



The effects of COVID19 on public and paratransit drivers in developing countries: A case study of Bangladesh and Nigeria

Zahara Batool^{a,*}, Chinebuli Uzundu^b, Md Mohaimanul Islam^c, Farzana Rahman^d, Zia Wadud^e

^a Institute for Transport Studies, University of Leeds, UK

^b Federal University of Technology, Owerri, Nigeria

^c University of Asia Pacific, Bangladesh

^d United International University, Bangladesh

^e Institute for Transport Studies, and School of Chemical & Process Engineering, University of Leeds, UK

ARTICLE INFO

Keywords:

Drivers
Vulnerability
Inequality
Pandemic
Paratransit
Public transport
Developing countries

ABSTRACT

Introduction: Public and paratransit services in low- and middle-income countries were severely hit by COVID-19 and related mitigation measures. This has affected both passengers and service providers. While there is now an abundance of studies investigating the effects on passengers, the literature on the impacts of the pandemic on drivers or service providers is scarce. As such, this study investigates the implications of the pandemic for commercial passenger vehicle drivers in the global south taking one South Asian country (Bangladesh) and one African country (Nigeria) as case study countries.

Methods: The study employed Interpretative Phenomenological Analysis (IPA) qualitative approach to explore and explicate the subjective experiences of drivers using semi-structured interviews. Using purposive sampling technique, thirty participants were recruited between March and April 2021. The recorded interviews were transcribed and thematically analysed using NVivo software.

Results: The analyses identify key challenges faced by drivers into five distinct themes including personal and social, physical, and operational, health and wellbeing, governance and regulation, and bad enforcement and policing related challenges. Participants reported immense hardship due to the bans on operations and lack of passengers, eliminating or reducing their only opportunities for earning a livelihood. There was a consensus among participants that they were abandoned by their governments during the pandemic and were left with no other choice than to work in risky situations. They either had to use the little savings they had or borrow money to feed their families, further reducing their opportunities for the future. Apart from facing reduced income, debt crisis, and unsustainable workload challenges, drivers reported mental health consequences of the pandemic including depression, suffering anxiety, fear of risk infection and helplessness.

Conclusions: This research concludes the impacts of the COVID-19 outbreak and its following containment measures on the health and wellbeing, personal and working lives of public and paratransit drivers in developing countries are substantial. The pandemic has seriously affected transport workers, which also amplified earlier inequalities. Development of non-discriminatory

* Corresponding author.

E-mail addresses: Z.Batool@leeds.ac.uk (Z. Batool), chinebuli.uzondu@futo.edu.ng (C. Uzundu), mohaimanulrifat@gmail.com (M.M. Islam), farzana@ce.uui.ac.bd (F. Rahman), Z.Wadud@leeds.ac.uk (Z. Wadud).

<https://doi.org/10.1016/j.jth.2023.101749>

Received 30 August 2023; Received in revised form 4 December 2023; Accepted 11 December 2023

Available online 23 December 2023

2214-1405/© 2024 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

policies, fair and stringent enforcement, and provision of targeted financial support along with awareness raising campaigns are essential to reduce the effect pandemic had on drivers.

1. Introduction

Occupational health and transport focused social research has a long history of studying the vulnerabilities of formal and informal public transport drivers revealing the growing threat to the wellbeing of drivers in the sector due to job related stresses, increased road traffic, violent passengers, police harassment, criminal extortion, job insecurity, low incomes, discrimination, and no access to social security (e.g., see [John et al., 2006](#); ITF, 2017). However, the COVID-19 pandemic has once again exposed the fragility of the sector and its working force. Public transport services brought major concerns for spreading novel Coronavirus among people, often more significant than other transportation means. The measures taken by governments worldwide to limit the spread of the virus including partial or full lockdown by April 2020, reduced seating capacity, along with fear of contracting the virus among passengers affected approximately 90% of the world's population ([Gössling et al., 2020](#)), reduced mobility to the minimum ([Fielbaum et al., 2023](#)) and resulted in low ridership ([Jenelius and Cebecauer, 2020](#); [Rasca et al., 2021](#)). The effect of these measures has challenged the resilience of public transport use and is anticipated to lead to a long-lasting reduction in public transport demand in future ([Sung and Monshauer, 2020](#); [Wang et al., 2022](#)), as fewer people are travelling than before the pandemic ([Anable et al., 2022](#); [Zafri et al., 2023](#)). [Zavareh and Mehdizadeh \(2022\)](#) and [Ansari et al. \(2023\)](#) highlight circumstantial effects of some of the measures such as wearing of facemask or taking antivirals while travelling increase in risk perception and psychological stress. [Zavareh and Mehdizadeh \(2022\)](#) further suggest that demand for public transport can be reinforced by adopting effective risk communication strategies which can also work to increase public support for COVID-19 related measures in public transport.

In the case of low and middle-income countries (LMICs), it is becoming increasingly clear that transport disruptions have imposed severe challenges which consist of informal and privately owned, uncoordinated transport services. Significantly reduced ridership, dense and poorly equipped buses, and an over-concentration of the population in large-sized developing cities are identified as some key concerning factors that are likely to hamper the future viability of these services in developing and emerging economies (see [Bird et al., 2020](#); [Dixon, 2020](#)). The consequences of this for both low-income vulnerable users of these services and drivers, who are often self-employed and do not have robust financial protection, are expected to be large.

Although, the full range of impacts of COVID-19 will unfold over time. In mainstream transport research, most of the studies have contributed to understanding how the pandemic has impacted public transport operations and investigated its implications for end users i.e., passengers e.g., [Mogaji \(2020\)](#) in Nigeria, [Bhaduri et al. \(2020\)](#) and [Das et al. \(2021\)](#) in India, [Abdullah et al. \(2022\)](#) in Pakistan, and [Jamal et al. \(2022\)](#) and [Zafri et al. \(2023\)](#) in Bangladesh. However, there are not many studies investigating the effects of outbreak response strategies on the lives of public and (informal) paratransit drivers (collectively termed as public transport drivers for this study) in these countries. Although, there is a growing consensus that transport workers, in particular, those working in the informal sector in LMICs have been hit hard due to the closure of public transport services ([Fielbaum et al., 2023](#)). Some of the reported impacts for paratransit drivers are loss in working hours, increase in operating kilometres, and reduction in daily ridership compared to the pre-COVID19 scenario ([The Urban Catalysts, 2021](#)), with some reports of drivers reverting to begging on the streets, too ([Calling, 2021](#)). Yet, the detailed account of drivers' lived experience due to economic and health crisis provoked by the pandemic is still missing, highlighting a gap in the understanding of the issues faced by these workers. More recently, [Fielbaum et al. \(2023\)](#) reported the health and economic repercussions of the pandemic on public transport, ride-hailing and delivery drivers in Chile using a self-administered online survey. All three groups of drivers in the study were found extremely concerned about the health and financial effects of the pandemic and reported general decline in job satisfaction. [Lemke et al., \(2020\)](#) reported similar pattern of increase in drivers' chronic stress exposure in the United States. The researchers highlighted the potential consequences of these stressors are linked with increased likelihood of sleep disorders, fatigue, and roadway crashes.

Nonetheless further, in-depth understanding of the impacts of the pandemic and associated lockdown rules on drivers in the context of diverse transport modes in different countries is required. Such investigations are also required as these vulnerable drivers were not only economically affected by reduced passenger demand but were responsible for compliance with safety protocols. In this context, the primary aim of this paper is to give better visibility to the challenges faced by public transport drivers during the pandemic and to understand the implications of the pandemic on public transport drivers at both personal and professional levels. The work provides an early insight from interviews conducted with the drivers in Dhaka (the capital city of Bangladesh: BD) and Owerri (the capital of Imo State in Nigeria: NG) to understand how the pandemic has impacted their lives during the COVID-19 related disruptions. To the best of our knowledge, the issue is still an under-researched area, as most COVID-19 related studies so far looked at the economic consequences of the pandemic on public transport and travel behaviour changes but not holistically its implications for people who provide these services. The paper is organized as follows. Section 2 introduces the two case study cities; section 3 describes the data collection and qualitative analysis methods. Section 4 describes the results and discusses them in the context of literature. Section 5 concludes.

2. Overview of the case study countries

Most urban passenger transport in both Asia and Africa is informal (ITF, 2017), dominates cities in the global south and did not stop completely during the pandemic ([Surico, 2021](#)). Likewise, public transport in both case study cities is underdeveloped and is quite different from the organised public transport available in developed countries, and as such requires special attention as discussed

below.

2.1. Dhaka, Bangladesh

Dhaka has a population of over 16.8 million as of 2021 and 465 square kilometres of built-up land area. The city is the centre of Bangladesh's economy, contributing to about 15% of the national Gross Domestic Product (GDP) (Revised Strategic Transport Plan [RSTP], 2015). The city's urban transportation depends on road transport vehicles like cars, buses, paratransit (like laguna, autorickshaws, pedal rickshaws), motorcycles, bicycles etc. Being the cheapest among all public transport, a bus is the main mode of transport for Dhaka dwellers. Bus fare is much cheaper than paratransit like autorickshaws. Inside Dhaka, the average travel fare on a bus is BDT 31 (0.36USD) and the autorickshaw fare is BDT 194 (2.24USD) (RSTP, 2015). Despite lower travel cost, its lower frequency and road congestion hinder its popularity. People rely on three-wheeler autorickshaws (locally known as CNG) or ridesourcing motorcycles for fast travel and door-to-door service. During the pandemic, autorickshaws played a significant role in safe passenger transport. However, in an autorickshaw, two to three people can travel at once which makes it an expensive transport mode for single-person travel. On the other hand, due to lower costs in terms of vehicle ownership and fuel costs, the well-off prefer to own a motorcycle rather than a passenger car in Bangladesh (Kamal and Ahsan, 2018). At the same time, the emergence of motorcycle based ridesourcing services in the city has rapidly increased motorcycle ownership (Wadud, 2020). Although there are some initiatives to organize the transport sector by regulating public transport routes and providing permits for buses and motorcycle taxis, in practice monitoring and implementation is weak. Apart from a few services offered by the state-owned operator, the entire passenger transport service is offered by the private sector, with little organization. The conditions of buses and minibuses are often poor. The several types of motorized vehicles used to provide commercial public transport services in Dhaka are shown in Fig. 1.

There were two lockdowns in Dhaka in response to COVID19 that affected the public transport sector. All public transport activities (including trains and flights) were closed between March 28 and June 1 in 2020, when buses were allowed to operate at half capacity (with accompanying fare increases). Buses were allowed to run at full capacity from September 1, 2020, while motorcycle taxis only from September 4 – a 5-month long ban. The second lockdown again involved banning public transport on April 5, 2021, but the decision was overturned within 2 days to allow public transport with 50% capacity in 11 large cities of Bangladesh. Nationwide, buses resumed operations much later August 11, 2021, but only half of the buses were allowed. The third wave of restrictions in January 2022 on public transport was overturned as soon as it started due to pressure from the transport lobby. However, restrictions on activities and movement along with staggered implementation of the lockdown rules resulted in public transports services facing huge losses, up to 90% hike in fares, and forced thousands of commuters to walk on the main roads of the city (Dhaka Tribune, 2020; France-Presse, 2021).

2.2. Owerri, Nigeria

On the same timeline as Bangladesh, Nigeria has its first confirmed case of COVID-19 on February 27, 2020 (Mogaji, 2020). At the time of this study, the reports about public and private vehicle drivers flouting of lockdown orders in main cities such as Lagos and



Fig. 1. Photos of public and paratransit services in Bangladesh and Nigeria.

Owerri were in the news media (Adediran, 2020; Alawiye, 2020). Owerri, the capital and the largest city of Imo State, has an estimated population of about 1.4 million as of 2016 and approximately 100 square kilometres of land area. Road transport is the primary means of transportation in the city just like in other parts of Nigeria, as it conveys an estimated 80% of all traffic (National Bureau of statistics, 2020). People move around using buses (mini and micro), taxis, autorickshaws and motorcycles (Okoko, 2006). Most services are dominated by the private sector which operates in an unorganised and not very controlled manner and does not have any formal training in bus operation (Ojekunle, 2014). Transport vehicles are often not roadworthy, with minibuses (locally known as *danfo*) having low capacity, high operating costs and increased traffic volume on highways causing congestion, time loss, road traffic crashes, and other related externalities (Fadare and Wojuade, 2007). Local journeys use motorcycles (locally known as *Okada*) and autorickshaws (locally known as *Keke*), but they rarely ply on the main arteries due to a ban eight years ago. Consequently, the demand for public transport has continued to grow along with an overwhelming increase in vehicle ownership; the number of minibuses as a public means of transportation has also increased (about 80%) in the city (Imo State Board of Internal Revenue Owerri, 2020). Private taxis such as Uber, Taxify and Bolt are better planned and organised but may not be affordable for low-income earners.

There is no government agency regulating fares for these private operators in the study area and the sector operates in a profit-driven mode, with no financial support from the Government. Operators do employ a fare structure graduated by distance, types of vehicles, quality of service, operating costs, and road conditions (Ndikom, 2008). The average travel fare on a bus is NGN 230 (0.55USD), autorickshaw is NGN 100 (0.24USD), and motorcycle is N430 (1.03 USD) (National Bureau of statistics, 2020). Even though the motorcycle is more expensive than other modes, people prefer to use it because they provide faster, door-to-door services and can readily manoeuvre traffic when there is congestion, among others. Fig. 1 shows the several types of vehicles providing commercial passenger transport in Owerri.

At the peak of the COVID-19 pandemic, the government announced some measures to help prevent the spread of the virus in the entire state. Some of these include a complete lockdown of the state as part of measures to prevent the spread of the coronavirus to the state, the barricade of all entries into the state by road and a complete test to be carried on those travelling into Imo state, strictly restricting public gatherings to ensure that people are not exposed to close contacts with other people. A combined team of military, police and other security agencies were also deployed to the streets to ensure strict compliance with the directives (Alozie, 2020). Social distancing was also emphasized on public transport vehicles including buses and taxis, while drivers and passengers were mandated to always wear face masks.

3. Methods

3.1. Participants

In total, thirty interviews were conducted in Nigeria (NG; 15) and Bangladesh (BD; 15). The selection process was purposive to represent drivers of three public transport modes (five drivers each) including buses (or minibuses in NG; labelled as BD1-5/NG1-5), autorickshaws (labelled as BD6-10/NG6-10) and motorcycles; riders (labelled as BD11-15/NG11-15). These drivers were selected based on their experience, knowledge, and involvement in commercial public transport operations and especially their experience during the pandemic. All participants were male as females are not usually involved in commercial driving jobs in the case study countries. While traditional qualitative research suggests a sample size between 5 and 25 sufficient (e.g., Cresswell, 2007; Townsends, 2013) to reach data saturation (Saunders et al., 2018). Considering the main objective of the case study was to understand the experiences and challenges faced by drivers during the pandemic, the sample size of 30 was deemed sufficient to reach saturation. More recent evidence-based research also suggests the sufficiency of 9–17 interviews to reach saturation (Hennink and Kaiser, 2022). It is also important to acknowledge we had to limit our interviews to 15 *per* country due to practical reasons including COVID-19 related restrictions which have implications for the generalizability of the findings. However, following the qualitative literature guidelines to improve the validity of research findings (e.g., see Vasileiou et al., 2018), considerable considerations were given to study design including the involvement of all team members in interview design to reduce lead investigator biases, structure of questions, writing probes and pre-interviews briefs and post-interviews reflections which helped to generate rich, good quality data, more details as below.

In Bangladesh, bus and autorickshaw drivers were approached at different bus stops and terminals and autorickshaw stops. There are no stops or stations for motorcycle riders. However, they could be seen to be waiting for passengers at bus stops. Hence, riders for this study were approached at those stops. Drivers were informed about the study, and they were asked if they drove before and during the pandemic or were new to the profession. For bus drivers, all the interviews took place inside an empty bus at the bus stop. Motorcycle and autorickshaw drivers' interviews were arranged at the University of Asia Pacific, Bangladesh.

Likewise, in Nigeria, the union leaders of bus drivers were initially contacted, informed about the interview, and asked for permission to approach and recruit members (potential participants) directly without going through them. This was to prevent undue interference or influence. They responded positively and participants were selected based on their experience of driving before and during the pandemic. Autorickshaws and motorcycle riders were approached directly at their stops. The interviews were arranged at the Federal University of Technology, Owerri.

Following the initial contact with those who showed interest, their contacts were collected, and text messages were sent to them with questions such as when they started driving and how long they have been in the public transport business. Only drivers with experience of driving before and during the pandemic were recruited. This was to double check and ascertain that the participants were eligible to participate in the study. When their participation was confirmed, they received further messages such as the interview protocol, address for the interview, their availabilities, and the information sheet.

3.2. Interview template and procedure

The study has employed Interpretative Phenomenological Analysis (IPA) qualitative approach to explore and explicate the subjective experiences of drivers. Rooted in phenomenology, IPA methodology is concerned with trying to understand lived experience and with how participants themselves make sense of their experiences (IPA, n.d.). Semi-structured qualitative interviews were conducted in both countries. An interview guide was developed with eight open-ended questions. IPA recommends open-ended interviews to allow participants to set the parameters of the topic by maintaining a balance between guiding and being led (Hefferon and Gil-Rodriguez, 2011). It began with basic questions about participants' personal and professional profiles and covered participants' opinions about COVID-19 impacts on their lives, followed by their wider concerns and recommendations. Before conducting the interviews, both written and verbal consent were obtained from participants. To facilitate discussion during the interviews, probes were also included in the guide to help the interviewer collect richer data without missing/forgetting any key information. After closing the interviews, interviewers recorded their personal reflections on the interview and documented key highlights. The interviews were conducted between March and April 2021. Interviews in Bangladesh were completed in the native language Bengali (Bangla) and translated into English. The translated scripts were reviewed by a senior member of the research team in Bangladesh. Later, the interpretations drawn from the interviews were also checked by the team for validation purposes. The study was reviewed and approved by the University of Leeds Research Ethics Committee and COVID-19 protocols were maintained throughout the duration of the interviews (Fig. 2).

3.3. Analysis

The recorded interviews were transcribed and thematically analysed using NVivo software. An initial cycle of descriptive coding was completed for Nigerian interviews and then expanded to Bangladeshi transcripts. A structured hierarchy approach was used to arrange coded data. As described by King (2004), the technique allows the researcher to analyse the texts at varying levels of specificity from broad higher order codes to detailed lower order codes (Batool et al., 2012). Higher order codes provide an overview of the emergent theme. While the lower order codes are more detailed in nature and are used to provide similarities and differences within and between cases.

Following this technique, coding data was arranged at three levels (see Fig. 3). At the lowest level (level-three) groups of codes holding similar dimensions were clustered together. This grouping produces more general higher-order codes at level-two (*sub-theme*) and level-one (*main-theme*). For confirmation purposes, results were shared with the Bangladeshi and Nigerian partners and their insights and reflection on the data were cross referenced to better develop an understanding of emergent themes. The issues emerging from both the countries were broadly similar.

4. Results and discussion

The analyses identified five key challenges faced by drivers: personal and social challenges, physical and operational, and those related to health and wellbeing, governance and regulation, and enforcement and policing (Fig. 3).

4.1. Personal and social challenges

The first level-one theme 'personal and social challenge' embraces and highlights four key challenges drivers faced during the pandemic at personal level. These include *no food security*, *reduced income* and how drivers' *socio-demographic* and *vehicle ownership status (rented vs owned)* has impacted and aggravated their challenges.

4.1.1. No food security

The issue of food security and scarcity has been extensively pointed out by all the participants. The theme is interlinked with



Fig. 2. Photos of drivers interviews in Bangladesh and Nigeria.

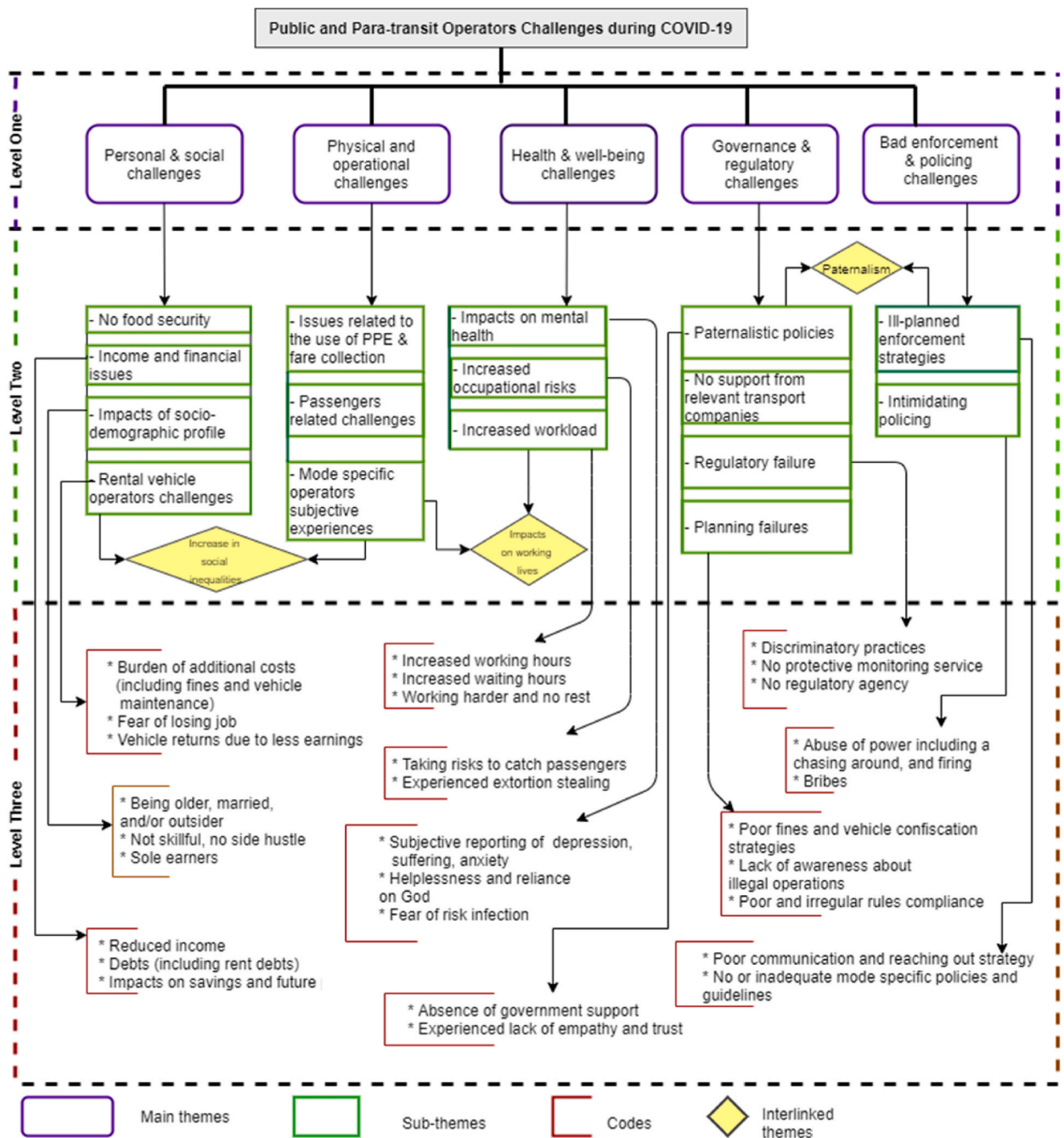


Fig. 3. Challenges and issues faced by public and paratransit drivers during COVID19 in developing countries.

reduced income and financial challenges drivers faced during the pandemic and highlights one of the leading reasons for drivers exposed themselves excessively to safety and security risks. The struggle to feed their family also immensely impacted their self-esteem and dignity and resulted in stress and anxiety. Participants reported not just increased food prices but getting food from the market was also a challenge as the task forces were chasing people away (NG6). Hence, it was reported that drivers did whatever they could to survive as they did not want their families to starve to death (BD4). Some of the excerpts below provide a glimpse of what drivers have gone through. The rise in hunger is established as one of the most tangible symptoms of the COVID19 crisis (Malpass, 2021). A recent expert-opinion based study confirms the issue of food security is one of the severe impacts of the pandemic faced by many poor transport workers in developing countries (Zhang et al., 2021). At the time of conducting this research, global food prices have reached all time high (United Nation, 2022). It is expected that situation might have gone worse for many of the public transport drivers and their families since the time of the interviews.

In March 2020, I had borrowed a total of 36,000 tk. only in two months and after that when I decided to ride [riding motorcycle] again but my daughters asked me not to go out. But as the only earning member I had to go out and how long can you lead life borrowing from someone else? They [My family] say that they will eat one time a day, but someone must earn that one meal, right? (BD6)

For me, the only challenge I faced was hunger and nothing else. Because I had just relocated to this place and was trying to settle down. COVID happened few months after I relocated, it shook us a great deal. (NG5)

4.1.2. Reduced income and financial issues

The theme highlights how the pandemic escalated the financial problems of drivers, pushed them into debts crisis, and had an economic impact on their families. 11 of the 20 drivers reported the pandemic made them fall into housing and vehicle rent debts. All drivers reported reduced income and mentioned that the lockdown restrictions and decreased number of passengers coupled with price increases of necessities adversely affected their future and pushed them further into poverty. Some of the excerpts below provide an overview of the situation. The finding is in line with emerging COVID19 literature which establishes most households struggled and are still struggling financially because of job loss during the pandemic. Overall, the COVID-19 pandemic is estimated to push between 88 million and 115 million people into extreme poverty (The World Bank, 2020). Hörcher et al. (2021) reported low demand levels and perceived risk of infection has extensively reduced fare revenue for public transport drivers. However, as emphasized by Despard et al. (2020), these job and income losses are not experienced equally by all. As it is more prevalent among the low-income population. It also led to hunger and difficulty in paying house rent amongst others. After studying changes in modal share due to COVID19 in Budapest, Bucsky (2020) recommends that the anxiety of infection may have a longer influence on transport mode choice. Hence drivers need to find innovative ways to make journeys less hazardous and to gain public faith. The study's results indicate that the reduction of ridership sizes may result to a vicious circle of constantly declining ridership and quality.

I had to loan some money, just to feed my family with two small daughters. I was unable to pay the house rent and as of today I still owed 4 months of house rent to the owner. (BD4)

Before the pandemic I have never had to borrow money rather I used to help other people. But after the pandemic I am barely surviving. (BD9)

All my savings were gone. We check and earn daily. We feed from what we earn, we are not on any salary or payroll. It affected us, if we do not work, we will not eat. At that time, we started eating our savings and that was a big problem to us. Some had challenges with house rents because the money saved up for rent was spent on food. (NG6)

In the market, they [army] were chasing and telling people not to come out. It affected us really. We did not even increase fare. People did not have money. I just needed to feed my family and collected what I could. (NG5)

4.1.3. Impacts of socio-demographic profile

The socio-demographic profile of drivers contributed significantly to their challenges during the pandemic. The presence of children, having caring responsibility of older parents, being older and not being skilled enough to do any other job are identified as some of the key influencing factors. In the case of Bangladesh, nine drivers informed they are the sole earners in their families. In the case of Nigerian drivers, some of them reported having a side job and support available from family and peers. However, overall participants reported they are not skilled or educated enough to take up any other job and hence their survival is solely dependent on public transport operations. This finding highlights vulnerabilities of public transport drivers in LMICs. They had limited to no coping strategies to manage an unforeseen crisis like the pandemic and ended up adopting negative coping strategies such as spending savings, taking debt, or exposing themselves to vulnerable situations. Enhancing community resilience with the help of local stakeholders and Non-Governmental Organisations (NGOs) as suggested by Darwish et al. (2020) can be a way of reducing adversities experienced by economically vulnerable households with limited coping mechanisms. The same principle can be applied as one of the solutions for this case study participants.

I have learned only one thing in life, driving a bus. So, no one wanted to take us as a mason's helper. The owner was angry and told to leave the house. On the other hand, there was always the problem of food. Because the shopkeepers did not lend us groceries ... they said ... you cannot pay. (BD1)

Currently, I have a lot of debts as I did not have any work during the lockdown period. But this is the only job I can do. Even if I cannot rely on the job in this situation but I have nothing else to do. At this age, without any education, there is no other way around. About the health, I have left it to the almighty. With a lot of debts, I did not have much of a choice to follow the lockdown. So, there is not much scope for day laborers like us to maintain the safety measures or lockdown properly. Even for earning the daily meal, I had to take this risk. (BD6)

Some of us drivers are single and not married. So, you cannot compare their problems with mine. I am taking care of my four kids, wife and my aged mother who is at home. These are the people I am taking care of, and I am struggling extremely hard to make sure that they are fed well and not die of hunger. (NG6)

4.1.4. Rental vehicle drivers' challenges

This theme highlights challenges specific to rental vehicle drivers who at times had to return the vehicle and had to bear additional costs including vehicle maintenance and fines as owners of the vehicles refused to support them. It is important to note that rental arrangement for public transport is very common in these two countries, where the drivers rent the bus, minibus, autorickshaw or motorcycle from the owners or business ventures for a fixed sum (daily, weekly or monthly basis), and earn their living only after paying back the owners the fixed sum and covering the costs of fuel, maintenance and related running costs. The lack of passengers and sometimes fines incurred, or bribes provided for stealthy operations reduced this margin during the lockdown in most cases, especially as there was little sympathy or support from the owners' side.

... With the CNG [autorickshaw] owner, no help at all. He says that if you do not want to drive then someone else will drive. Rather than supporting us, the owners have burdened us more as they are not paying for any police cases. If there is any problem with the vehicle then I must repair it, no help from anyone at all. (BD7)

Some days, when you come out, you may go home with only NGN 600 (1.44USD) and if you buy fuel of NGN 400 (0.96USD). You will be left with only NGN 200 (0.48USD) and you know that this is not working at all. And because you go out and come in, the owner of the KEKE [autorickshaw] may think that you are making some money, that was why I returned it to him. So, when the lockdown was eased, I went back to beg and plead with him to give me back the KEKE and explained the challenges I faced during that time. (NG10)

However, some Bangladeshi drivers said owners demonstrated goodwill gestures by reducing the daily rent. BD10 reported receiving food from his CNG (autorickshaw) owner during the lockdown period. One Nigerian driver said he could not meet up with his remittances to the owner of his motorcycle and reported

... it did not bring any problems between us. She knew and understood what was happening and that there were no passengers. I have a good relationship with the owner because normally before COVID, I never defaulted on my payments. Even if I do not meet up, I will always go to explain to her, and she will understand. (NG14)

Before the pandemic, the CNG [autorickshaw] rent was 800 taka (9.27 USD) per day but after the pandemic the owner of the CNG [autorickshaw] has dropped the rent. Now depending on my days income sometimes I pay 500 taka (5.80USD) and sometimes I pay 600 taka (6.95USD) as per day rent. The owner does not question me about the rent rather he said that firstly I should keep my daily need, then pay him whatever is left. (BD8)

4.2. Physical and operational issues

The second level-one theme 'physical and operational issues' emerged as one of the key challenges drivers faced in both countries. The analyses found drivers experienced *passengers related challenges* as well as those related to *the use of Personal Protection Equipment (PPE)* and *fare collection*. Participants hold their *mode specific subjective experiences* and reported a sense of discrimination and unjust towards them.

4.2.1. Issues related to the use of PPE and fare collection

Participants highlighted the use of PPE and adoption of safety measures are dependent on several issues including affordability and perceptions about COVID19, especially whether they believe it is a hoax or not. For instance, one of the participants thought there was no major need for using safety measures as he does not see any coronavirus around him and believed there will not be any damage to the country (BD7). Participants recorded wearing PPE could also increase problems of approaching and/or communicating with passengers. Bangladeshi drivers in particular highlighted unease to wear face masks, and gloves due to the hot and humid weather of the country and reported the perceived likelihood of getting into crashes. For instance, one driver reported he stopped wearing PPE after first use as it made him feel as if he was "boiled with hot water" (BD12). The finding highlights potential health risks to these drivers. In the literature, strong evidence of the prevalence of hypertension among urban public transport workers exposed to high temperature exist. For example, a study by [Pimenta and Assuncao \(2015\)](#) with bus drivers in Brazil reported a higher risk of hypertension among drivers experiencing thermal discomfort while driving. Following excerpts highlights issues related to the use of PPE, whereby Nigerian participants further emphasized the hardship regarding the purchase of PPE.

The experiences of the drivers in this study are comparable to findings from a roadside survey conducted in Ghana. The results of the survey showed that even though the majority (98.0%) of buses complied with the social distancing rules established by the government, the compliance with the face mask policy was only partial in most vehicles. About 12.6% of the vehicles had fewer than three commuters without face masks, while 21.3% of buses had fewer than three people with face masks ([Dzisi and Dei, 2020](#)). It is also possible to observe differences in compliance with safety measures based on the personal characteristics of drivers. For example, [Agyemang et al. \(2021\)](#) accessed the face mask use among commercial drivers during the COVID19 Pandemic in Ghana. Results indicated that older drivers (age 55 years and above) consistently wore face masks compared to younger drivers. The study also identified not being comfortable wearing a face mask as one of the barriers to its adoption. It was also found that commercial drivers, their attendants, and commuters, in general have a higher chance of infection due to overcrowding in public transport and during handling and exchanging money.

Based on participants' opinions and suggestions, it is concluded that compliance with COVID19 measures can be increased with the help of stringent and fair enforcement, increased support, and facilitation from the government, and increasing the awareness level of users. Along with these measures, affordable prices (for face masks, hand sanitisers etc.) are also important. For example, some of the

drivers reported using hot water (NG9/NG10) instead of hand sanitisers or difficulty in using them due to religious reasons (NG1). There is emerging evidence that governments should bear the cost of providing free face masks to poorer members of the community (Tsifodze, 2020) who may be exceptionally vulnerable and unable to afford them.

I have travelled a lot in this pandemic and most of the time I have not use any mask. If there is a real virus out there then I might have been dead by now. So, I do not believe in any corona virus in our country and even if there is a coronavirus, then it is not an infectious disease. (BD4)

You do not expect me to buy sanitiser when I have not even eaten. I did not use sanitiser, no hand gloves, no alcoholic drinks. (NG1).

They [measures] were not really difficult. The only problem was that there were people who did not have any money to buy these things at that time. You may think that the nose mask is cheap at NGN100 (0.24USD) but it is not. People had no means of earning that NGN100 (0.24USD) at that time. If you had NGN500 (1.20USD) at that time and your husband was really doing anything, if he buys a facemask today and forget it somewhere and buys it again tomorrow, then you can understand what that means. It may seem like people were being stubborn by not using facemasks, but the reality was that there was no money. (NG3)

4.2.2. Passengers related challenges

The theme highlights finding passengers during lockdowns was a challenge particularly due to the closure of offices and schools. Also, passengers were struggling to pay fares and at the same time expecting to provide safety measures such as hand sanitiser at no additional cost. For instance, NG2 reported that “... not everybody believed that COVID is real, so some passengers were very reluctant to use the hand sanitisers. We did not change the fare because we did not even have enough passengers.” The situation was quite similar in Ghana where it was expected for both transport drivers and users to acquire their own face masks and hand sanitizers. However, at a limited scale this was addressed with the donation of government and other private entities (Dzisi and Dei, 2020). It is also necessary to know the user’s willingness to pay for implementing health and safety measures in public transport and paratransit. Our own ongoing work reveals that users were willing to pay extra for safety measures such as hand sanitizers and social distancing in buses and barriers between drivers and passengers in motorcycles in Bangladesh and Uganda (Bwambale et al., 2021). Awad-Nunez et al. (2021) also reported that users were willing to pay extra in Spain. However, how this willingness to pay can be realized into actual payment and improved safety measures remains an important future research area.

Drivers also reported experiencing passengers’ *rude behaviours, manipulation, and reluctance* to follow safety measures. For example, BD5 reported seeing no hesitation among passengers for sharing rides with other people without observing social distancing. As soldiers were brought in to enforce the rules during the pandemic in Nigeria. They stopped and arrested people who were not adhering to the rules. The situation became tougher for drivers there. NG5 shared one such experience.

There are also many passengers when we told them the seat is not empty, they cannot go. Then they pushed the helper, got on the bus, and found the empty seat next to a passenger and sat down, they do not follow any hygiene rules. (BD5)

A pregnant woman asked me to drop her at a certain place, but I told her that the soldiers were there. She started pleading and refused to get down from the bus. When we moved a bit further, I was caught and instead of her coming to beg, she left me alone with them and went her way with her son. The soldiers took my bus to their office in Obinze (15.4km) and it was there for 4 days. I paid above NGN 30,000 (72.18USD) to recover the bus from them. (NG5)

Moreover, participants reported that the situation was not easy for passengers either and they were also exposed to several challenges. The decision to either cease commuting or avoiding proximity to passengers in public transport was not an option for many of these travellers. As these are the people who rely on these services in their day-to-day lives and hence were willing to compromise on their safety by ignoring social-distancing and safety measures in place. This finding is contrary to wealthy countries, where rapidly growing evidence is suggesting significant changes in travel patterns of public transport users due to multiple factors including a shift to working from home, access to remote working facilities or alternative, and private forms of transport (Sung and Monschauer, 2020). To some extent, such shifts were observed in developing countries too (Bhaduri et al., 2020), but the interviewees here were primarily speaking of their captive passengers.

Passengers were also complaining about the difficulties that time. They were being smuggled out and tried everything possible to dodge the police and military. Everyone was very alert and needed to know the routes where soldiers were operating. People had to go out, there was no support from anywhere and the house will not provide what they will eat. So, they had to go out to find what to eat. Roads were blocked, so travelling was a nightmare. The only thing is that you will have to settle (bribe) all enforcement agents at every check point for you to be allowed to go. (NG7)

4.2.3. Mode specific drivers’ subjective experiences

This last sub-theme shows bus, autorickshaw and/or motorcycle riders all have their individual experiences and reflections to share. Each mode driver felt discrimination towards itself compared to other modes of transport, especially in Bangladesh. For instance, autorickshaw drivers felt social distancing was not observed in buses at all. However, bus fares were increased up to 60% (BD8/BD10). At the same time, they also expressed concern buses were taking their ridership as autorickshaws were becoming increasingly unaffordable under current circumstances. Hence, they had to charge a low fare to retain their customers. A similar feeling was shared by bus drivers for autorickshaws as reflected in the following excerpts.

Would you like to answer me, why is lockdown only for bus drivers? We bus drivers try to follow the rules, use double mask, always keep spray in the bus, maintain social distance. But other public transport operators do not seem to be very aware of these rules. Because I have seen many such scenes, when the bus sector was closed, 4/5 people shared rides on CNG [autorickshaws]. So, if the government forces everyone to use masks, gloves, drive the bus wearing PPE, I will accept. (BD5)

... People do not seem to ride CNG [autorickshaw] as it is a costly ride and due to lockdown, most people tried to ignore riding a CNG unless there is no other way. Currently the bus service is shut down and people has no choice but to use CNG ... The normal fare of Farmgate to Mirpur was BDT 200 (2.32USD) before COVID19, but now 200 taka seems a lot to people as they don't want to take the ride alone with this fare. As a result, passengers try to share the ride as well as the fare with different individuals ... If I do not do sharing, then it is hard to get a single passenger with that costly fare. (BD6)

Contrary to Bangladeshi drivers, Nigerian autorickshaw drivers reported better experiences and said their operations seem to be less impacted during lockdown compared to bus drivers. For instance, one of the drivers reported he never had to bribe anybody and continued driving on his route, unlike bus drivers who were constantly arrested by the police (NG7). The following excerpt further highlights this. One explanation is that the route of autorickshaw drivers in Nigeria is a short distance and rarely would you find enforcement officers on those routes. This is unlike the bus drivers who ply all the major routes in the city.

KEKE [autorickshaw] was better than because during that COVID period, people preferred it. You know that it is equally cheap. People can come and ask you to carry them alone for NGN500 (1.20USD) and you will do that. If one has their facemask on and their sanitiser with them. That was how we were working. Buses are usually crowded even with the social distancing rule. Personally, I made a lot of money during the lockdown. It is not even true that people were caught because we were bribing the police officers. Once you give them money, they will let you go. (NG8)

Bangladeshi motorcycle riders' operations are severely impacted during the pandemic. Motorcycle ridesourcing services were banned longer than buses, taxis and autorickshaws in the country due to fear of proximity between the drivers and passengers, aggravating the drivers' plight further. The finding is quite similar to what Fielbaum et al. (2023) found in the case of ride-hailing and delivery drivers in Chile. Those drivers either lost their jobs without any compensation, or reported to be more exhausted, had greater concerns and largest decrease in their job satisfaction compared to public transport drivers of the city in a result of unstable nature of their app-based jobs which was sharpened during the pandemic.

The government have not provided much support rather than created problem for us. The government announced that motorcycle ridesharing¹ will be stopped along with public transportation as a result, the apps were also closed for months. If the apps are closed and motorcycle ridesharing is stopped then how would our family run? After the apps were closed most people used to think that the service was illegal, and we did not find passengers in that time. That was a really tough time. (BD12)

Also, the passengers might think that the same helmet or seat might have been used by other passengers from where they may also get infected with COVID19, and these are the possible reasons for passengers avoiding motorcycle rides. (BD11)

4.3. Health and wellbeing related challenges

In continuation of some of the health risks identified in the above discussion, this paper confirms public transport drivers in the study were exposed to significant mental health and wellbeing risks during the pandemic. The theme aggregates three groups of factors that capture health and wellbeing related challenges drivers have faced. Participants faced *mental health and risk challenges*. They also reported an *increase in occupational risks* and concerns related to an *increase in workload*. What concerning is that 28 out of 30 participants reported one or more of these challenges.

4.3.1. Impacts on mental health

The first sub-theme *impacts on mental health* collates subjective expressions of drivers during interviewing. For example, reporting of depression, suffering anxiety; fear of risk infection and helplessness and reliance on God. This study confirms the emerging evidence on COVID-19's impact on mental health and health inequalities. For instance, in the UK, more than two-thirds of adults (69%) report feeling somewhat or very worried about the effect COVID-19 is having on their life (The Health Foundation, 2020). The study findings are comparable to a growing body of research indicting frontline workers are at a substantial risk of developing mental health disorders (e.g., see Carmassi et al., 2021). However, what is important to consider is that not just the worker, but their families are also at a higher risk of developing these symptoms. For instance, a cross sectional study conducted in China found dramatic impacts on mental health status among family members of Health Care Workers (HCWs) who worked during COVID19. The study found high risk factors for developing depressive symptoms among parents and other next of kin of HCWs (Ying et al., 2020). In our study, traces of these impacts among family members can also be found. For instance, BD3 reported how he kept his child and mother unaware of the troubles he was facing. However, his wife understood this and was suffering with him with the pressure of providing for the family. There were instances reported when parents had borrowed money to support drivers (e.g., BD5) or children have asked them not to leave the house to drive (e.g., daughter of BD6). The fear of not providing for the family was quite evident among drivers. It can be

¹ Ridesourcing is known as ridesharing in Bangladesh.

expected that this fear not only impacted their health, but it was translated and impacted the mental health and wellbeing of their family members too. While the COVID-19 literature is recognising irreversible losses of lockdowns and restrictions that would lead to permanent damage to health and quality of life more widely (Gogoi et al., 2023). There is growing evidence that COVID-19-related acute stress and depressive symptoms would increase over time (Holman et al., 2020; Gong et al., 2022). Hence, a post covid-19 support and longer-term follow-up of these affected families could prove useful to reduce some of the pandemic-induced health inequalities.

If you hear anymore then you will not be able to hold your tears. Everything in this country is running as usual but only the public transport is being shut down. In this country if a person is dead then no one will care. (BD4)

Sometimes we had to take COVID19 patients as our passengers. For example, one day I took a passenger from Apollo hospital and dropped her off to Mirpur. After dropping her she asked me to clean the seats with sanitizers. When she said that I became really scared thinking that I might have taken a corona patient. I sprayed sanitizers the whole CNG [autorickshaw] but the fear was not leaving me. I drove 20 days with that fear. (BD10)

... you carry anyone you see to make sure you were eating and maintaining your family. We put our health in the hand of God, we were living by his mercy. (NG4)

I faced so many challenges then, from what my family will eat to house rent to illness. Only God saved us that time. COVID is not something that should happen again, God forbid. (NG5)

4.3.2. Increased occupational risks

The second theme informs drivers' experiences of extortion and stealing as well as the nature of their job as key factors contributing to COVID-19 related increased occupational risks. Excerpts below inform situations that exposed participants to high-risk situations in terms of both safety and security. It is worth mentioning that people in public-facing roles (such as transport drivers and cleaners) are categorised as with an increased risk of contracting COVID-19 (The United Kingdom Parliament, 2020). As highlighted by Fielbaum et al. (2023), who reported up to 67% of drivers in their study faced COVID-related risky situations by carrying passenger that might have COVID-19, reported significant degradation of several dimensions of their job related satisfaction.

There was a day I went to drop passengers somewhere and we followed one of those farm and village roads, can you believe that young men who are indigenes of that place blocked the track roads and were asking us for money too (bribes) before they could let us through. A lot of things happened. We had to settle them by parting with some amount of money. They said that it is their village road and that it was their right to collect money from transporters. (NG5)

I must go out to calm down my stomach. We pick up and drop off passengers from various places, different ages, different occupations. So how much safety will I find in giving them service? (BD5)

4.3.3. Increased workload

The third theme an *increased workload* indicates COVID-19 impacts on working lives and informs how factors such as reduced income, a smaller number of passengers coupled with bad enforcement strategies have increased drivers' working and waiting hours. Seven of the drivers specifically mentioned they are working harder and taking no rest to compensate for the losses incurred during the pandemic. The finding is linked with an important but overlooked aspect of work-life balance in LMICs. Apart from direct health costs, it is widely known that stress-related work factors including fatigue could lead to risky driving which is a matter of public health concerns with serious implications for society (Useche, Ortiz, Cendales, 2017).

I try to ride more than 14 hours a day. From 5AM to 10PM sometimes 11PM, I drive and take my lunch and sleeping break in between. Before the pandemic, I used to work 10 to 12 hours a day which was enough for me. But during the pandemic, I am working more hours because there have not been many passengers on the road like there used to be before the pandemic. (BD7)

What I am earning now in a full day is half of what I used to earn before the COVID19. All the local passengers are facing a critical situation now because of COVID19. Most people who use the motorcycle service are fancy or rich, so after the pandemic people are trying to avoid the expensive rides and using the public transport as much as possible. As a result, we had to wait for hours to get a single ride. (BD12)

4.4. Governance and regulatory challenges

The theme highlights challenges faced by drivers during the pandemic due to poor governance and regulatory activities including the adoption of *paternalistic policies* (e.g., no reduction in licensing fees and charges) and *poor planning* by government bodies. The *regulatory failings* including no price control and *absence of support from relevant transport companies* (including ridesourcing companies such as Pathao, and Uber in Bangladesh), owners associations and/or unions made working conditions more complex for the drivers.

4.4.1. Paternalistic policies

All the participants repeatedly mentioned they did not receive any support from the government and experienced empathy deficits.

In Bangladesh, drivers mentioned a fee was required to be paid along with Identity Card to get the government's support. There was no reduction or support available to pay licensing fees and charges. Two of the motorcycle ridesourcing drivers also took part in a protest of these perceived unfair policies. Participants believed there were political motives behind the pandemic and the imposition of the lockdowns.

No, there was not any support from the government at all. In the first lockdown the military was on the streets. I heard that they have given some foods to people, but I did not get it. All the transport drivers were promised that if we submit our license number to owners' union offices, we will get 8000 taka (92.73USD) but I never got that money. Either the government never gave that money, or it did not reach us. We submitted our NID [National Identity Card], license and 100 taka (1.16USD) fee just to get the help. But No one got anything. (BD9)

... we the ridesharing drivers were harassed by the police a lot. Police used to stop us for sharing ride even if we have all our licenses, they will fine us at least 1000 taka (11.59USD). About this harassment we the drivers have protested in Mogbazar, and I was present in that protest, the whole country saw that protest and no one said anything about it. (BD15)

Like Bangladesh, in the case of Nigeria, there is also reporting that the government support packages did not reach drivers as the local officials hoarded those resources. Participants reported officials distributed resources such as face masks among themselves that were sent to public transport drivers.

There was no form of help from the government. It was during that demonstration that we heard that some people hid palliatives which the government provided for the citizens. We heard but did not see anything. Even water was not given to us. (NG8)

Apart from paternalistic policies and hoarding of resources, the lack of trust and paternalism in COVID policies was also perceived by many of the participants. The following excerpts highlight this concern.

... You remember we heard that there was a facemask that cause more death than COVID. You know that before you use anything from government, you must be careful, you will have to examine it first. This is because, they do not always say the truth. Those in the upper class will not use these things but give it to the poor masses to use. Anything they cannot use, let them give it to us but if they can use it, then they can never give us. (NG6)

I think the government is imposing this COVID19 on normal people to maintain political balance. I do not think there is anything like COVID19 in our country. In this country, everyone who has power can do anything to anyone and the government is doing this lockdown thing for political purpose ... The government has power and that is why they are imposing lockdown, because they are not getting affected by it. (BD4)

4.4.2. Planning failure

Participants also complained about governments' poor communication and reaching out strategies and the absence or inadequate policies and guidelines available to public transport drivers. This is an important concern and needs to be addressed. A recent study in Bangladesh about healthcare, social and economic challenges faced by the country confirms that lack of awareness, improper knowledge, attitude to and practice of rules are the factors dominant in spreading COVID19 (Islam et al., 2020). Therefore, developing appropriate channels to communicate guidelines and rules to members of the public could be beneficial.

About financial support from the government the counsellor of our area took our NID number total three times, but nothing came from that. In social media I saw that the counsellor helped some people by giving them some food but not everyone got that help. (BD13)

The indigenes of this place were providing food items and PPEs for the villagers. They would usually call them together and give it to them, but nobody gave us anything because we are not from here. The government used to send messages through the traditional rulers who in turn inform their representatives who pass whatever information to members of their kindreds. The representatives take members of their kindred to share what they were given but because we are strangers, we did not receive any of these. (NG1)

4.4.3. Regulatory failure

Talking about regulatory failures, participants highlighted discriminatory practices, the absence of monitoring and reporting mechanism for COVID positive cases, and the absence of effective regulatory bodies for price controls and rules enforcement.

COVID is not an experience anybody would wish for a second time because during that time there was general hike in prices of different things such as motor oil and other things we use in buses. This is because those who were selling could not even go back to the market to restock, so the increased the price of the goods they had. (NG1)

it was difficult to know exactly what to do with the virus. This is because, the person you are carrying is not coughing and not sick, so one may conclude that since both the rider and the passenger are not coughing or running temperature, then we are all healthy. But we did not even know how to identify anybody with the virus. (NG2)

4.4.4. No support from relevant transport companies

Apart from the above-mentioned issues, the unavailability of support from unions, transport associations and ridesourcing companies aggravated the physical and operational challenges faced by the drivers. All the participants mentioned either union do not exist

or took no initiatives during the pandemic.

There was not any help from the union. They did not even bother to know how we drivers were living. (BD7)

There was no support from the unions. They were only passing information from the government to us. They were not really talking to us. We have a strong union. The only thing they did at that time was to withdraw from asking us to pay daily ticket fees because the situation at that time was severe, there was no money. You just come out and go to work. (NG1)

Motorcycle riders mentioned ridesourcing companies in Bangladesh increased percentage cuts (commission) and stopped giving bonuses. To add, the government's ban on public transport overnight made ridesourcing services operations illegal. These factors severely reduced their income. It is worth mentioning that there are currently 14 government approved ridesourcing companies operating in Bangladesh, which has especially increased the number of motorcycles and motorcycle driving has become a popular source of earning (Wadud, 2020).

... the government announced that motorcycle ridesharing will be stopped along with public transportation as a result, the apps were also closed for months. If the apps are closed and motorcycle ridesharing is stopped then how would our family run? After the apps were closed most people used to think that the service was illegal, and we did not find passengers in that time. That was a really bad time. (BD12)

I am using the Uber app for 2.5 years now and the facilities we used to get from UBER like ride bonus or percentage cut, all these facilities have become half of what it used to be. Currently they are cutting more percentage from us, and the ride fare has come down a lot. Before then pandemic Uber used to cut 20% from our income and if we complete 50 or 100 rides then we used to get bonuses. After the first lockdown Uber is cutting 25% from per ride fare and the fare of each ride has also come down. I think they do not have particular rules or regulations about percentage cut, they are cutting money by their own wish or so. (BD11)

4.5. Bad enforcement and policing related challenges

Apart from facing governance and regulatory challenges, this research has found that the *intimidating policing* and *ill-planned enforcement strategies* added to the problems of drivers during the pandemic. The findings of this last theme overlapped and interlinked with the Governance and Regulatory Challenges discussed above.

4.5.1. Intimidating policing

The issues related to intimidating policing are particularly highlighted in much of the discussion with Nigerian drivers. Some of them even experienced incidents of flogging, chasing around and harassment from law enforcement agencies and reported soldiers were shooting at car tyres and bursting them. The situation was not much different for Bangladeshi drivers too. For both countries, participants reported officials were collecting and accepting bribes and allowing transport services to operate without conforming to COVID-19 safety measures.

These findings are not new. In general, the culture of abuse of power, corruption and concerns about police integrity are not new in the context of developing countries. In Nigeria, the police are more widely perceived to be corrupt and less trusted by citizens (Afrobarometer, 2020). The report published by Human Rights Watch (2010) revealed police officers routinely extort money from drivers and passengers at roadsides checkpoints. In some cases, resulting in confrontations and fuelling police abuse. For Bangladesh, a survey on graft in service-oriented sectors found corruption is highest in law enforcement agencies (The Daily Star, 2018). During the pandemic, the issue has also been frequently reported by local press of the countries, urging police authorities for stricter enforcement and identification of police officers involved in taking bribes (e.g., see Alawiye, 2020).

The military used to arrest people who did not have them [facemask]. They were everywhere enforcing the use of, especially facemasks. If you do not have it on, they will either flog you or you buy it from them at an outrageous sum of money. (NG1)

When these enforcement agents found that we were not finding some of these things easy, they made it more difficult for us. Sometimes, we had to give them some bribes for them to allow you to pass. You may also run into another group, and they will start chasing you. It was all chaos and so difficult to do anything. While driving, one had to be on the alert to know if the car following you was any of the enforcement agents. They were moving with ordinary cars and chasing people around, you would not even know that the taskforce was following you. (NG2)

4.5.2. Ill-planned enforcement strategies

The deficits in the planning of enforcement strategies further compounded challenges for drivers. Discriminatory and irregular rule compliance, as well as heavy fines and vehicle confiscation and recoveries, all added to the problems of drivers. Driving illegally on different hidden routes has also been reported. In Bangladesh, drivers explicitly mentioned lenient enforcement in the second lockdown compared to the first one. However, the situation was not different in the case of Nigeria either where despite being frequent mention of strict enforcement, illegal operations were successfully continued by drivers at different routes. However, research has shown that strict enforcement could improve adherence to some of these rules. A recent study confirms that strict enforcement measures and ensuring people's adherence to rules are needed to reduce the spread of infections (Islam et al., 2020).

There are people who know all kinds of routes. If you wanted to travel from here to Portharcourt on Bike, you will see someone to take you. They know all roads. These young boys know all the routes, they even travel from here to Rivers state (75 km). They used their motorcycle and followed farm roads to avoid the military off at various points even from Obinze. (NG1)

I have not seen any police checking anyone for masks. The government has said that there will be strict regulation on mask, but I have not seen any activity from the government at all. The policies are more active if there is a high ranked police officer is coming to visit. (BD13)

5. Conclusions

This research concludes that the impacts of the COVID-19 outbreak and its following containment measures on the health and wellbeing, personal and working lives of public and paratransit drivers in developing countries are substantial. The pandemic has amplified earlier inequalities and disproportionately affected transport workers in developing countries. The financial hardship faced by all drivers was further aggravated by the government requirement for the provision of sanitization facilities for passengers and protections measures for themselves. There is a clear sense among the public transport and paratransit drivers that they were abandoned by governments and were left with no other choice than to work in the risky situations. Any ‘announced’ support or benefits did not reach the drivers either. The behaviour of transport operating companies was also not helpful – as evidenced by the increases in the ‘cut’ for ridesourcing platforms immediately after such services were allowed. There was a severe lack of support networks or institutions (other than family and friends) for these drivers.

Subjective reflection of drivers highlights discriminatory practices and intimidating enforcement experiences during this time. These challenges have impacted both their personal and working lives. In Bangladesh, drivers were found to be less compliant with COVID19 rules especially during the second lockdown due to lenient enforcement. On the other hand, intimidating law enforcement practices in Nigeria widened the gap between citizens and the government. Lack of information campaigns to reach transport workers also sometimes created confusion and a whole-hearted buy-in from the drivers and operators was limited. Also, some drivers were forced to break the lockdown related regulations to feed their family members. As such, penalizing drivers without alternative provisions to maintain livelihood need to be avoided.

The challenge for the governments is to introduce fair, non-discriminatory enforcement and compliance strategies that are well received by people and can positively influence their perception. Information campaigns to enlighten the passengers about the need for distancing and sanitizing measures will ease the public transport drivers’ tasks, while targeted campaigns to educate the transport workers will also likely be useful. Policies that can be discriminatory by design (e.g., allowing bus fares to rise in Bangladesh, but banning motorcycle ridesourcing) need to be avoided. A risk-based decision making process should be practised – although such evidence was missing at the start of the pandemic, they are now available, e.g. [Hetherington et al. \(2021\)](#) showed that low cost shields can drastically reduce airborne exposure in motorcycle taxis.

An early area of intervention is the provision of financial and food support to the transport workers. In most of the developed world, the transport industry had received substantial bailout packages from respective governments. Such financial and food support directly targeted at the most vulnerable transport workers, rather than vehicle owners will be more useful. Transparent governance of such support schemes is also vitally important, as there were complaints of ‘missing’ support. Given the poor driving skills of many of these drivers, and a large number of crashes in these countries, conditioning some of the financial/food support upon driver training can be a beneficial strategy in the long term. Skills training in other areas can also be a useful long-term strategy.

To maintain a safe transport provision in buses and paratransit. The purchase of PPE and sanitisers should also be supported by the governments, rather than leaving it to private drivers, who are already stretched. Encouraging interest-free loans and providing the private lending sector with guarantees for these types of loans to vulnerable workers can be another avenue to help the workers. While these strategies are difficult to implement in practice due to the unorganised nature of transport provision in most developing countries, the need for some form of organization – even via local worker unions or NGOs – becomes even more important in the context of a pandemic.

To conclude, it is hoped the present research has helped to accumulate an understanding of the issues faced by the public- and paratransit drivers in LMICs and would contribute to developing a pandemic resilient public transport system for the future without placing the livelihood and health and wellbeing of its workers at risk.

Financial disclosure

We acknowledge the support from UK Research and Innovation as part of the Global Challenges Research Fund (GCRF) and Newton Fund Agile Response Call to address COVID19 (No. EP/V043226/1).

CRedit authorship contribution statement

Zahara Batool: Conceptualization, Formal analysis, Investigation, Methodology, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Chinebuli Uzundu:** Data curation, Investigation, Resources, Validation, Writing – original draft. **Md Mohaimanul Islam:** Data curation, Investigation, Validation. **Farzana Rahman:** Investigation, Supervision, Validation. **Zia Wadud:** Funding acquisition, Methodology, Project administration, Resources, Supervision, Validation, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

Acknowledgements

We acknowledge the support from UK Research and Innovation as part of the Global Challenges Research Fund (GCRF) and Newton Fund Agile Response Call to address COVID19 (No. EP/V043226/1).

References

- Abdullah, M., Ali, N., Aslam, A.B., Javid, M.A., Hussain, S.A., 2022. Factors affecting the mode choice behavior before and during COVID19 pandemic in Pakistan. *International Journal of Transportation Science and Technology* 11 (1), 174–186.
- Adeiran, I., 2020. Coronavirus: drivers flout lockdown order in Lagos. <https://www.premiumtimesng.com/regional/ssouth-west/387773-coronavirus-drivers-flout-lockdown-order-in-lagos.html?tztc=1>.
- Afrobarometer, 2020. In Nigeria, Majority of Police Encounters Marked by Bribery, Difficulty Getting Assistance, Survey Shows.
- Agyemang, E., Agyei-Mensah, S., Kyere-Gyeabour, E., 2021. Face mask use among commercial drivers during the COVID19 pandemic in accra, Ghana. *J. Community Health* 46 (6), 1226–1235. <https://doi.org/10.1007/s10900-021-01004-0>.
- Alawiye, A., 2020. Despite lockdown, no-movement order, transport companies still embark on night journeys. <https://www.icirnigeria.org/despite-transport-companies-night-journeys/>.
- Alozie, C., 2020. Breaking] Covid -19: No more weddings, burial in Imo – Uzodinma talks tough. *Vanguard*. Available at: <https://www.vanguardngr.com/2020/03/breaking-COVID19-no-more-weddings-burial-in-imo-uzodinma-talks-tough/amp/>.
- Anable, J., Brown, L., Docherty, I., Marsden, G., 2022. Less Is More: Changing Travel in a Post-pandemic Society, 978-1-913299-15-6. Centre for Research into Energy Demand Solutions, Oxford, UK.
- Ansari, S., Du, H., Naghdy, F., Sattar, A., 2023. Impact of Post-Covid-19 on Driver Behaviours: A Perspective towards Pandemic-Sustained Transportation.
- Awad-Nunez, S., Julio, R., Gomez, J., Moya-Gomez, B., Gozalez, J.S., 2021. Post-COVID19 travel behaviour patterns: impact on the willingness to pay of users of public transport and shared mobility services in Spain. *European Transport Research Review* 13, 20.
- Batool, Z., Carsten, O., Jopson, Ann, 2012. Road safety issues in Pakistan: a case study of Lahore. *Transport. Plann. Technol.* 35 (1), 31–48. <https://doi.org/10.1080/03081060.2012.635415>.
- Bhaduri, E., Manoj, B.S., Wadud, Z., Goswami, A., Choudhury, C., 2020. Modelling the effects of COVID19 on mode choice behaviour in India. *Transp. Res. Interdiscip. Perspect.* 8, 100273.
- Bird, J., Kriticos, S., Tsivanidis, N., 2020. Impact of COVID19 on Public Transport. IGC International Growth Centre. <https://www.theigc.org/blog/impact-of-COVID19-on-public-transport/>.
- Bwambale, A., Uzundu, C., Mukwaya, P., Islam, M., Rahman, F., Wadud, Z., 2021. User Willingness to Pay for COVID19 Mitigation Measures in Public Transport and Paratransit in Developing Economies: Evidence from Uganda and Bangladesh.
- Calling, C., 2021. Students organize donation drive for UP-ikot jeepney drivers. Available from: <https://themaniladispatchdotcom.wordpress.com/gallery/>.
- Carmassi, C., Pedrinelli, V., Dell'oster, V., Bertelloni, C.A., Cordone, A., Bouanani, S., Corsi, M., Baldanzi, S., Malacarne, P., Dell'osso, L., Buselli, R., 2021. Work and social functioning in frontline healthcare workers during the COVID19 pandemic in Italy: role of acute post-traumatic stress, depressive and anxiety symptoms. *Riv. Psichiatr.* 56, 189–197.
- Cresswell, J., 2007. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. Sage, Thousand Oaks.
- Darwish, W., Burnett-Stuart, M., Humlova, P., 2020. COVID19 Impact on vulnerable households in Yemen. Available at: <https://reliefweb.int/report/yemen/COVID19-impact-vulnerable-households-yemen-november-2020>.
- Das, S., et al., 2021. A radical modal shift from public to private transport mode. *Transport Pol.* 109, 1–11.
- Despard, M., Grinstein-Weiss, M., Chun, Y., Roll, S., 2020. COVID19 job and income loss leading to more hunger and financial hardship [Online]. Available: <https://www.brookings.edu/blog/up-front/2020/07/13/COVID19-job-and-income-loss-leading-to-more-hunger-and-financial-hardship/>. (Accessed 5 April 2022).
- Dixon, S., 2020. Understanding COVID19's Impact on the Transportation Sector. Deloitte. <https://www2.deloitte.com/us/en/pages/about-deloitte/articles/COVID19/COVID19-impact-on-transportation-sector.html>.
- Dzisi, E.K.J., Dei, O.A., 2020. Adherence to social distancing and wearing of masks within public transportation during the COVID 19 pandemic. *Transp. Res. Interdiscip. Perspect.* 7, 100191.
- Fadare, S.O., Wojuade, C.A., 2007. Study of traffic delay situation in ibadan, Nigeria. *Ife planning journal*, 3 (1).
- Fielbaum, A., Ruiz, F., Boccardo, G., Rubio, D., Tirachini, A., Rosales-Salas, J., 2023. The job of public transport, ride-hailing and delivery drivers: conditions during the COVID-19 pandemic and implications for a post-pandemic future. *Epub* 2022 Nov 11. PMID: 36405769; PMCID: PMC9650571 *Travel Behav Soc* 31, 63–77. <https://doi.org/10.1016/j.tbs.2022.11.004>.
- France-Presse, A., 2021. Public transport ahead of lockdown. <https://www.ndtv.com/world-news/thousands-stranded-as-bangladesh-shuts-public-transport-ahead-of-lockdown-2474627>.
- Gogoi, M., Chaloner, J., Qureshi, I., et al., 2023. One virus, many lives: a qualitative study of lived experiences and quality of life of adults from diverse backgrounds living in the UK during the COVID-19 pandemic. *BMJ Open* 13, e067569. <https://doi.org/10.1136/bmjopen-2022-067569>.
- Gong, Y., Liu, X., Zheng, Y., Mei, H., Que, J., Yuan, K., Yan, W., Shi, L., Meng, S., Bao, Y., Lu, L., 2022. COVID-19 induced economic slowdown and mental health issues. PMID: 35310204; PMCID: PMC8931846 *Front. Psychol.* 13, 777350. <https://doi.org/10.3389/fpsyg.2022.777350>.
- Gössling, S., Scott, D., Hall, C.M., 2020. Pandemics, tourism and global change: a rapid assessment of COVID-19. *J. Sustain. Tourism* 1–20.
- Hefferon, K., Gil-Rodriguez, E., 2011. Methods: Interpretative phenomenological analysis. <https://www.bps.org.uk/psychologist/methods-interpretative-phenomenological-analysis>.
- Hennink, M., Kaiser, B., 2022. Sample sizes for saturation in qualitative research: a systematic review of empirical tests. *Soc. Sci. Med.* <https://www.sciencedirect.com/science/article/pii/S02777953621008558>.
- Hetherington, R., Hasan, A.B.M.T., Khan, A., Roy, D., Salehin, M., Wadud, Z., 2021. Exposure risk analysis of COVID19 for a ride-sharing motorbike taxi. *Phys. Fluids*.
- Holman, E., et al., 2020. The unfolding COVID-19 pandemic: a probability-based, nationally representative study of mental health in the United States. *Sci. Adv.* 6, eabd5390 <https://doi.org/10.1126/sciadv.abd5390>.
- Hörcher, D., Singh, R., Graham, D.J., 2021. Social distancing in public transport: mobilising new technologies for demand management under the COVID19 crisis. *Transportation* 1–30.
- Human Rights Watch, 2010. Nigeria: corruption fueling police abuses. <https://www.hrw.org/news/2010/08/17/nigeria-corruption-fueling-police-abuses>.

- Imo State Board of Internal Revenue Owerri (ISBIR), 2020. Number of Registered Vehicles by Type and Year, pp. 2013–2017.
- IPA. Interpretative phenomenological analysis. n.d. <http://www.ipa.bbk.ac.uk/about-ipa>.
- Islam, S., Islam, R., Mannan, F., Rahman, S., Islam, T., 2020. COVID19 pandemic: an analysis of the healthcare, social and economic challenges in Bangladesh. *Progress in Disaster Science* 8, 100135.
- Jamal, S., Chowdhury, S., Newbold, K.B., 2022. Transport preferences and dilemmas in the post-lockdown (COVID-19) period: findings from a qualitative study of young commuters in Dhaka, Bangladesh. *Epub* 2022 Jan 7. PMID: 35036315; PMCID: PMC8744405 *Case Stud Transp Policy* 10 (1), 406–416. <https://doi.org/10.1016/j.cstp.2022.01.001>.
- Jenelius, E., Cebeacauer, M., 2020. Impacts of COVID19 on public transport ridership in Sweden: analysis of ticket validations, sales and passenger counts. *Transp. Res. Interdiscip. Perspect.* 8, 100242 <https://doi.org/10.1016/j.trip.2020.100242>.
- John, L.M., Flin, R., Mearns, K., 2006. Bus driver well-being review: 50 years of research. *Transport. Res. F Traffic Psychol. Behav.* 9 (2), 89–114.
- Kamal, S.M., Ahsan, N.A., 2018. Uber-Pathao ride-share's impact on Dhaka. *The financial express*. <https://thefinancialexpress.com.bd/views/uber-pathao-ridesharesimpact-on-dhaka-1524842540>. (Accessed 8 September 2021).
- King, N., 2004. Using templates in the thematic analysis of text. In: Cassell, C., Symon, G. (Eds.), *Essential Guide to Qualitative Methods in Organizational Research*. Sage, London, UK, pp. 257–270.
- Lemke, M.K., Apostolopoulos, Y., Sönmez, S., 2020. Syndemic frameworks to understand the effects of COVID-19 on commercial driver stress, health, and safety. *J. Transport Health* 18, 100877.
- Malpass, D., 2021. Covid crisis is fuelling food price rises for world's poorest. *Guardian*. <https://www.theguardian.com/business/2021/jan/29/covid-crisis-is-fuelling-food-price-rises-for-worlds-poorest>. (Accessed 5 April 2022).
- Mogaji, E., 2020. Impact of COVID19 on Transportation in Lagos, Nigeria, vol. 6. *Transportation Research Interdisciplinary Perspectives*, 100154.
- Nation, United, 2022. Food Price Index hit record high in February, UN agency reports. <https://news.un.org/en/story/2022/03/1113332>.
- National Bureau of statistics, 2020. Transport watch. <https://nigerianstat.gov.ng/elibrary>.
- Ndikom, O.B.C., 2008. *Fare Systems and Strategies in Element of Transport Management*. Bunmico Publishers, Lagos.
- Ojekunle, J.A., 2014. Analysis of fare structure and determinant of bus operations in Nigerian cities. *Int. J. Develop Soc.* 3 (2) <https://doi.org/10.11634/216817831504553>.
- Okoko, E., 2006. *Transportation Planning and Management in Urban Transportation Planning and Modelling*. Millennium Publishers, Akure.
- Pimenta, A., Assuncao, A., 2015. Thermal discomfort and hypertension in bus drivers and chargers in the metropolitan region of Belo Horizonte. Brazil. <https://doi.org/10.1016/j.apergo.2014.10.011>.
- Rasca, S., Markvica, K., Ivanschitz, B.P., 2021. Impacts of COVID19 and Pandemic Control Measures on Public Transport Ridership in European Urban Areas – the Cases of Vienna, Innsbruck, Oslo, and Agder.
- RSTP, 2015. *Revised Strategic Transport Plan (RSTP), 2015-2035*. Government of the People's Republic of Bangladesh. Ministry of Communications, Dhaka Transport Co-Ordination Board.
- Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., Jinks, C., 2018. Saturation in qualitative research: exploring its conceptualization and operationalization. *Qual. Quantity* 52 (4), 1893–1907. <https://doi.org/10.1007/s11135-017-0574-8>. *Epub* 2017 Sep 14. PMID: 29937585; PMCID: PMC5993836.
- Sung, J., Monschauer, Y., 2020. Changes in Transport Behaviour during the COVID19 Crisis. IEA. <https://www.iea.org/articles/changes-in-transport-behaviour-during-the-COVID19-crisis>.
- Surico, J., 2021. Informal transport must play a bigger role in post-pandemic recovery. Here's How that Can Happen. <https://www.research.ox.ac.uk/article/2021-06-16-informal-transport-must-play-a-bigger-role-in-post-pandemic-recovery-here-s-how-that-can-happen>.
- The Daily Star, 2018. Corruption highest in law enforcement. <https://www.thedailystar.net/news/city/corruption-in-bangladesh-law-enforcement-agencies-most-corrupt-tib-1626589>. (Accessed 5 April 2022).
- The Health Foundation, 2020. *Emerging Evidence on COVID19's Impact on Mental Health and Health Inequalities*.
- The United Kingdom Parliament, 2020. *COVID19 and occupational risk* [Online]. <https://post.parliament.uk/COVID19-and-occupational-risk/>. (Accessed 11 April 2022).
- The Urban Catalysts, 2021. *Moving towards Gender Equitable Public and Paratransit in a Post-COVID19 World*. IMC Worldwide.
- The World Bank, 2020. Covid-19 to add as many as 150 million extreme poor by 2021. <https://www.worldbank.org/en/news/press-release/2020/10/07/covid-19-to-add-as-many-as-150-million-extreme-poor-by-2021>.
- Townsend, K., 2013. Saturation and run off: how many interviews are required in qualitative research. https://www.anzam.org/wp-content/uploads/pdf-manager/5_ANZAM-2013-002.PDF.
- Tribune, Dhaka, 2020. Covid-19: public transport services struggling for lack of passengers. <https://www.dhakatribune.com/bangladesh/213688/covid-19-public-transport-services-struggling-for>.
- Tsifodze, E., 2020. *Slums, coronavirus; the remedy* [online]. <https://www.modernghana.com/news/994988/slums-coronavirus-the-remedy.html>. (Accessed 11 April 2022).
- Vasileiou, K., Barnett, J., Thorpe, S., et al., 2018. Characterising and justifying sample size sufficiency in interview-based studies: systematic analysis of qualitative health research over a 15-year period. *BMC Med. Res. Methodol.* 18, 148. <https://doi.org/10.1186/s12874-018-0594-7>.
- Wadud, Z., 2020. The effects of e-ridehailing on motorcycle ownership in an emerging-country megacity. *Transport. Res. Pol. Pract.* 137, 301–312.
- Wang, J., Huang, J., Yang, H., et al., 2022. Resilience and recovery of public transport use during COVID-19. *npj Urban Sustain* 2, 18. <https://doi.org/10.1038/s42949-022-00061-1>.
- Ying, Y., Ruan, L., Kong, F., et al., 2020. Mental health status among family members of health care workers in Ningbo, China, during the coronavirus disease 2019 (COVID19) outbreak: a cross-sectional study. *BMC Psychiatr.* 20, 379. <https://doi.org/10.1186/s12888-020-02784-w>.
- Zafri, N.M., Khan, A., Jamal, S., Alam, B.M., 2023. Impact of COVID-19 on public transport usage in an anticipated 'new normal' situation: the case of a South Asian country based on first wave data. *Asian Transport Studies* 9, 100099. <https://doi.org/10.1016/j.eastsj.2023.100099>. *Epub* 2023 Feb 17. PMCID: PMC9935274.
- Zavareh, M.F.M., Mehdizadeh, T., Nordfjærn, 2022. Demand for mitigating the risk of COVID-19 infection in public transport: the role of social trust and fatalistic beliefs. *Transport. Res. F Traffic Psychol. Behav.* 84, 348–362.
- Zhang, J., Hayashi, Y., Frank, L.D., 2021. COVID19 and transport: findings from a world-wide expert survey. *Transport Pol.* 103, 68–85.