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Analysis of Domestic Water Services in Yenagoa, Nigeria

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Abstract

The level of domestic water services largely influences household's health and socioeconomic development. Hence, the study analyzed domestic water services in Yenagoa. Data for the study were obtained from responses to a structured questionnaire that was administered systematically to 400 household heads. The level of households' domestic water services was determined using four domestic water service indicators (major domestic water source, time spent fetching water, quantity of water supply and household's expenditure on water). The data was analyzed using percentages and a Domestic Water Service (DWS) model that integrates the responses to the categorized service indicators and produce a single value that indicates the level of households' domestic water services. The value of the calculated DWS was 60.8%, which indicated that the average level of households' water services in Yenagoa was moderate. The quantity of household water supply exerted the highest negative drag on the service

level. With the current levels of domestic water services, Yenagoa might miss the SDG target 6.1 unless the poorly rated service indicators are adequately addressed.

Keywords: Cost of water, domestic, household, source of water, water quantity, water services.

1. Introduction

Water provision is a basic necessity for the survival of man. For example, man depends on water to meet daily needs such as drinking, cooking, washing and other domestic activities. Therefore, the level of water services to a large extent influences household's health and socioeconomic development (Chowdhury *et al* 2018; Zerbo *et al* 2021; Ohwo & Omidiji 2021). For example, the consumption of unsafe water has been blamed for the high incidence of diarrhea, which has caused preventable deaths, especially among children below the age of five. Prüss-Ustün *et al* (2019) reported that in 2016, about 485,000 deaths due to diarrhea were attributable to poor access to water supply. Similarly, in 2011, it was reported that about 700,000 children below the age of five died as a result of diarrhea, which was caused by the consumption of unsafe water (Bain *et al* 2014). These realities probably led to the inclusion of target 6.1 in the Sustainable Development Goals (SDGs), which focuses on achieving unrestricted universal access to safe drinking water among all peoples by 2030. Achieving this target will go a long way to significantly reduce diarrhea disease and other infectious diseases that are connected to the consumption or use of contaminated water.

Over the years, global efforts towards reducing the proportion of people without adequate water supply have made appreciable progress, especially from 2000 to 2020, where about 2billion people gained access to safely managed drinking water services (WHO & UNICEF 2021). However, significant gaps still remain to be covered to achieve universal "safely managed drinking water services," particularly in developing economics. Unfortunately, the Joint Monitoring Programme (JMP) report for 2021

revealed that 26%, 70% and 78% of the world, sub-Saharan Africa (SSA) and Nigeria population, respectively, have no access to safely managed water services; while 6% (about 12million) Nigerians still use surface water as their major source of domestic water supply in 2020 (WHO & UNICEF 2021). This perhaps explains why the rate and fatality of waterborne diseases, especially diarrhea is high among children in Nigeria (WSP 2012). Despite the havoc associated with the consumption and use of unsafe water, most cities in Nigeria still lacked public water utilities, which has compelled households to use alternative supply sources that does not guaranty safety (The World Bank 2021). This is what target 6.1 sets out to eliminate but the rate of progress so far is quite slow. In order to achieve this target, there is the need to know the current level of water services of households in any given area, which will form the basis of service provision monitoring. The WHO and UNICEF have designed a five-level service ladder "(surface water, unimproved, limited, basic and safely managed water services)" for classifying and monitoring households' water services to determine whether progress is being made towards the attainment of target 6.1(WHO & UNICEF 2017).

However, the various factors that influence household's level of water service such as quantity of water supply and household's water expenditure were not properly accounted for in the five-level service ladder. For example, a household may have access to safely managed water services but may not be able to use the source continuously if the cost of water from the source is eating deep into the household's budget, which may result to patronage of different water sources that are less reliable. Similarly, some of the major water sources may also provide intermittent supply, which may affect the quantity of household's water supply. These situations would give a false impression of the true water service levels of affected households. Since this is the reality in most cities in Nigeria and many other cities around the world, it may not be correct to classify households that experience these situations as having safely managed water services. Such classification could underplay the true situation experienced by the affected

households and jeopardize the development of strategies to scale up the level of water services.

In order to have a better appreciation of households' water services, this study proposed a domestic water service (DWS) model to assess the level of households' water services in Yenagoa. The model integrates the four proxy indicators of water service (major domestic water source, time spent fetching water, quantity of water supply and household's expenditure on water) to produce a single value that was used to classify the level of water services available to households. This classification may inform policy interventions in the assessment and monitoring of progress towards the attainment of SDG target 6.1.

2. Study Area

Yenagoa is a fast growing capital city in Nigeria, which is located between latitudes 4^{O} 55' and 5^{O} 02'N, and longitude 6^{O} 15' and 6^{O} 25'E (see Figure 1). Since it became the capital of Bayelsa State in 1996, it has experience tremendous population increase due to migration of people from different parts of the country, especially the surrounding rural communities. From 1991 to 2019, it was estimated that the population of Yenagoa grew from 50,000 to 350,000 (Ohwo & Omidiji 2021). The rapid growth in population has created infrastructural deficits because of the failure of the State government to match increasing demands of the population for infrastructural amenities. One area that has been affected is the provision of potable water, as most areas in the city are not connected to the State Water Board network. Even areas that are connected do not get reliable services as supplies are usually intermittent, forcing the people to use other less reliable sources of water supply. This situation is quite frustrating because Yenagoa has rich stock of ground and surface water resources, with high average annual rainfall of about 3000mm (Ohwo 2019). Perhaps, the poor water services has accounted for the high incidence of diarrhea and typhoid fever in Yenagoa (Ohwo & Omidiji 2021). If this current

trend is not checked, it might negatively affect progress towards the attainment of the SDG target 6.1 in Yenagoa.

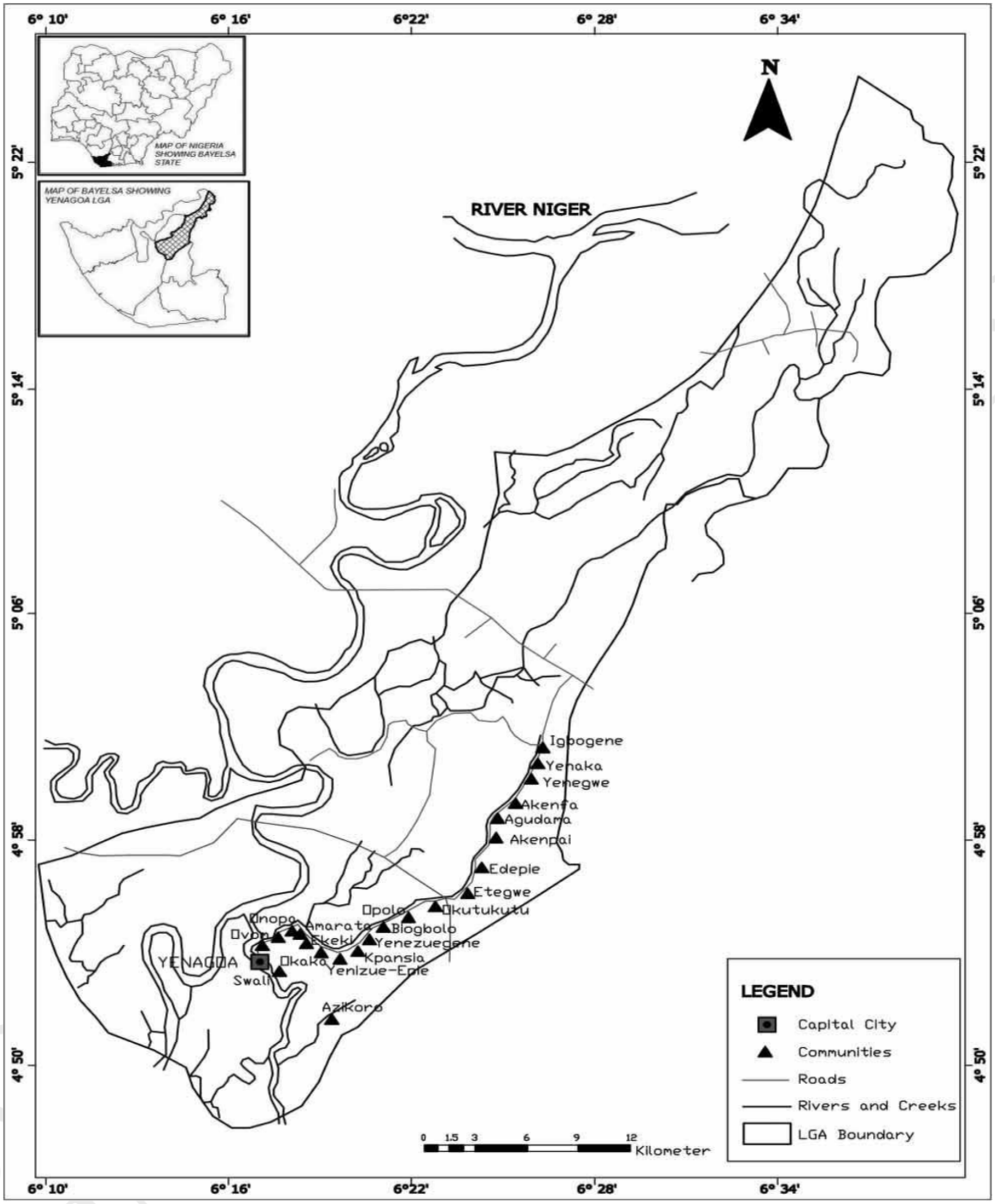

Figure 1: The Study Area in Yenagoa Local Government Area

Source: Ohwo (2019)

3. Method of Study

A cross-sectional survey was carried out using a structured questionnaire that was administered to sampled household heads in Yenagoa. The classified and systematic sampling methods were employed to sample 400 households out of the estimated households' population of 75,000 (Ohwo 2019). To ensure a representative sample, the 20 communities in the town were classified into four zones, which comprise of five communities in each zone. Thereafter, using the Krejcie and Morgan (1970) table for sample size determination, 100 copies of the questionnaires were assigned to each of the zones making a total of 400 questionnaires, which were administered directly by hand to the respective respondents.

Responses to the questionnaire were used to know the demographic characteristics of respondents; household domestic water characteristics and level of domestic water services. Responses to four service indicators (major domestic water source, time spent fetching water, quantity of water supply and household's expenditure on water) were used to determine the water service levels of respective households. Water safety was measured using a proxy indicator of "major source of domestic water supply". This was done because of the inability to continuously measure the quality of household domestic water supply. This proxy indicator was also adopted by Ohwo (2019). Since most people seem to easily relate distance to time spent, rather than the actual distance covered, time spent for a round-trip including queuing was used to define distance to major domestic water sources. Quantity of water supply was measured per capita per day, while cost of water was measured based on the percentage of household monthly income spent on water supply per month.

Each of the four indicators was categorized into five scales and was assigned weight value, which ranges from 1-5points. The value of 1 represents very low service, 2, low service; 3, moderate service; 4, high service; 5, very high service. The indicators were selected based on review of literature and the JMP definition of "safely managed water

services", which is "drinking water from an improved water source that is accessible on premises, available when needed and free from faecal and priority chemical contamination".

The collected data were analyzed using tables, percentages and a domestic water service (DWS) model, which produce an index value that was used to classify household domestic water services. The model was designed after the "waterborne disease vulnerability (WDV) model" by Ohwo (2019). The DWS model integrates the responses to the four categorized service indicators and produces a single value in percentage, which was used to determine the level of services enjoyed by households. The higher the calculated value, the better the water service of the household. The model is as follows:

$$DWS = \frac{dwsi}{hwv} \times \frac{100}{1} \quad (1)$$

Where:

$$dwsi = \sum_{i=1}^{n} \frac{nri\,(suw)}{TNR}; \; i = 1, 2, 3, 4, 5 \quad (2)$$

DWS = domestic water service; dwsi = domestic water service index; hwv = highest service weight value (5); nri = number of responses to service unit weight value (1-5) of each i^{th} service indicators; suw = service unit weight, a number from 1-5; TNR = total number of responses to all service unit weight values (1-5) of all i^{th} indicators (1-4). The interpretation scale of the model is as follows: very low service = below 25%; low service = 25- 44%; moderate service = 45 – 64%; high service = 65 – 84%; very high service = 85 - 100%

4. Results and Discussion

4.1. Respondents' Demographic Characteristics

Four hundred (400) copies of questionnaire were administered to sampled respondents and 394 (98.5%) were returned. The analyses of the respondents' demographic characteristics are presented in Table 1. The responses showed that 52.03% males and 47.97% females were sampled, which adequately represented both sexes. The age structure revealed that 70.55% of the respondents were 40years and below, which confirm the assertion that Yenagoa has a youthful population (Ohwo 2019), with only 5.08% above 65years. The marital status showed that more married respondents (56.09%) were sampled; while 40.10% were single and 3.80% were either divorced or widowed. This is perhaps a fair representation of the marital status in Yenagoa. The occupational group with the highest responses was self employed, with 36.80%, while "others" category had the lowest responses of 11.42%.

Household size decreases progressively from 1-3 persons (38.32%) to 10 and above persons (9.14%). This produces an average household size of approximately 5 persons in Yenagoa. This indicates that the household water requirement may be quite high when the per capita demand of each household is aggregated. The income structure of household heads showed that 67.77% earned N90.000 ($214.29) and below, using the official exchange rate of $1 to N420. The income bracket of N30.001 to N90.000 had the highest responses, while above N210.000 had the lowest (6.35%). Based on the response pattern, the average income of households' heads in Yenagoa was approximately N83.000. It is instructive to note that 21.32% of the households earn below the National Minimum Wage of N30.000 ($71.43). Considering the rate of inflation (17.76% for the month of June, 2022), the average household income (N83.000) was considered low for a household size of five.

Table 1: Respondents Socioeconomic Characteristics

S/N	Questionnaire Variable	Response Variable	Response	Percentage
1	Sex	Male	205	52.03
		Female	189	47.97
2	Age	Below 25 yrs	109	27.66
		25- 40 yrs	169	42.89
		41-65 yrs	96	24.37
		Above 65 yrs	20	5.08
3	Marital Status	Married	221	56.09
		Single	158	40.10
		Divorced	6	1.52
		Widowed	9	2.28
4	Educational Status	No formal Education	31	7.87
		Primary	37	9.39
		Secondary	186	47.21
		Tertiary	140	35.53
5	Occupation	Self employed	145	36.80
		Public service	51	12.94
		Private sector	57	14.47
		Business	96	24.37
		Others	45	11.42
6	Household size	1-3	151	38.32
		4-6	148	37.56
		7-9	59	14.97
		10 and above	36	9.14
7	Income per month	Below N30,000	84	21.32
		N30, 001-N90,000	183	46.45
		N90,001-N150,000	67	17.00
		N150,001-N210,000	35	8.88
		Above N210,000	25	6.35

Source: Authors' fieldwork, 2021

4.2. Household Domestic Water Characteristics

The cost of water is one of the major determinants of the source of household's domestic water supply. As the cost increases, households may be forced to use less quality sources,

which are less expensive and far away from the household dwelling. This situation may lead to man-hour loss, due to increase in time spent on fetching water from distant sources and the consumption and use of less quality water, which could expose the household to avoidable water borne diseases (Howard *et al* 2020).

Responses to household domestic water characteristics as presented in Table 2 showed that 65.23% of sampled households spent less than N200 for water supply per day; while 16.49% spent N300 and above. The highest percentage of response (40.86%) was recorded with households that spent less than N100 and the lowest (5.58%) was recorded for N400 and above, with an estimated average cost of water supply per household per day of N165 (N4.950 per month). This implies that households' earning the monthly National Minimum Wage of N30.000 would be spending approximately 16.5% of their income on water supply. A study by Nnaji *et al* (2013) noted that the average cost of water in Nsukka was N0.81 per litre, which translates to about 7% of the mean income of the residents. This shows that households spend reasonable amount of money for domestic water use which may most likely compel some households (especially low income earners) to seek alternative cheaper water sources even if they have access to "safely managed water sources."

Since cost of water influences the choices of the major water sources, respondents were asked to rate the quality of their major domestic water supply. From the responses, only about 57% of the households considered their water supply as either very adequate or adequate; while about 30% perceived the water supply from their major source as either inadequate or very inadequate. This response is however better than what was reported in a study in Calabar, where 87.3% of the respondents assert that the services of the pipe borne water was poor and need improvement (Okon & Njoku 2017). This is an indication that some households rely on poor water sources for domestic use, which may be attributable to so many reasons, including cost of water. Despite the uncertainties of the water quality from some of the major water sources, 75.13% of households do not treat

their water before consumption, which agrees with the findings of an earlier study in Yenagoa that reported 70% (Koinyan *et al* 2013). This situation exposes a large number of the population to water borne diseases.

In addition, only about 51% of households considered their current water supply as sufficient in meeting their demands; while about 49% indicated either moderate (26.14%), inadequate (19.29%) or very inadequate (3.30%). The response confirms the assertion that in almost all urban centres in Nigeria, water supply falls short of demand (Solihu & Bilewu 2021). This situation may affect sanitation and hygiene behaviour of the people with dire health and socioeconomic consequences.

Table 2: Household Domestic Water Characteristics

S/N	Questionnaire Variable	Response Variable	Response	Percentage
1	Cost of water supply per household per day	Less than N100	161	40.86
		100 – N199	96	24.37
		200 – N299	72	18.27
		300 – N399	43	10.91
		N400 and above	22	5.58
2	Perceived quality of water supply from major domestic source	Very adequate	82	20.81
		Adequate	144	36.55
		Moderate	50	12.69
		Inadequate	91	23.10
		Very inadequate	27	6.85
3	Consideration of current water supply in meeting demand	Very adequate	72	18.27
		Adequate	130	32.99
		Moderate	103	26.14
		Inadequate	76	19.29
		Very inadequate	13	3..30
4	Treatment of water from major source before consumption	Yes	98	24.87
		No	296	75.13

Source: Authors' fieldwork, 2021

4.3. Domestic Water Service Indicators

The levels of domestic water services of households in Yenagoa were determined using four service indicators (major domestic water source, time spent fetching water, quantity of water supply and household's expenditure on water) as stated in the methodology. The responses to each of the service indicators, which were weighted from 1-5points, were used as proxy indicators to know the quality of water services enjoyed by respective households. The lowest value indicates very low service, while the highest value indicates very high service; which means, the higher the weighted value, the better the water services. Table 3 contains the responses to domestic water service indicators.

4.3.1. Major domestic water source

Water safety, which is one of the characteristics of "safely managed water" as defined by the SDG target 6.1 monitoring ladder, was measured using households' major domestic water source, due to the difficulties in testing continuously households' water supply. Based on the SDG target 6.1 service ladder, the five categorized service levels were assigned weight values from 1-5. The lowest value (1) was assigned to surface water sources, while the highest value (5) was assigned to piped borne water that was located on premises and continuously available when needed. Surface water is at the lowest rung of the water service ladder and considered as the worst source of water supply because of its vulnerability to all forms of pollution. On the other hand, piped borne water is considered the safest water source because it is usually treated before transportation through the pipe distribution networks. This process reduces to the barest minimum the contamination of the water from this source of supply.

Unfortunately, responses to households' major water sources showed that only 3.81% of households used piped borne water that was located on premises and continuously available when needed. Although another group of 14.97% households had access to

piped borne water, located on premises or public taps located outside the premises, however they usually provide intermittent services. Since the source is considered safe but supply may be intermittent and involved the transportation of water from the source to the household dwelling, which may introduce contamination, it was assigned a weight of 4. The most popular and widely used water sources in Yenagoa were boreholes, protected dug wells and rainwater. These sources were indicated by 50.76% of households, which was lower than the 64% that was reported by Ohwo (2019). Although these sources were classified as "improved water sources" by the SDG target 6.1 monitoring ladder, however, they are more susceptible to pollution than piped borne water. Since these sources are generally classified as improved sources and offer reasonable level of safety, it was assigned a weight of 3. The categorized unimproved water sources such as unprotected dug wells, springs, tanker trucks, and carts with small tank/drum was assigned a weight value of 2 and constitute the major water sources for 25.55% of sampled households; while 5.33% households used surface water. This clearly shows that a reasonable proportion of the households in Yenagoa are highly exposed and vulnerable to water borne diseases, which could have dire consequences on the health and socioeconomic life of the people.

4.3.2. Quantity of water supply

Households' quantity of water supply was assessed per capita per day because of the variations in household size and to facilitate comparison between households. In arriving at the categorization of service levels for quantity of water supply, the various suggestions and submissions by different scholars and the World Health Organization (WHO) were considered in arriving at the weighted scale used for the study. It should be noted that the different suggestions were based on different circumstances. For example, Gleick (1996) proposed 50 litres per capita per day (l/c/d) for four basic human needs-

drinking, cooking, sanitation and bathing; while a minimum of 15 l/c/d was recommended for drinking, cooking and basic hygiene during humanitarian interventions (Sphere Project 2018). Also, the UN-Water Decade Programme on Advocacy and Communication and Water Supply and Sanitation Collaborative Council (2010) reported that the WHO recommended 50-100 l/c/d to meet basic needs and prevent major health concerns. Based on these recommendations, this study categorized quantity of water supply that meets basic needs of drinking, cooking, bathing, sanitation and hygiene. The various responses to each of the categories are presented in Table 3. The lowest weight (1) was assigned to less than 20 l/c/d, while the highest weight (5) was assigned to 110litres and above.

From the responses, 67.51% households used below 50 l//c/d threshold that was recommended by Gleick (1996); with 25.89% of this proportion having below 20 l/c/d, which is needed for basic survival. While 32.48% of the households had 50 l/c/d and above, with only 4.31% of this percentage having 110 l/c/d and above. This trend produced an estimated average of 43 l/c/d water supplies in Yenagoa, which was lower than the 68 l/c/d recorded in Bauchi metropolis (Istifanus 2017). This shows that most households' may find it difficult to meet the required water quantity for their daily domestic needs, which may be attributable to the cost of water, as studies have shown that cost influences quantity of water demanded by households (Howard *et al* 2020; Price *et al* 2021). The inability to get the required quantity of water to meet basic household needs could predispose affected persons to preventable water borne diseases (Howard *et al*, 2020).

4.3.3. Time spent fetching water

Distance to major source of households' water supply was measured using the time it takes to fetch water for a roundtrip including queuing. Time was used as a proxy indicator instead of actual measured distance because of the ease in its determination. In addition, this proxy indicator was also used by the JMP in categorizing the target 6.1 service ladder (WHO & UNICEF, 2021).

From the responses in Table 3, it was revealed that the time spent by 73.35% of households to obtain water from their major source was less than the 30minutes threshold set for basic access by the JMP for a return journey including queuing. However, only 22.33% of this proportion seems to have household water connection, as they spent five minutes and less. While 26.65% households spent more than 30minutes for a roundtrip to their major water source; with 7.87% of the percentage spending above 40minutes. In all, the average time households' spent in obtaining water from their major source was 20.26minutes. Although further improvement is needed to reduce the time spent fetching water by households, however, this average time was better than the 38minutes recorded for Uganda but higher than the 14minutes for Madagascar (Cassivi *et al* 2018). The households that spent over 30minutes in this study may have challenges in meeting the required quantity of water needed in the home because as distance increases, the quantity of water that can be fetched decreases. Such situation may impact negatively on level of sanitation and hygiene activities in the home, which could result to serious health and socioeconomic challenges.

4.3.4. Household's expenditure on water

The expenditure on water was determined using the proportion of household's monthly income expended on water as shown in Table 3. The categorization of expenditure and assigned weight value was guided by the recommendation of the United Nations

Development Programme (UNDP) that household's water budget should not exceed 3% to enable households meet other essential needs (Kayser *et al* 2013). Based on this threshold, less than 2% expenditure was assigned the highest weight value of 5point, while above 7% expenditure was assigned the lowest weight value of 1point, because at this level of water expenditure, low income earners will find it difficult to make provisions for other essential needs. For example, as stated above, households in Yenagoa spend an average of N165 daily (N4,950 monthly), which is 16.5% of households' earning the monthly National Minimum Wage of N30.000 and 5.96% of the average household's monthly income of N83,000, which almost doubled the recommended 3% expenditure threshold. This figure was however lower than the 7% reported in Nsukka (Nnaji *et al* 2013) but higher than the 4% and 3.3% reported in Nebelet and Sebeta towns in Ethiopia, respectively (Mezgebo & Ewnetu 2015; Eridadi *et al* 2021).

From the data, 38.07% households spent 4% and above of their monthly income on water expenditure, with 6.09% of this percentage spending above 7%; while 61.9% spent 3% and below, with 27.92% of this percentage spending less than 2%. The mean monthly household's expenditure on water in Yenagoa was 3.39%, which was higher than the recommended 3% threshold by the UNDP. This implies that households are financially stressed providing water for their domestic uses, which may likely affect the provision of other services.

Table 3: Response to Domestic Water Services Indicators

S/N	Service indicators	Service weight (1-5)	Responses	Percentage
A	**Major domestic water source**			
1	River, dam, lake, pond, stream, canal or irrigation channel (surface water)	1	21	5.33
2	Unprotected springs, dug wells, tanker trucks, carts with small tank/drum	2	99	25.13
3	Boreholes, protected springs, dug wells and rainwater, tube wells	3	200	50.76
4	Piped borne water (located on premises or public tap located outside premises and usually provide intermittent supply)	4	59	14.97
5	Piped borne water (located on premises and continuously available when needed)	5	15	3.81
B	**Quantity of water supply per capita per day**			
6	Less than 20litres per capita per day	1	102	25.89
7	20-49litres per capita per day	2	164	41.62
8	50-79litres per capita per day	3	81	20.56
9	80-109litres per capita per day	4	30	7.61
10	110litres and above	5	17	4.31
C	**Time spent fetching water from major source of supply**			
11	Above 40minutes for a round trip.	1	31	7.87
12	31-40minutes for a round trip	2	74	18.78
13	21-30minutes for a round trip	3	89	22.59
14	6-20minutes for a round trip	4	112	28.43
15	5minutes and below	5	88	22.34
D	**Household expenditure on water (percentage of household monthly income spent on water supply per month)**			
16	Above 7%	1	24	6.09
17	6-7%	2	40	8.88
18	4-5%	3	91	23.10
19	2-3%	4	129	34.01
20	Less than 2%	5	110	27.92

*Service weight: 1, Very low service; 2, Low service; 3, Moderate service; 4, High service; 5, Very high service

Source: Authors' fieldwork, 2021

4.4. Calculated Levels of Households' Domestic Water Services

The DWS model and the data in Table 3 were used to determine the overall level of households' domestic water services in Yenagoa as presented in Table 4. From the table, it was revealed that the total weight values of the four water service indicators ranges from 878points for quantity of water supply per capita per day to 1,443points for household expenditure on water. This means that of the four service indicators, quantity of water supply per capita per day was the least rated and exerts the highest negative effect on the level of domestic water services experienced in Yenagoa; while household expenditure on water had the highest rating and exerts the least negative effect on the water service levels. It was also observed that of the weighted scale (1-5) across the four service indicators, "weight 3" had the highest calculated value of 1383points, while weight 1 had the lowest value of 178points. This implies that more responses indicated moderate service (weight 3) to the various categorized service scales across the four service indicators, while the least responses was recorded for very low service (weight 1). It was therefore not surprising that the calculated dwsi for Yenagoa was 3.04points on a five point scale. Substituting this value into the equation, the calculated households' DWS in Yenagoa was 60.8%. With reference to the interpretation scale of the DWS model as stated in the methodology, households in Yenagoa experienced moderate domestic water services. This clearly show that much still need to be done to improved the water services experienced by households in the city as we move towards the target 6.1 goal.

Table 4: Calculated Rating of Households' Domestic Water Services

Service indicators	nri x (suw1)	nri x (suw2)	nri x (suw3)	nri x (suw4)	nri x (suw5)	Total weigh t	TNR
Major domestic water source	21	198	600	236	75	1,130	394
Quantity of water supply per capita per day	102	328	243	120	85	878	394
Time spent fetching water from major source of supply	31	148	267	448	440	1,334	394
Household expenditure on water	24	80	273	516	550	1,443	394
Total	178	754	1,383	1,320	1,150	4,785	1,576

$$dwsi = \frac{\sum_{i=1}^{n} nri\ (suw)}{TNR} = 4785/1576 = 3.04$$

$$DWS = \frac{dwsi}{hwv} \times \frac{100}{1} = \frac{3.04}{5} \times \frac{100}{1} = 60.8\%$$

5. Conclusion

The study has revealed that households in Yenagoa experienced moderate domestic water services based on the four service indicators used in the study. Although all the service indicators required some level of improvements, however, the quantity of water supply per capita per day was the least rated and exerts negative drag on the water services in Yenagoa. The findings have shown that much work needs to be done to enhance households' water services in Yenagoa by improving on all the service indicators used in the study. With the current levels of domestic water services experienced, Yenagoa might miss the SDG target 6.1 if urgent measures are not put in place to address the poorly rated service indicators.

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