation of the most available modes of transportation in the selected states under study.

The various transport modes excluding motorboats system are common across all states in the Niger Delta. The use of motor bikes and motorboats ranked highest in Bayelsa State, with motorboats employed more frequently during intercommunity movements in the swamps. Edo State tops the list on the use of public buses, taxis and autorickshaws as means of transportation within the state especially in the rural.



Figures 2. Means of transportation in Bayelsa State districts

bikes are all available means however, motor bikes and canoes/motorboats are the most frequently used, especially in the remote areas. Nembe and Southern Ijaw rank higher than the other districts in the use of canoes and motorboats (Figure 4). The outcomes of the qualitative and quantitative data analysis of transportation systems show that availability of transport means (e.g. motorboats) is poor. Again, the high tides and the topographic nature of location can delay boat movement. These findings suggest the creation of an effective transportation system, including: the provision of motorboats; motor vehicles; skilled drivers to reduce difficulties with access; and construction of road networks to overcome the terrain issues. This proposal promotes ease in movement, improve on accessibility to health centres and aid cost reduction in healthcare.

Transportation means to health facilities: The availability of different means of transport to health facilities, occasionally affected by the location and travel distance to the facilities, is a vital aspect of effective rural healthcare delivery. Analysing the survey findings on the various modes of transport to health facilities (Figure 4), Yenagoa, tops the list in the use of taxis and autorickshaws, Ogbia district leads in the use of public bus services and motorbikes to seek medical attention within and outside the district. Nembe and Southern Ijaw districts show a high use of motorboats as means of transport to health facilities. However, there is a high level of dissatisfaction in the available and existing transport modes to the different health facilities from all districts and this applies to even inter district movement for health visit. Figure 4 shows that all districts excluding Yenagoa have a high percentage level in the use of the water ways.

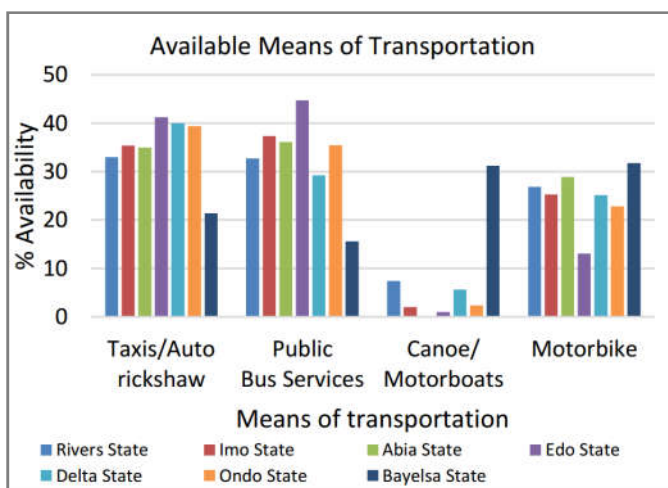


Figure 1. Available means of transportation in Niger Delta

Rivers and Delta States do have small percentages of water-based transport system which are not as much as that of Bayelsa State having large water mass (about 70%). Taxis and autorickshaws are popular in the capital city of Bayelsa (Yenagoa) owing to the large land mass compared to all other districts. Nembe and Southern Ijaw districts have the highest records in the use of motorboats (Figure 2) owing to the percentage of water bodies surrounding their communities. Figures 3 and 4 show the response from different respondents in the selected states (including Bayelsa State) on the most used transport means to healthcare centres. Taxis, autorickshaws, minibuses, canoes/motorboats and motor

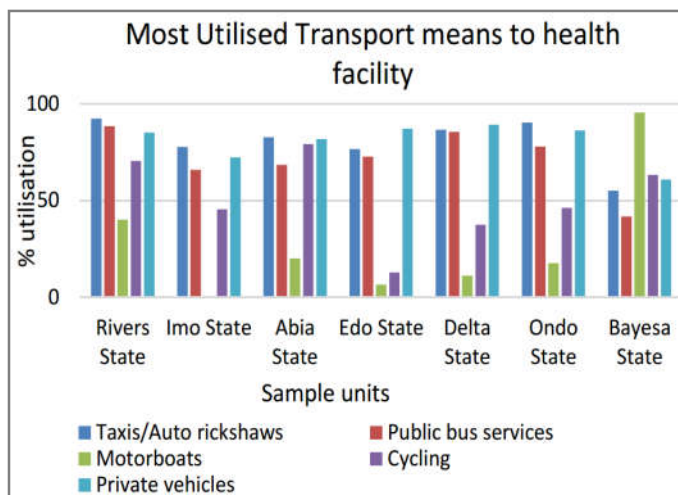


Figure 3. Transport means to health facility in Niger Delta

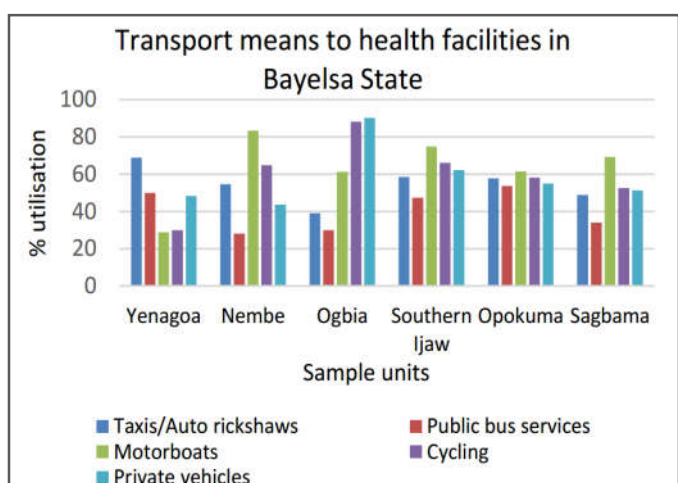


Figure 4. Transport means to health facility in Bayelsa State

Similar observations were gathered from responses in the use of the road transport system (public buses, taxis and autorickshaws) across all districts. Ogbia district is a special example where privately-owned vehicles are preferable to public services. Analysis of the data gathered revealed that some challenges exist in the available means of transport to the various health facilities in Bayelsa State. Restructuring of the transport system which would include provision of motorboats, vehicles and skilled drivers can reduce difficulties with transportation on the waterways and roads in the state. A long-term approach could be the construction of more road networks and bridges to resolve the transport concerns. The potential benefits of a strategic long-term approach would include reduction in transportation costs, ease of movement and quicker access to health centres.

Accessibility concerns: From the obtained datasets, most of the travel time of the people to healthcare facilities were between 15 to 60 minutes as shown in Figure 5. The finding is true for the districts within Bayelsa State except for Yenagoa district where the travel time is one hour and more for most residents. This is because the sparse distribution of functional health facilities within the district. Residents from within and outside the district experience some accessibility challenges due to distance and transport issues. As is the case for the other districts, nearby facilities are either not functional or unequipped to provide desired services in some situations.

Residents who live far away from the main facilities providing basic, referral and special services (owing to their location) travel for longer distances to receive basic or specialist services.

Chi-square test – Travel time and age group relationship

To further assess the datasets quantitatively, the SPSS analytical tool was introduced. The Pearson chi-square test of independence was used to determine significant relationship between two (categorical) variables. The variables in this section are the “travel distance to health facility” and “age group”. The Null hypothesis exists if no significant relationship is observed between variables and that is when asymptotic significance, p-value > 0.05) while the alternative hypothesis becomes valid when the asymptotic significance, p-value <0.05. Table 3 shows the test outcomes for the districts of Bayelsa State, the focus region of this study. From the P values generated, the “age group” and “travel distance to health facility” are independent for the districts except Sagbama where P<0.05. The results derived from Sagbama district is $\chi^2 (15, N=117) = 25.406, p=0.045$. This implies that a relationship exists between the variables.

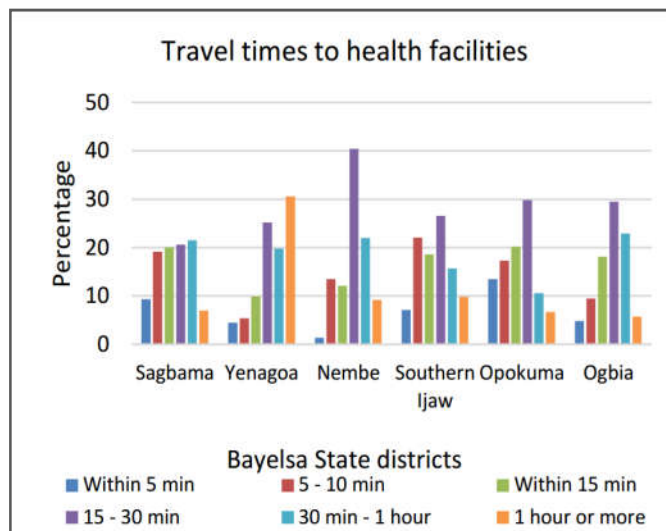


Figure 5. Travel times to health facilities in different communities in Bayelsa State

Different age groups are affected by the long travel distances due to the nature of terrain, transport system and availability of health centres for different ailment types. For Sagbama (Figure 6), people between the ages of 18 and 24 visited the clinics more and on shorter travel times and those between ages 45 and 54 made least visits to the clinics but on longer travel times. Field findings reveal that there are no privately owned or managed health centres in Sagbama district, and most of the respondents seldom visited the government health facilities (many of which are either inactive or closed). Access to the health facilities are via land and water ways depending on the location of the facilities in the communities and the access routes available (Figure 7). A good number of individuals travel longer distances to seek medical attention due to remoteness from functional health centres. Opportunities for access improvement include: improvement in mode of transport and access networks to reduce long travel times to the facilities; revamping inactive healthcare centres; and exploring the use of flexible or mobile clinics for easy access to health services.

Table 3. Travel time to age status relationship in Bayelsa State

Districts	Value (X ²)	df	Asymptotic Significance (2-sided) (P -values)	Number of Valid Cases (N)	Minimum expected count
Ogbia	16.41	20	0.691	95	0.05
Sagbama	25.406	15	0.045	117	0.3
Southern Ijaw	41.233	30	0.083	341	0.07
Opokuma	36.492	25	0.064	101	0.7
Nembe	36.024	30	0.207	139	0.14
Yenagoa	37.696	30	0.158	106	0.24

Table 4. Health insurance coverage – Travel time

Districts	Value (X ²)	df	Asymptotic Significance (2-sided) (P – values)	Number of Valid Cases (N)	Minimum expected count
Ogbia	22.513	10	0.013	88	0.07
Sagbama	31.357	10	0.001	116	0.24
Southern Ijaw	11.996	10	0.285	338	0.71
Opokuma	8.549	10	0.575	102	0.07
Nembe	6.072	5	0.299	138	0.07
Yenagoa	5.265	4	0.261	43	0.09

*df – degree of freedom

Table 5. Employment and Transport relationship

Transport means	Value (X ²)	df	Asymptotic Significance (2-sided) (P – values)	Number of Valid Cases (N)	Minimum expected count
Taxis/auto rickshaw	928.491	36	0.00	896	0.00
Public bus services	948.237	36	0.00	896	0.00
Canoes/Motorboats	950.8	36	0.00	896	0.00
Motor bikes	930.409	36	0.00	896	0.00
Pubic services to other cities/towns	946.635	36	0.00	896	0.00

Chi-square test – Travel time and health insurance relationship

The SPSS Chi-square test is valid ($p < 0.05$) for Sagbama district on the test performed to establish the relationship between available health insurance scheme and travel time in Bayelsa State as shown in Table 4. Both variables are valid for the district only and thus rejects the null hypothesis. Variables remain independent for all other districts as p values > 0.05 . Most personnel are not covered by any form of insurance, Figure 8. Those fully covered by insurance go to nearby private health facilities for treatment and conversely, those not covered by any form of insurance visit equipped government healthcare centres which are distant from them. There is a need for further efforts on the means of transportation and flexible healthcare clinics for easy access to health services. A qualitative analysis based on a comparison of respondents from the health and the public was further carried out using the NVivo software tool. The comparative analysis revealed issues around “distance to health facility” and “transportation” following interview sessions with respondents in the different districts. Respondents confirmed these two issues were constraints encountered in their localities as there are no major road networks due to the nature of the terrain (Figure 9) and unavailability of good transport systems. The difficulty in affording and meeting up with the high transportation costs to the healthcare centres was an additional finding gathered during the study. This basically stemmed from the long distances to health centres. Low availability of transportation and weather constraints are also known to affect movement. Affordable transport cost remains a challenge as there is a low level of income in these remote areas.

Chi-square test – Employment status and available transport means: This study revealed that poor transportation system also deters or discourages health workers from resuming timely at the communities of service.

Transport availability to some locations are morning and evening hours only especially where there are available motorboats to cater for two movements in a day. A chi-square test on the relationship between employment and available transport means within the state revealed that a significant relationship exists for both variables i.e. p values < 0.05 for all transport means in the state (Table 5). Aside the effect of poor transportation to ease of access to healthcare system, it presents a great challenge to the unemployed as well as low-income workers trying to meet up with daily living. It is known to isolate the poorest families in rural settings from job opportunities. Data gathered revealed reliance on canoes (water ways) in some locations was high as employing motorboats were too expensive. Patients complained they were unable to meet up with medical appointments and so did workers who are similarly having problems with punctuality because of poor motorboats availability and delayed or long travel movements using canoes. This key factor (punctuality) often affected employment of locals by potential employers. Figure 10 shows the disparity between the employed and unemployed on utilisation of available transport services. Data shows that in all means of transportation available within the state, utilisation was highest for the employed. Study revealed that some job seekers often turned down jobs or adjusted their schedules (which impacted on work performance and delivery) because their potential earnings were too low compared with the high transport costs. Some of the local industries where low-skilled manual work is available are sited in locations requiring use of water ways, more than one vehicle stops, or areas underserved by public transport

Development of an access delivery guide

This study suggests that the influence of policymakers on suitable road projects in these riverine communities will go a long way in improving access to healthcare facilities. Provision of adequate public transportation means, competent

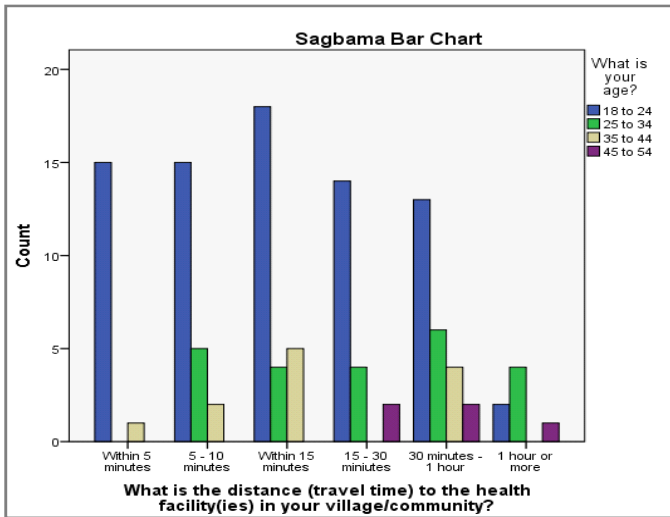


Figure 6. Sagbama district: Relationship of travel time to age status

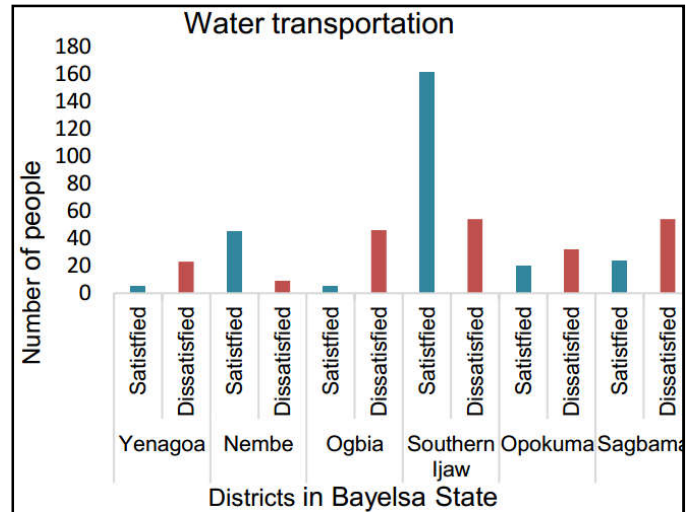


Figure 9. Level of satisfaction on water transportation from different districts

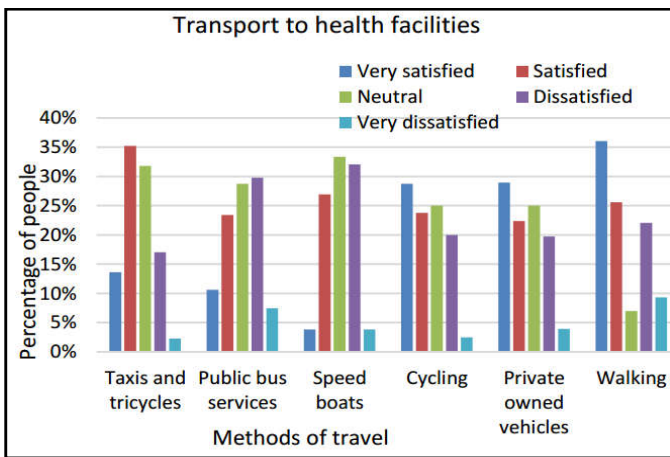


Figure 7. Sagbama district: Available transport means and level of satisfaction

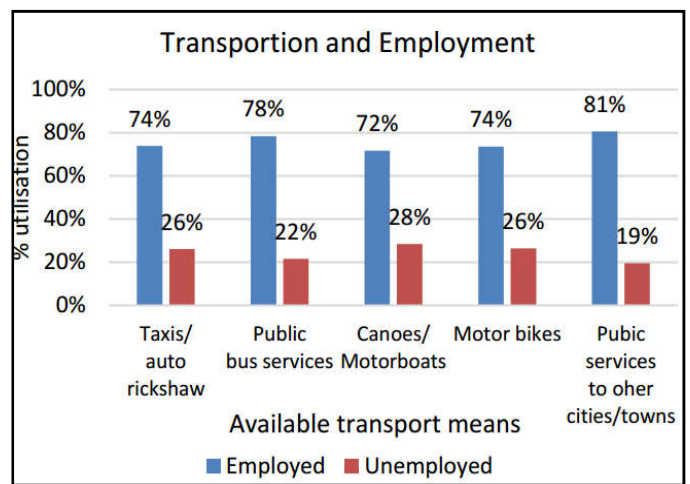


Figure 10. Employment and transport relationship in Bayelsa State

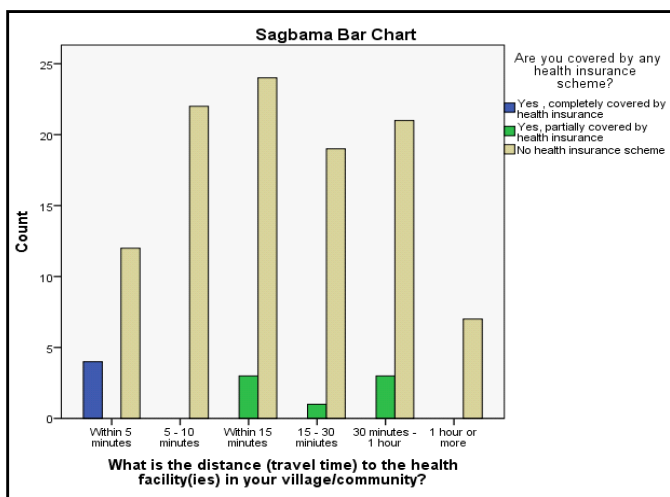


Figure 8. Health insurance coverage – Travel time relationship in Sagbama District

helmsmen in areas where there are existing emergency services or motorboats are a few of the suggestions that would promote easy and timely access to remote health centres even during emergencies. These suggestions have been summarised and developed into a guide represented in Table 6. This is specific to the area of study focus but could be applied to any other rural settings to improve access to health services where similar transportation issues exist.

A survey on the most pressing challenges that deterred the communities from proper and urgent medical attention revealed transportation concerns as one of the most pressing challenges. The impact of transportation on patients' health is a delay to the medical appointment, interrupted delivery of care (unavailable health personnel), compliance with prescription (health management plans), poor health outcomes, increased fatalities. Strategies to eliminate (or reduce) transportation concerns comprise three major categories following the data analysis on the available transport means (modes), employment and incomes, travel times to function health centres and data gathered on the level of education and training of indigenes from the survey.

- **Transportation services:** providing services based on the needs of the community, geography and funding. Most journeys are usually a to-and-fro movement and transport services should cover services from patient home or locality to health centres. As is in the system employed in the UK where an integrated transport system exists, the key driver is having an efficient transport system that would be easy and affordable to use, accessible to all, and comprehensive in the destinations it serves (Allen, 2018). This category on transportation services would include:

- Door-to-door transportation services: patients’ home or work site to the healthcare centre.
- Fixed route shuttle/motorboats service: services operated through some established routes and several structured stops.
- Cost reduction: government intervention on cost of transportation and provision of very cheap mode of transport to ease movement and enhance and quick access to health centres
- Inclusive modes of transport that are more patient or fragile friendly so to make movement or accessibility easier for the disabled, aged and sick people.
- Transport safety – adopting best practices that focus on driver, helmsmen skills and behaviour, as well as the condition of the cars, motorboats, road, waterways and local environment to ensure safety. Instituting a journey management program to manage safe operation of transport systems.
- Community-based point of care: timely delivery of healthcare products, staff or services to patients where they are situated or receiving services. This approach helps to alleviate the need for patients to travel long distances to services, for instance.
- Mobile clinics operate services in vans, buses, motorboats where patients live and get them to see the doctors. The high cost of providing support for patients to visit fixed health facilities can provide the services of mobile clinics.
- Healthcare services at social service locations: arrange health services such as national health programs within communities to prevent patients from additional trips to health centre for medical care. It is executable through partnerships with community and social service organisation.
- Telehealth: use of telehealth and information technology to provide medical attention to patients at a distance. It involves the transmission of guidance to the direct healthcare service provider from offsite healthcare providers with more expertise or resources.
- Education: Training drivers and helmsmen on transportation safety to avoid vehicle and motorboats accidents.

- Self-help programs: considering budgets constraints and priorities by the government, provision of adequate funding to capture all concerns may not be immediate. The use of self-help programs by the different communities or districts within the state will help close out small local transport tasks for required improvements in the transport system. These may include employing services from local contractors, using local or community trained individuals and getting volunteers within the communities to undertake some tasks.

This category basically manages response to health and support needs for those accessing health services in each community. The purpose is health improvement and wellbeing through combined efforts and support from the government, and stakeholders with adequate policies and funding. A similar approach exists in the United Kingdom where the government provides resources through an integrated health and social care system to ensure that people have access to the right services at the right time, focus on preventative care is paramount to reduce the length of hospital stays and, services are timely and responsive (Audit Scotland, 2018).

Health centre structure: repositioning of health structures based on the configuration of the environment to complement a minimal travel distance from homes to health centres or social service areas. This could go a long way to alleviate transportation barriers.

- Social service point: provide health centre and pharmacy outlets in a location people regularly visit such as the market point or point of essential business activities.
- Hours of operation can be altered to suit the availability of people such as the extension of hours to include weekends and evenings.

In conclusion, providing the right transportation strategies often requires addressing expertise, the high cost of fuel, vehicles, motorboats, public transportation network and securing adequate funding. The following are recommendations that will enable the overall success of the proposed transportation guide (Table 6).

Table 6. Transportation and health access delivery guide

Components	Transportation and health access		
Mode of transport	Walking, cycling, automobile, motorboats and canoes, public transport systems such as taxis, buses and motorbikes.		
Barriers of transportation to healthcare	Travel distance to healthcare provider, distance between patients and available healthcare provider, existing transportation means and structure, cost of transport services, knowledge, perception and use of available transportation services and skilled drivers for certain services.		
Categories most affected	The elderly adults, families (children and women), medical workforce, ill populations, low-income individuals.		
Impact of transportation on patient health	Delayed medical appointment and response, interrupted delivery of care (unavailable health personnel), non-conformance to prescription and health management plans, poor health outcomes, increased emergency and fatality rates.		
Considerations for implementation	Diverse transportation strategies should be employed, embrace customized strategies always, significant finance and personal commitment to transportation service, dedicated and capable staff, extensive partnerships with stakeholders, diversified capital schemes.		
Strategies	Transportation services <ul style="list-style-type: none"> • Door to door transportation services • Fixed route services • Cost reduction • Inclusive transport • Transport safety 	Community based point of care <ul style="list-style-type: none"> • Mobile clinics • Healthcare at social service points • Telehealth • Education on transport safety • Self-help programs 	Health centre structure <ul style="list-style-type: none"> • Socio service points • Hours of operation suitable to patients

- **Varied access and transportation strategies:** Several transportation plans or actions aimed at achieving long-term solutions to the identified impact of transport issues on health care must be used together to increase access to health and social services effectively.
- **Customisation:** Some strategies function well in one location and may not in another. It is better that strategies are community specific considering the varying topography and transportation concerns.
- **Organisational obligation:** Making significant finance and a personal commitment towards building, executing and growing transportation services.
- **Dedication and competency of the workforce:** This has to do with the workforce such as healthcare providers (public and private), transport sector, international organisations and the government teaming up to achieve success.
- **Extensive partnerships:** Developing partnership networks that include a combination of government agencies, health and social services, transport providers and authorities, volunteers, educational institution and non-governmental agencies.

Conclusion

The study sought to address the gap in transportation issues relating to ease in accessing healthcare services in Bayelsa State. The issues cut across the various districts in the state and a significant concern to the rural, particularly the riverine locations due to the nature of their terrains. Increased travel time for residents to healthcare providers and service points is a direct consequence of this gap. The study revealed that quick access to rapid response and emergency services is an aspect that is much impacted on by transportation issues such as availability of transport means, travel costs and have over time led to preventable death situations. Motorboats and motorbikes are the most frequent means of public transportation across most of the districts of Bayelsa State following the massive water body and sparse population. The use of taxi, buses, autorickshaws and motorbikes is limited to intra-district movements due to sparse and poor road networks while the services of canoes and motorboats are employed for inter-districts movements or within districts isolated by large water bodies. The proposed guide for managing the transport concerns provides better execution methodologies that will promote better accessibility to healthcare systems. Recommendations from the guide considering different identified components such as mode of transport and the barriers to effectiveness for healthcare services can be implemented to actualise improved healthcare delivery and quality of life.

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