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Analysis of public transport inclusiveness among persons with disabilities before and during COVID-19 in Benin City, Nigeria

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ABSTRACT

There are over one billion people with disabilities (PWDs) worldwide, with 80 percent of these people living in low-income countries (LICs). Globally, COVID-19 significantly impacted various sectors of society, and the public transport sector is no exception. Interestingly, the public transport sector accounts for about 70% of all intra-city travel in LICs. Despite this, policies and practices in the public transport sector rarely identified, understood, and accommodated the mobility needs of PWDs before and especially during COVID-19. The study had a sample size of 203 respondents, which cut across all categories of disability, such as physical impairment, visual impairment, hearing impairment, and learning disabilities such as speech impairment, etc. It adopted mixed-methods research (MMR), and findings revealed that PWDs were significantly excluded from the public transport system before and especially during COVID-19. In order to boost public transport inclusion among PWDs, the study recommends that their mobility needs be identified and prioritized at all levels, including policies, infrastructure, modes, and services, during and post-COVID-19 in Benin City, Nigeria.

Keywords: Public Transport, Inclusiveness, Persons with Disabilities (PWDs), Before & COVID-19, Benin City, Nigeria

INTRODUCTION

There are over one billion people with disabilities (PWDs) worldwide, with 80 percent of these people living in low-income countries (LICs) (DFT, 2021). Public transportation is one of several societal sectors that COVID-19 has had a far-reaching effect on globally (Sogbe, 2021). In this study, the term "public transport" refers to shared passenger transportation services that are available to the general public for a posted fee. The elements of public transport services that are used by commuters without prior reservation include modes such as minibuses, taxis, tricycles, and motorcycles, as well as infrastructure like roads, walkways, crossings, terminals, stops, shelters, lighting, etc. (UN-Habitat, 2018). Approximately 70% of all intra-city travel occurs in LICs using public transportation (Fisher & Robinson, 2018). Intra-city public transportation services were permitted to run in LICs, but only under strict guidelines, in an effort to stop the spread of COVID-19 through transportation. As LICs began to loosen their grip, lifting intra-city travel restrictions, the existing public transportation mode was unable to keep up with demand for public transport services. This has led to overcrowding in bus stops and terminals, increased waiting times, high travel fares, etc., with attendant implications for COVID-19. Interestingly, PWDs have remained conspicuously absent from policies aimed at fostering inclusion, particularly on public transport in LICs. Inclusive public transport is an enabler of access to essential services and sustainable livelihoods, as it is concerned with eliminating socio-cultural and environmental travel constraints among all users, PWDs in particular during COVID-19 (2018; Abdullah, Dias, Muley, & Shahin, 2020; Park & Chowdhury).

Interestingly, the transport needs of PWDs in LICs have not yet been completely understood and given top priority. Existing public transport has been observed to discriminate against PWDs in many areas, such as availability, affordability, reliability, safety, comfortability (user friendliness), etc. Previous studies have revealed a gross public transport inequity among PWDs in Benin City concerning infrastructure design, service accessibility, fare administration, etc. (Park & Chowdhury, 2018; Omirin & Ojekere, 2017). Reduced mobility, employment possibilities, and social contact are only a few of the significant socioeconomic effects of this prejudice (Omirin & Ojekere, 2017). In reality, PWDs are most likely to be among the most disadvantaged and negatively impacted by the COVID-19 pandemic, particularly in LICs. The SDG target 11.2 in particular aims to provide PWDs with safe, cheap, accessible, and sustainable transportation systems by 2030. This target encourages an inclusive public transport approach that focuses on meeting the transport needs of all so that none, especially PWDs, are left behind.

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As COVID-19 continues to have wide-reaching impacts on all facets of human civilization, PWDs have been uniquely impacted in terms of access and inclusion in public transport systems. Essentially, inaccessible and exclusive public transport has been the bane of PWDs, undermining their capability to use available public transport as a mode of travel (ESCAP, 2020). With little to no access to social welfare or security, restricted personal mobility, a variety of underlying health issues, and inaccessible and discriminatory public transit networks, PWDs are likely to be among the urban poorest and most vulnerable during the COVID-19 pandemic. As most LICs begin to ease travel restrictions, current practices in public transport operations are taking a toll on the travel experience of PWDs. For instance, the fare burden is now exorbitantly high; likewise, prolonged waiting time, boarding and alighting challenges, rush hour, overcrowded terminals and modes, etc. (Ajayi, Aworemi, Wojuade, & Adebayo, 2020). Under such mobility constraints, the capability of PWDs to continue to access essential services such as healthcare, groceries, livelihoods, etc. is in doubt. However, inclusive public transport is the process of designing and implementing public road transport systems that are accessible to and inclusive of PWDs (Nwachia, Ogbonnaab, & Wushishia, 2023). It is focused on ensuring that all aspects of the system, from the vehicles themselves to the infrastructure, are accessible to people with a wide range of disabilities.

It is against this backdrop that this research seeks to describe the extent of inclusiveness of PWDs in the public transport system before and during COVID-19, with a view to enhancing inclusive public transport recovery for PWDs in Benin City, Nigeria. The study asked the following research questions: Are there inclusive public transport-related policies for PWDs before and during COVID-19? What were the travel patterns and mobility barriers of PWDs before and during COVID-19? What was the perceived impact of mobility barriers on the sustainable livelihoods of PWDs before and during COVID-19? What strategies or options exist to enhance inclusive public transport recovery for PWDs during and post-COVID-19? It is hoped that the evidence from this study will help stimulate discourse on enhancing inclusive public transport for PWDs in LICs.

Review Literature

Due to the unabated rise in transmission of the COVID-19 virus globally, on March 30, 2020, the Nigerian federal government imposed a state-wide lockdown (Ibrahim, Ajide, & Julius, 2020). This was done. This was subsequently introduced to all other states in the federation. As part of measures to enhance the effectiveness of the lockdown, interstate travel was banned on Thursday, April 23, while intra-city public transport operations were initially asked to operate at 50% carrying capacity and later 60%, amidst strict adherence to physical distancing regulations and sanitary practices of hand washing, hand sanitizers, temperature checks (Presidential Task Force on COVID-19, 2020), etc. Public transport operating time was restricted to the hours of 8 a.m. to 4 p.m., while drivers and commuters were required to wear nose guides or masks in transit (Adamu, 2020). The lockdown could not be maintained, nevertheless, due to the mounting public unrest brought on by the agonizing socioeconomic effects of the COVID-19 epidemic, which led to its lifting on May 4, 2020 (Ajide, Ibrahima, & Alimi, 2020). By June 30, 2020, the interstate travel ban had been lifted, allowing public transport to move freely between states. Similarly, public and private schools will reopen by the end of September 2020 (WHO, 2020). As of November 25, 2020, Edo State, with its administrative capital in Benin City, had 2,696 confirmed cases of COVID-19, 16 new cases, 2,569 discharged cases, and 111 deaths, ranking second only to Lagos State (Nigeria Centre for Disease Control, 2020). In this same vein, the president of Ghana issued a partial lockdown via broadcast on March 30, 2020, at 1 a.m., 48 hours after the report of the COVID-19 outbreak. Due to the partial lockdown, residents of Greater Accra and Greater Kumasi had to remain at home for the subsequent two weeks. Additionally, passengers were not allowed to travel by public transport between Ghana's hinterlands and restricted zones (Asante & Mills, 2020; Sogbe, 2021). 323 fatalities have been reported out of a total of 51,667 confirmed cases (Ministry of Health, 2020).

It's interesting to note that COVID-19 has significantly disrupted the public transportation system in LIC cities, including Benin City, Nigeria. Disruptions to PWDs' current mobility options have far-reaching implications. Mogaji (2020), for instance, noted that in Lagos, the cost of transportation increased while there was a shortage of transport modes. Such negative impacts were found to have affected all users of public transport, including PWDs. Similarly, across Kenya and Bangladesh, between 92% and 100% of respondents were negatively impacted by COVID-19, partly due to limited transport and restricted movement, among others (i2i Innovation to Inclusion, 2020). From this survey, it is abundantly clear that PWDs experienced higher levels of exclusion and isolation during COVID-19, partly due to exclusionary public transport responses. Financial strains brought on by the COVID-19 pandemic may disproportionately impact households with disabled members (Banks, Davey, Shakespeare, & Kuper, 2021). In the same vein, PWDs may be more susceptible to catching COVID-19 due to physical accessibility issues with personal hygiene tools like hand washing sinks and water pumps, as well as hurdles to receiving public health information on prevention strategies and response services.

Across most LIC cities, the capacity and/or ability of PWDs to lead an independent life is largely dependent on accessible, inclusive, and sustainable public transport. For PWDs who do not own or are able to drive a car, public transport remains the most common mode of travel for accessing places of opportunity or interest. Seen in this light, the public transportation system is accessible when PWDs can easily make use of it to reach places of interest, including work, school, the market, etc., without being restricted by physical, financial, or safety concerns (Julius, 2020). In a similar vein, an inclusive public transport system describes modes of transportation and design that cater to all travelers' requirements, including those of people with

disabilities (PWDs) (Nwachia, Ogbonnaab, & Wushishia, 2023). Accessible and conveniently designed public transport vehicles are essential to making public transport inclusive among PWDs in LICs. This is so because it makes it easier for PWDs to board, alight, and sit in public transport vehicles (Ipingbemi, 2015). Similarly, a universal design approach to public transport infrastructure and furniture is equally vital for inclusive public transport among PWDs. PWDs need accessible public transport infrastructure and furniture such as curbs and ramps, audio/visual communication, guided handrails, tactile markings, rest shelters, etc., in order to ensure effective inclusive public transport. While the transport needs of PWDs may differ according to the typology of disability, it is expected that such needs should be adequately factored in from the outset of the design of public road transport infrastructure. Previous research in low-income countries (LICs) has repeatedly shown that PWDs are completely or partially denied access to public transportation because of infrastructure that is not inclusive, which results in unequal access to public transport services (Ak, Atuahene, & Agyekun, 2017; ECLAC, 2020; Omirin & Ojekere, 2017). In the fight for civil rights and equal opportunity for PWDs, transport equity is crucial. PWDs can access significant opportunities in education, work, health care, housing, and community life with the help of an inexpensive, dependable, and safe transport infrastructure. Unfortunately, current investments in the infrastructure of public transportation, particularly in LICs, have disproportionately benefited personal motorization, leaving those who cannot afford personal motorization, such as PWDs, with few practical transportation options (Omirin & Ojekere, 2017). For populations that depend on public transport or other forms of travel, regardless of gender, age, disability, etc., it is necessary to provide adequate transport services that are more accessible and inexpensive. This position is made even worse by the global public health crises brought on by the COVID-19 pandemic, which have a triple-harmful effect on PWD inclusion and accessibility to public transportation in LICs.

METHODOLOGY

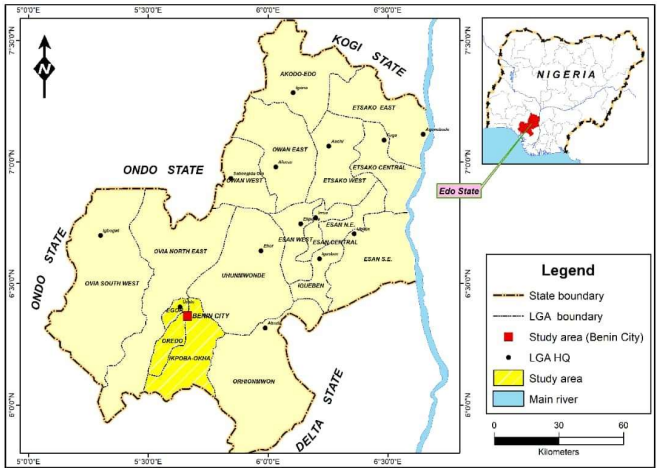
To achieve the research's aim and question, a mixed-methods approach (MMR) was used. According to Ing, Vento, Nakagawa and Linton (2014), and Velho (2019), the MMR is an approach to inquiry that integrates quantitative and qualitative research methodology to address research issues in a single study. The fundamental tenet of this strategy is that it enables a more thorough use of data. In other words, MMR allows researchers to get more insight into how people experience the events they are studying.

This research adopts a cross-sectional research design. This research design enables researchers to collect data about a population at a time and make inferences from such data. The target population for this research is PWDs that reside in Benin City, Edo State, Nigeria. Benin City is the study area and location for this research because it has the highest urban population of PWDs. Geographically, Benin City lies within latitudes 6026N and 6031E and longitudes 5035E and 5041E. It consists of four (4) urban local government areas (LGAs), namely: Oredo, Ikpoba-Okha, Egor, and Ovia North East, as shown in figure 1.

Sampling technique

The research participants were chosen using the purposive sampling method. Two PWD associations, namely the Joint National Association of Persons with Disabilities (JONAPWD) and the Edo State Association of Hearing and Speech Impairment, Benin City, Nigeria, were purposefully selected. Interestingly, a representative sample of the study population can be found in these two associations, and as a result, the sample frame for the study was determined. These associations allowed for the sampling of respondents who met the eligibility requirements for study participants, which are persons living with disabilities. For this study, PWDs were divided into four categories. This includes people who are physically disabled, visually or audibly challenged, or who have learning or communication disabilities. Twenty-three (203) respondents in total took part in the study.

Figure 1: Study Area, Benin City, Nigeria



Instrument for data collection

This study adopted a well-structured questionnaire, a focus group discussion, and a key informant interview (KII) guide for data collection. The structured questionnaire was used to obtain quantitative data from the respondents, while the FDG guide was utilized to elicit qualitative data from the respondents. Two (2) sessions of FGD were held with respondents, which included one respondent each from the physically impaired, visually impaired, and hearing/speech impaired. The quantitative and qualitative data were collected from PWDs at the meeting venue of two associations identified for the study. KII was utilized to elicit information from one (1) key informant identified from the Department of Transport, Ministry of Infrastructure, Edo City Transport Service (ECTS), and private road transport unions: the Nigerian Union of Road Transport Workers (NURTW), Benin City, Nigeria. The datasets obtained from the field survey were coded and analyzed using SPSS and Atlas Ti. Descriptive and inferential statistics were used to explain the general characteristics of respondents and generate findings for appropriate public transport response and recovery for PWDs amidst COVID-19.

RESULT

Socio-demographic characteristics

Table 1: Categorization of disability among respondents

Characteristics		*f*	%
LGAs of residence	Egor	41	20.2
	Ikpoba-Okha	46	22.7
	Oredo	96	47.3
	Ovia North-East	20	9.9
Classification of disability	Physically impaired	77	37.9
	Visually impaired	51	25.1
	Hearing impaired	60	29.6
	Learning/speech impaired	15	7.4
Cause of disability	Birth	71	35.0
	Poliovirus	75	36.9
	Road crash	28	13.8
	A disease of the eye	12	5.9
	Others	17	8.4
Length of disability	Since birth	83	40.9
	below 1 year	6	3.0
	1 - 5years	39	19.2
	6 - 10years	12	5.9
	10 – 15 years	28	13.8
	16 years and above	35	17.2
Travelling status	Travel dependent	87	42.9
	Not travel dependent	116	57.1

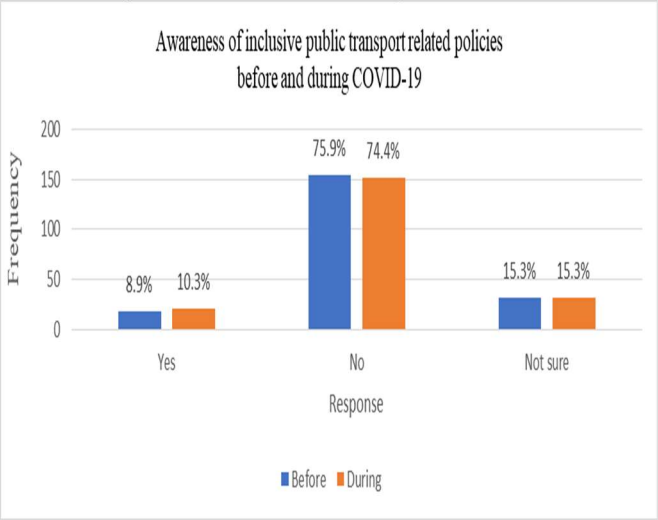
Table 1 shows disability prevalence across the study area indicated that there were more physically impaired people at 37.9%, followed by hearing impaired people at 29.6%, visually impaired people at 25.1%, and learning and speech impaired people at 7.4%. A greater percentage of respondents had a disability from poliovirus and birth-related complications, which can be attributed to poor sanitary conditions and healthcare facilities at a tender age. Despite their disability, a higher percentage of the respondents were able to make independent daily travel arrangements, while below, half of the respondents depended on someone else (a caregiver) to travel daily.

Table 2 shows the socio-demographic characteristics showed that 51.7% of respondents were male and 48.3% were female, while 93.1% were below age 49 and below. 37.4% of the respondents had the highest educational level, which was secondary, technical, or grade II education. Also, 41.4% of the respondents were unemployed, while an additional 15.3% were employed in the informal sector of the economy. 82.7% of the respondents earn below the minimum wage in the country, which is 30,000 Naira, an indication that the majority of the respondents live below the poverty line.

Table 2: Socio-demographic characteristics of respondents

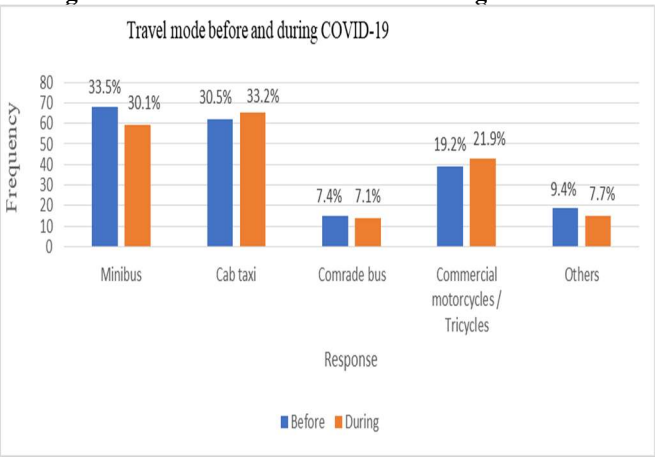
Characteristics		***f***	**%**
Gender	Male	105	51.7
	Female	98	48.3
Age in years	18 - 29 Years	64	31.5
	30 - 49 Years	125	61.6
	50 - 69 Years	14	6.9
Marital status	Single	123	60.6
	Married	69	34.0
	Divorced	5	2.5
	Widow/Widower	6	3.0
Highest educational level	No formal education	25	12.3
	Primary school	42	20.7
	Secondary/Technical/Grade II	76	37.4
	NCE/OND	24	11.8
	University	29	14.3
	Postgraduate	7	3.4
Occupation	Unemployed	84	41.4
	Artisans/Self-employed	31	15.3
	Private employment	40	19.7
	Public service	34	16.7
	Pensioners	1	.5
	Begging	6	3.0
	Others	7	3.4
Monthly income	Below 10, 000 Naira	106	52.2
	10, 000-20, 000 Naira	40	19.7
	20, 000-30, 000 Naira	22	10.8
	30, 000-40, 000 Naira	14	6.9
	40, 000-50, 000 Naira	10	4.9
	Above 50,000 Naira	11	5.4
Household size	1-2	74	36.5
	3-5	97	47.8
	6-8	24	11.8
	Above 8	8	3.9

Figure 2: Awareness of inclusive public transport related policies before and during COVID-19



A higher percentage of the respondents (74.4%) were not aware of inclusive public transport-related policies either before or during COVID-19.

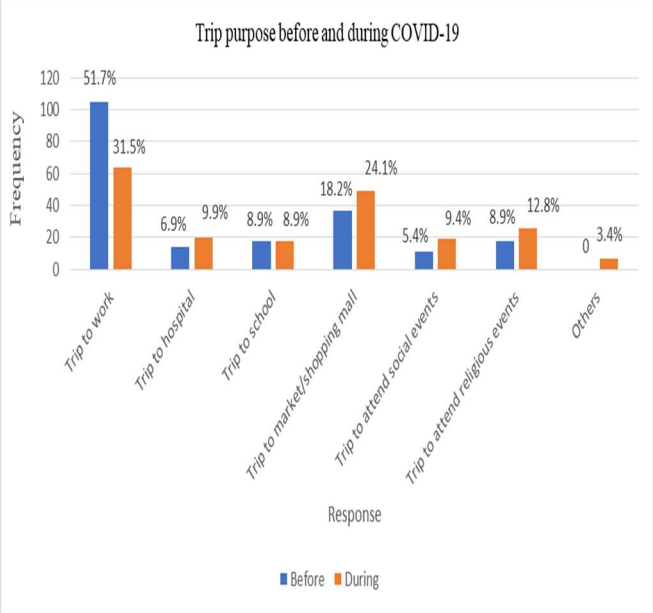
Figure 3: Travel mode before and during COVID-19



As shown in figure 3, the most commonly used travel mode among respondents before COVID-19 was minibus (33.5%), while taxicabs (30.1%) were preferred during COVID-19. This result showed that a significant percentage of the respondents opted for a taxicab during COVID-19. The FGD result further supported these findings;

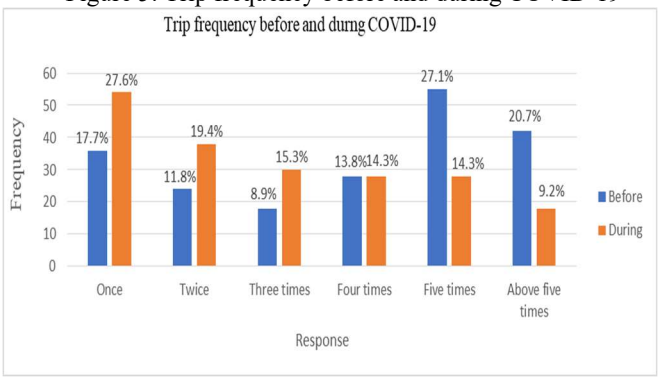
''I mostly use the public buses for me to travel to any place of my destination'' FGD: speech impaired (2021).

Figure 4: Trip purpose before and during COVID-19



As shown in figure 4, there was a significant difference in the daily trip purpose—which in this study indicates a one-way trip—of the respondents before and during COVID-19. A higher percentage of respondents (51.7%) made more trips to work before COVID-19, while during COVID-19 it dropped to 31.5%, which gave a 39% reduction in trips to work during COVID-19. Also, trips to markets and shopping malls increased significantly from 18.2% to 24.1% during COVID-19. This led to a 32% increase in trips to markets and shopping malls during COVID-19.

Figure 5: Trip frequency before and during COVID-19



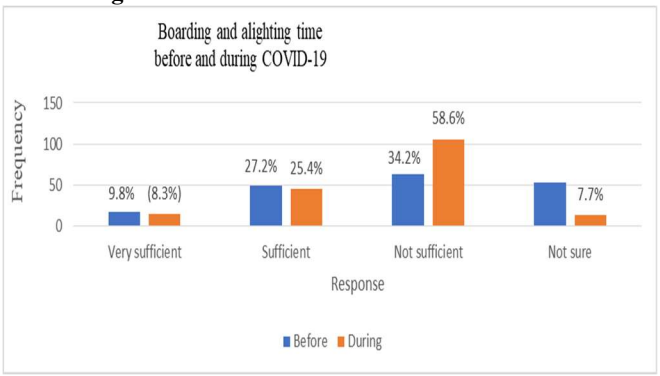
The trip frequency of the respondents per week before COVID-19, as shown in figure 5, reveals that a higher percentage of the respondents (27.1%) made at least five trips in a week, compared with 27.6% who made one trip during COVID-19.

Table 3: Travel cost before and during COVID-19

Characteristics	Before		During		t (df)	p
	Mean	S.D.	Mean	S.D.		
Daily cost of travel	436.11	293.91	527.14	321.08	-4.995 (174)	.000

Daily travel costs using public transport modes before and during COVID-19, as shown in Table 3, show that the T-test computation is significant. With a P-value of 0.000, this indicates that there was a significant difference in the daily travel of the respondents before (293.91) and during COVID-19 (321.08). Therefore, daily travel costs were significantly higher among the respondents during COVID-19 in Benin City, Nigeria

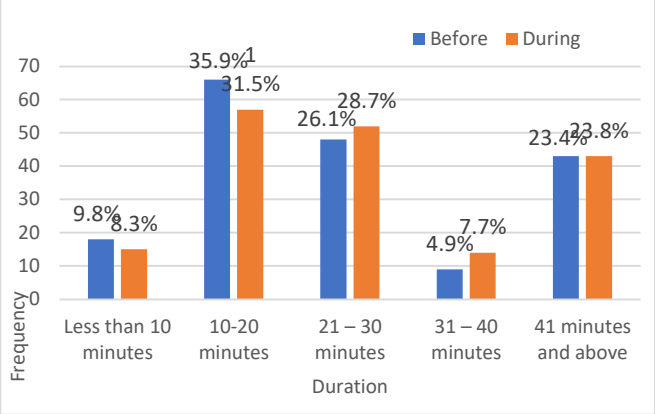
Figure 6: Boarding and alighting time from public before and during COVID-19



As shown in figure 6, 34.2% of the respondents indicated that both boarding and alighting times were not sufficient before COVID-19, while during COVID-19, this rose to 58.6%. This resulted in a 24.4% decrease in boarding and alighting times during COVID-19. Secondly, most respondents mentioned the absence of ramps, especially on the higher, bigger buses. Lastly, some drivers don't like to pick up and create space for PWDs. Sometimes co-passengers stigmatize PWDs. The FGD result further supported these findings:

''There is the absence of ramps in most of these vehicles, especially the high ones and the bigger buses, and then the inability of the drivers to stop for you because of your disability, not wanting to carry you and then creating space for you. Sometimes even some co-passengers stigmatize you and also restrict your access to all these vehicles or spaces because people believe that because of your visual impairment or disability, some of them will not want to be close to you or assist you. These are some of the difficulties we face.'' FGD: visually impaired (2021).

Figure 7: Waiting time for public transport mode before and during COVID-19



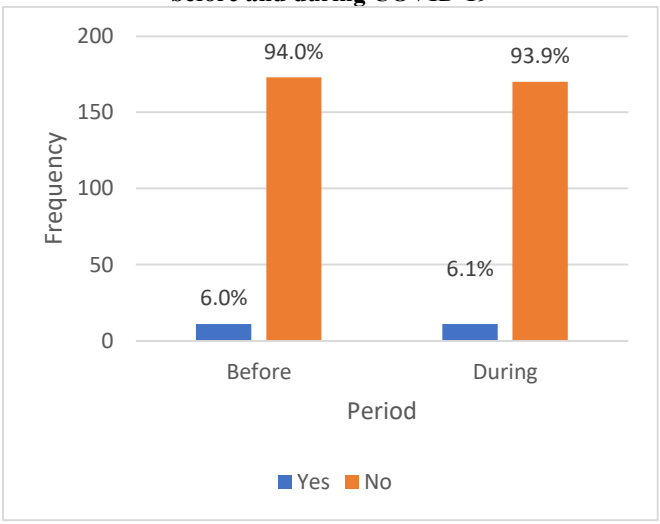
As shown in figure 7, a higher percentage of respondents 90.3% spent above 10 minutes waiting for public transport service before COVID-19, whereas 91.7% spent above 10 minutes waiting for public transport service during COVID-19. This revealed that there was a 0.8 percent increase in waiting times for public transport services during COVID-19. This waiting time is considered too long in view of the frail physical nature and underlying health conditions of some of the respondents across the city. The FGD result further supported these findings;

''Most times when I wait for public transport, it does not come on time, and when it comes, it is quickly occupied with other passengers, leaving me behind.'' FGD: visually impaired, (2021).

Availability of public transport service before and during COVID-19

In the same vein, 53.3% of the respondents reported that the availability of public transport modes was low before COVID-19, compared with 63.5% during COVID-19. This led to an 8.7% reduction in the availability of public transport during COVID-19. Besides, the design of public transport modes such as minibuses, taxicabs, etc. did not meet the needs of 88% of the respondents before COVID-19, and this increased to 91.7% during COVID-19. 57.1% of the respondents were not satisfied with access to the bus terminals, stops, and travel information before COVID-19, and this increased to 64.1% during COVID-19. More so, provision was not made for dedicated or special seating space reservations for 93.9% of the respondents on public transport before and during COVID-19.

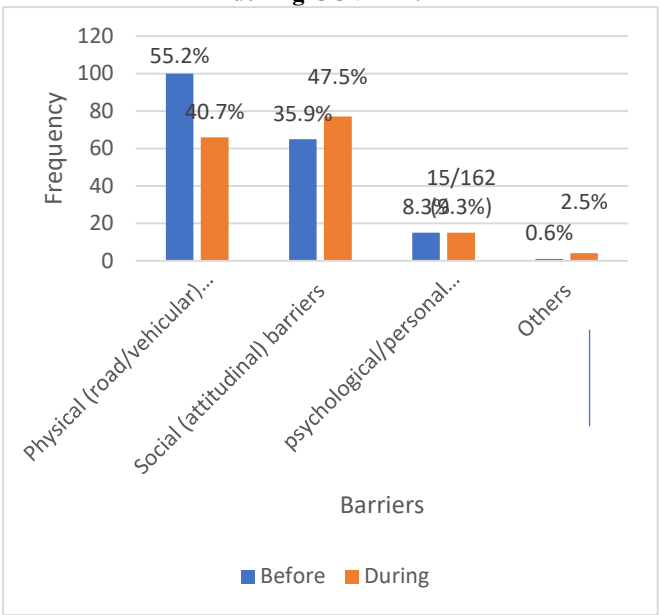
Figure 8: Dedicated seat reservation in public transport before and during COVID-19



As shown in Figure 8 as, 94% of respondents did not have dedicated seat reservation in public transport mode before COVID-19, while during COVID-19, 94% did not have. This finding was corroborated by KII:

"We don't have those kinds of buses among our fleets and also when PWDs enter our vehicle they are mostly at the mercy of the drivers" KII – Representative of Edo City Transport Service, (2021).

Figure 9: Mobility barriers experienced before and during COVID-19



As shown in figure 8, a higher percentage of the respondents (55.2%) reported that they experienced physical or design barriers in their use of public transport before COVID-19, whereas during COVID-19, a higher percentage of the respondents (47.5%) reported that they experienced social or attitudinal barriers.

Table 4: Perceived effect of public transport exclusion on sustainable livelihoods

Contributions of public transport to sustainable livelihood of respondents before and during COVID-19		Before COVID-19		During COVID-19	
		N=183	%	N=177	%
Ability to move around and generate income	Low	113	61.7	151	85.3
	Moderate	45	24.6	18	10.2
	High	25	13.7	8	4.5
Ability to go, search for and secure employment	Low	108	59.0	157	88.7
	Moderate	52	28.4	14	7.9
	High	23	12.6	6	3.4
Ability to secure better education and training	Low	102	55.7	148	83.6
	Moderate	50	27.3	21	11.9
	High	31	16.9	8	4.5
Ability to participate in community development	Low	95	51.9	139	78.5
	Moderate	53	29.0	29	16.4
	High	35	19.1	9	5.1
Ability to invest in economic opportunities/saving	Low	95	51.9	143	80.8
	Moderate	56	30.6	22	12.4
	High	32	17.5	12	6.8
Ability to secure better health care	Low	76	41.5	128	72.3
	Moderate	72	39.3	37	20.9
	High	35	19.1	12	6.8
Ability to engage in social network and community relations	Low	75	41.0	123	69.5
	Moderate	59	32.2	26	14.7
	High	49	26.8	28	15.8

As shown in Table 4, the lack of inclusion in public transport affected the sustainable livelihoods of over 70% of the respondents before and during COVID-19 in Benin City, Nigeria.

Discussion

From the results, it can be seen that existing public transport policies across the study area have largely focused on meeting the mobility needs of non-disabled users, while those of PWDs have consistently been neglected with respect to public transport infrastructure design, mode design, accessibility, cost, convenience, safety, etc. Interestingly, the study abundantly revealed that PWDs were neither aware of inclusive public transport policies before nor during COVID-19. For instance, the study reveals that 8.9% were aware of the existence of an inclusive public transport-related policy, while 75.9% mentioned that they were not aware of such a policy, whereas 15.3% were not sure before COVID-19. However, during COVID-19, 10.3% said they were aware of inclusive public transport-related policies, whereas 74.4% mentioned that they were not aware of such a policy, and 15.3% were not sure whether public transport was inclusive. With this, it is abundantly clear that a higher percentage of respondents were not aware of inclusive transport-related policies either before or during COVID-19 in Benin City, Nigeria. More so, the mobility needs of this group of people were not prioritised in public transport-related policies, particularly during COVID-19 in Benin City. This outcome is supported by prior research by Eleweke and Ebenso (2016), who discovered that the majority of Nigerian cities lacked evidence of the implementation of the UNCRPD policy's accessibility component. Likewise, the finding also agreed with Vanderschuren and Nnene (2021), which stated that traditional public transport policies required amendments in order to accommodate the mobility needs of PWDs. In the key informant section with a representative of Edo City Transport Service, it was likewise revealed that there were no ‘‘special mobility plans’’ made for PWDs during COVID-19. ‘‘All the plans made were general for everybody, including people with disabilities, like sanitizer and others that were used for everybody.’’

The respondents' travel patterns also changed considerably before and during COVID-19. Respondents in Benin City made more trips to essential services such as markets and grocery stores and fewer trips to their places of employment compared to before the COVID-19 pandemic outbreak. Additionally, the respondents' trip frequency was much lower during COVID-19. This finding is supported by Abdullah, Dias, Muley, and Shahin (2020), who discovered that during COVID-19, most people made more necessary trips to markets and shopping centres. Interestingly, minibuses were the most often used form of transportation among respondents before COVID-19, but taxis, commercial motorbikes, and tricycles were favoured modes of transportation during COVID-19 because they were widespread and provided a sense of travel independence for respondents. Public transport service was largely unavailable and unreliable for PWDs before COVID-19, which grew worse during COVID-19. The unique peculiarity of PWDs meant that they were largely unable to compete for the few stocks of public transport modes that were available during COVID-19. This meant that PWDs were largely excluded and had no access to places of interest before and especially during COVID-19. Daily travel costs were significantly higher among the PWDs during COVID-19 in Benin City, Nigeria. More so, a substantial number of respondents did not have dedicated seat reservations in public transport mode before and during COVID-19, which contravened the principle of equity in public transport. During the KII section session with a representative of ECTS, he affirmed that there was no fare reduction for PWD commuters in the city. ‘‘There is no cost consideration for them for now; we don’t because we are operating a card system. Even with that, in the type of society we are in, if that variation is there, you will see people who are not physically challenged go and get it’’.

More so, public transport modes did not meet the universal design standards required for easy boarding and alighting among PWDs before and during COVID-19, which implied that the mode was largely usable for trip purposes among PWDs. Likewise, a higher percentage of the respondents were not satisfied with the level of accessibility to bus terminals, stops, and travel information before and especially during COVID-19. Besides, a higher percentage of the respondents spent 10 minutes or more waiting for public transport before and during COVID-19. Despite this, there was no provision made for dedicated or

special seating space reservations for a higher percentage of the respondents before and during COVID-19 in Benin City, Nigeria. Also, a higher percentage of the respondents were dissatisfied with the level of service provided by public transport staff before and during COVID-19 in Benin City, Nigeria. Equally, a higher percentage of the respondents experienced social barriers in terms of cost, the negative and unsupportive attitude of transport staff, including drivers and their assistants, and from co-passengers and commuters during COVID-19. During the FGD session, this result was further buttressed. ''Usually it is not easy at all. For instance, on Sunday, when I carried my baby while standing at the bus stop, some bus conductors started looking at me as if I were a witch, thinking that it was because of my wickedness that I became a PWD. Sometimes I waited up to three hours before getting a vehicle to convey me to my destination.''

Besides, a lack of inclusive public transport affected the sustainable livelihoods of a greater percentage of the respondents before and during COVID-19 in Benin City, Nigeria. For instance, before COVID-19, 61.7% of respondents could not move around on public transport and generate income, while during COVID-19, this rose to 85.3%. Similarly, before COVID-19, 59% of respondents could not move around on public transport to search for and secure employment, while during COVID-19, this amounted to 88.7%. Likewise, before COVID-19, 55.7% of respondents could not move around on public transport to secure better education and training, while during COVID-19, this amounted to 83.7%. In this same vein, 51.9% of respondents could not move around on public transport in order to invest in economic opportunities or savings before COVID-19, while during COVID-19, this amounted to 80.8%. Equally, before COVID-19, 41% of respondents could not move around on public transport to engage in social networking and community relations, while during COVID-19, this amounted to 69.5%. Furthermore, 41.5% of respondents could not move around on public transport to secure better healthcare before COVID-19, while during COVID-19, this amounted to 72.3%.

A needs-based approach to inclusive public transport policy is proposed to aid the rapid recovery of PWDs during and post-COVID-19. More so, accessible, inclusive, and safe public transport modes will no doubt play a vital role in boosting PWDs' access to COVID-19 vaccines, essential services, and sustainable livelihoods during and post-COVID-19. While many LIC cities, including Benin City, may continue to experience a sporadic wave of COVID-19, sustained efforts are required to boost the access, inclusion, and safety of PWDs in public transport modes, terminals, and stops.

Policy recommendations

Based on the results and discussions, the following policy recommendations have been proposed.

The government should identify and mainstream the mobility needs of PWDs into current and future public transport policy formulation and implementation across the city.

A dedicated seat area should be created in the government-owned and operated public mass transit scheme, Edo, across the city for PWDs during and post-COVID-19. When enforced, it will help to address the current inequity in access to public mass transit experienced by this group of people.

Paratransit travel services, such as tricycles and motorcycles, should be strengthened to thrive, as they pose the capability of providing independence of travel for PWDs during and post-COVID-19.

Transport fare support and subsidies should be introduced for PWDs in the state government-owned public transport system during and post-COVID-19 in Benin City. This can be a full or partial subsidy for the cost of travel. This will help to reduce the burden of travel fares among PWDs and also improve their accessibility to sustainable livelihood opportunities during and post-COVID-19.

Training of public transport staff including drivers and assistants on the mobility needs of PWDs should be prioritized during and post-COVID-19. Minimum standards that should govern the operations of drivers with respect to PWDs should be agreed upon, as should penalties for defaulters.

Conclusion

From the results, discussion, it is worth noting that PWDs were excluded from public transport before and during COVID-19 in Benin City, Nigeria. In view of this, there is an urgent need to prioritise the mobility needs of PWDs at the policy, planning, and operational levels of the public transport system in Benin City, Nigeria. This will enhance the capabilities of PWDs to actively participate and take advantage of socio-economic opportunities that may boost their livelihood assets during and post-COVID-19 in Benin City, Nigeria.

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Conflicts of Interest

The authors declare no conflicts of interest

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