Densification Efforts by Urban Local Authorities in Zimbabwe under the Impact of COVID-19

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Abstract

The article examines the implications of densifying cities in the context of rapid urbanisation and COVID-19. One of the issues concerning the spreading of COVID-19 is the role played by population density. Increasing density has benefits that relate to counteracting the detrimental effects of urban sprawl. However, the emergence of COVID-19 poses challenges in implementing densification due to tensions between its benefits and health impacts. Therefore, the article considers the implications of COVID-19 on densification efforts made by municipal authorities in Zimbabwe. The research adopted the social interpretivism philosophy and the qualitative research approach in investigating the problem. It used the exploratory research design and the health urban planning and sustainable city concepts to inform the study. Data collection was through documentary review and key informant interviews. The data were analysed through content and thematic analysis. The study reveals that density is not the only factor that contributes to the spread of COVID-19. It is concluded that densification cannot be discarded because of the COVID-19 pandemic.

Keywords: *urban sprawl, resilience, policy dilemma, densification, urban planning, health impact assessment, urban development.*

INTRODUCTION

Globally, urban local authorities are seeking to raise the population densities in their areas of jurisdiction for various reasons. Planned urban densification is gaining worldwide popularity because it is associated with

immense social, economic and environmental benefits within and outside the cities (Bereitschaft and Scheller, 2020; Dembski *et al*., 2020; Olanrewaju and Adegun, 2021). However, while densification is a noble urban development practice, local authorities encounter complex challenges in implementing it (Turok, 2011; Berg, 2016; Dunning, Hickman, and While, 2020). The challenges of implementing densification are more burdensome on policy-makers and urban planners who are the vanguard of crafting policies that influence city development patterns and forms (Turok, 2011). Notwithstanding the benefits of densification, it has potential negative impacts that need to be addressed, thereby complicating its implementation *(ibid.*). The drive to increase densities is complicated as it requires policy-makers and urban planners to balance several issues that include technical, social, economic and environmental, and health concerns in densifying the cities (Dunning, Hickman and While, 2020).

One of the major contemporary challenges to densification is the health crisis, that is, the coronavirus (COVID-19) pandemic in 2019 (UN-HABITAT, 2021). The outbreak and spreading of the pandemic across the globe, particularly in urban areas, have raised questions about the cumulative benefits of densification concerning the health of society (Dunning, Hickman, and While, 2020). Further, there intense is policy and academic research about the future of densification as the predominant strategy of urban development in the contest against COVID-19 (Berg, 2020; Afrin, Chowdhury and Rahman, 2021; Philip, Garth, and Alison, 2021). These researches have been motivated by the role of density in the transmission of COVID-19 (Hamidi, Sabouri, and Ewing, 2020). It is noteworthy that there are two perspectives on the connection between cities' densities and their vulnerability to COVID-19 *(ibid.)*. One of the perspectives links the greater transmission of the pandemic in cities to densification. The other viewpoint disputes the vulnerability of cities to the pandemic due to densification (Fang and Wahba, 2020). An analysis of the literature reveals that the researches on these viewpoints are ongoing as there is no definite and authoritative position on the nexus between COVID-19 and urban densities (Mukarram, 2020).

The contrasting perspectives about the connection between urban density and the transmission of COVID-19 and the current research on them raise two issues about densification. Firstly, every perspective has policy implications for cities that are considering the adoption of hard densification, that is, implementing densification on a large scale for the first time. Secondly, the cities that are battling the effects of the pandemic and urban sprawl urgently need the outcome of the research as evidence to make and implement planning decisions that tackle both issues. For instance, cities in Zimbabwe are badly in need of this outcome as they are trapped in the dilemma of whether to adopt hard densification or not in the context of the negative effects of urban sprawl and the pandemic. The cities are in this predicament because no sooner did the government indicate the need to adopt hard densification, was there an outbreak of the COVID-19 and the ensuing debates about the role of high density in contributing to its spreading.

It is important to note that, while several types of researches have been done elsewhere to provide evidence about the effect of density on COVID-19, there seems to be no similar research done in Zimbabwe. Therefore, this research seeks to examine the implications of COVID-19 on initiatives by urban local authorities in Zimbabwe to adopt a densification strategy. This research aims to provide evidence that will aid public authorities in Zimbabwe to decide on densification in the context of the pandemic based on insights from local and international experiences. It is intended to benefit actors in urban development. This is achieved by examining the connection between the spread of the pandemic and density through empirical and documentary analysis. The major research question to be addressed is: Should urban local authorities in Zimbabwe adopt densification and under what conditions? The article demonstrates that density is not the sole determinant of the vulnerability of cities to health and pandemics like COVID-19. The article argues that there are multiple solutions to pandemics. Further, it argues that density planning should be adopted while taking measures for health-proofing development in cities.

The article is divided into seven sections: the introduction and background situating the research problem in the local and global context,

conceptual and theoretical frameworks, literature review, methodology, results and discussions, recommendation and conclusion.

THE CONCEPTUAL THEORETICAL FRAMEWORK

Health proofing of urban planning policies and development is imperative. If not properly addressed through health impact assessments, it can have negative implications on cities. The section achieves this by focusing on the implications of COVID-19 on densification initiatives by municipalities.

Proper urban planning and development are important facets that undergird the sustainability of cities. Sustainable cities in addition to being resilient, functional and productive, are healthy settlements. Urban development is the making and sustenance of cities through the construction and regeneration processes that foster their operational, health, and liability needs (Zimunya and Chirisa, 2021). Planning is an activity that is undertaken by public authorities and it involves the generation of spatial strategies that are used to guide urban development. (Parker and Doak, 2012). Its products are plans and policies that either support the cost-effective and sustainable compact urban form or promote the costly and less sustainable sprawling urban patterns. In this way, planning can aid or undermine the creation and restructuring of cities through its spatial strategies. In the same vein, planning strategies can promote or undermine healthy conditions in cities.

The adoption of effective planning strategies that support sustainable cities is affected by several factors. Among other issues, health crises affect the nature of urban planning and resultantly urban development. The connection between health, one the one hand, and urban planning and development, on the other, is a long-standing history (Berg, 2020). For instance, over a period spanning over two centuries, epidemics and pandemics have shaped the policy and practice of urban planning and development across the globe. It is important to note that the impact of health issues on urban planning and development aspects is often positive. In the past, the responses to epidemics and pandemics have led to the adoption of better planning standards resulting in better urban built environments manifested by better services and living spaces (Bereitschaft

and Scheller, 2020). Both past and recent studies indicate that previous disease outbreaks have led to improved water and sanitation services and a better-built environment that have enhanced the quality of urban life and the continued existence of cities.

However, while the outbreaks of diseases are subsequently followed by improvement in cities, they are associated with policy dilemmas that affect decision-making in city development. Policy dilemma encompasses policy-makers and analysts making efforts to predict if policies will have a desirable impact. This dilemma occurs in a situation where the determinants of the transmission of the diseases are not clear (Hamidi, Sabouri, and Ewing, 2020). Usually, such dilemmas are characterised by conflicting perspectives about what drives the transmission of disease, thereby affecting the devising of urban planning and development strategies. Depending on the nature of the analysis of the determinants of the transmission of the disease, two possible scenarios of planning decisions and responses to such dilemmas emerge. One possible scenario is that of making wrong planning decisions based on a flawed assessment of a health crisis, resulting in the rejection of better urban planning or/and development policies, strategies, and practices (Turok, 2011). The consequences of such rejection are to deny the realisation of potential positive effects associated with such practices and policies to the affected cities (*ibid*.). Corollary, the other scenario is to make a proper assessment of the health crisis resulting in the modification of a planning system, thereby leading to an improved built environment in cities guided by such a system.

One of the contemporary health crises that are creating policy dilemmas in urban planning policy and development concerns the future of densification practices in cities in the context of the COVID-19 pandemic. Densification is a practice that refers to the adoption of a compact form of urban development (Dembski *et al*., 2020; Olanrewaju and Adegun, 2021). It is manifested by an increased number of dwelling units per hectare or square kilometre and resultantly the rising of population densities in an entire city or some of its parts (Turok, 2011). The COVID-19 threatens to scuttle efforts and proposals by urban local authorities to implement densification initiatives in many cities across the

globe. This threat is worsened by the highly contagious nature of the disease that spread to 215 countries in a very short period (Mukarram, 2020). Theoretically, it is argued that high densities aid the transmission of infectious diseases because citizens come into closer contact and interact more among themselves (Hamidi, Sabouri, and Ewing, 2020). However, while there are several recent studies at the global level on the contribution of urban densities to the transmission of COVID-19 (Bereitschaft and Scheller, 2020; Fang and Wahba, 2020; Afrin, Chowdhury and Rahman, 2021; UN-HABITAT, 2021), currently, there seems to be no research on the issue at the regional level and in Zimbabwe. This lacunae of literature on the relationship between density and the spreading COVID-19 in Zimbabwe makes this study germane and more imperative.

Thus, the policy dilemma in this respect concerns the difficulty facing policy-makers in deciding on the adoption of a densification strategy in the context of the COVID-19 pandemic. Policy-makers are not sure whether to adopt the densification strategy or not, given the controversies surrounding the role of densities in the transmission of the COVID-19 pandemic (UN-HABITAT, 2021). Making decisions on densification policies in the context of the COVID-19 pandemic is currently not easy for urban local authorities (Afrin, Chowdhury, and Rahman, 2021). One possible reaction of policy-makers is to reject densification on the erroneous basis that it contributes significantly to the transmission of the COVID-19 pandemic despite indications by recent studies that there are several causes of its spread. Past and recent studies indicate that densification is adopted as a practice to counteract urban sprawl for its several benefits within and outside cities (Dieleman and Wegener, 2004; Turok, 2011; Dunning, Hickman and While, 2020; Rocha, 2021). As such, the possible rejection of densification initiatives on the erroneous connection with COVID-19 has potential ramifying consequences of foregoing its benefits in cities and their hinterlands.

The foregoing conceptual and theoretical analysis shows that while health issues positively impact urban planning and development in a manner that improves cities, they can complicate decision-making on city development. The challenge posed by health issues is to balance the

environmental, social and economic impacts of policies together with health outcomes. The COVID-19 pandemic presents one classical policy dilemma to urban decision-makers about the course of action to be taken between adopting densification or continuing with the low-density development of urban forms (Berg, 2020; Hamidi, Sabouri, and Ewing, 2020). The latter option is associated with negative externalities for both the cities and their peripheries. Therefore, it is important to undertake a proper impact health assessment of any urban issue before making planning and development decisions. Thus, in the case of the nexus between COVID-19 and densification, it is important to analyse the drivers of the pandemic to avoid uninformed decisions like discarding compaction as a development style, thereby foregoing its merits and compromising urban sustainability (Sharifi and Khavarian-Garmsir, 2020; Philip, Garth and Alison, 2021). The challenges encountered by cities due to sprawling urban development are such that no urban local authority can afford to reject densification (Turok, 2011; UN-HABITAT, 2021), particularly based on poor analysis of its impact on the transmission of pandemics like COVID-19. If evidence from other research concerning the multiplicity of drivers of COVID-19 is to go by, it is equally imperative to consider complementary solutions to the pandemic and similar diseases without rejecting densification as the norm in the post-pandemic planning and development of cities (Bereitschaft and Scheller, 2020; Afrin, Chowdhury, and Rahman, 2021; Rocha, 2021). Notwithstanding this emerging idea, the emergence of COVID-19 has revealed to the world the importance of strengthening the impact of health assessments and health proofing of all future urban planning and development policies.

LITERATURE REVIEW

Recent studies have examined the contribution of urban density to the spreading of COVID-19 (Hamidi, Sabouri and Ewing, 2020; Kang *et al*., 2020; Lingam and Sapkal, 2020; Bhattacharjee and Sattar, 2021). The debates about the interconnection of the spread of COVID-19 and density have been sparked by the fact that well-planned and managed urban density is one of the components that undergirds the creation of sustainable cities (Turok, 2011; Hamidi and Zandiatashbar, 2019; UN-HABITAT, 2021). However, the pandemic has prompted reflections on

the importance of dense urbanism considering that COVID-19 is spread through contact with other people. This interactive aspect of people makes density an issue in tackling the pandemic, particularly in cities where there are mass interactions.

Theoretically, it is perceived that there is a positive correlation between the incidences of COVID-19 and its mortality. This perception emanates from the argument that high density is associated with increased population and, resultantly. high mass interaction. Consequently, this common thinking and opinion take density as a major factor in causing the transmission of the pandemic and its mortality. However, several empirical and analytical studies on this problem indicate that density is not the only factor that causes the spreading of COVID-19 and its fatalities(Fang and Wahba, 2020; Hamidi, Sabouri and Ewing, 2020; Mukarram, 2020; Afrin, Chowdhury and Rahman, 2021; UN-HABITAT, 2021). These studies indicate that in some cases, COVID-19 severely affected both low and high density areas in cities (*ibid*.). On the other hand, these studies indicate that COVID-19 was successfully contained in some dense urban areas. These findings, to some extent, dispel the notion that density is the only risk factor in the transmission of COVID-19. These studies imply that solutions to the pandemic are beyond addressing the issues of urban density. In other words, these studies suggest that de-densification or not adopting densification are not viable solutions to the COVID-19 pandemic. This makes it imperative to examine the other factors that contribute to the spread of the pandemic.

The issue of poor service delivery, particularly inadequate water provision and unsanitary conditions in cities, is one of the factors that has contributed to the transmission of COVID-19. For instance, inadequate water supply affects the washing of hands to prevent the spread of COVID-19 (Lingam and Sapkal, 2020). Besides that, the provision of unclean water is associated with diarrhoeal diseases that weaken the immune system (*ibid*.). Further, the lack of these basic services makes it difficult for the deprived urbanites to practice social distancing, which is one of the measures to prevent the spreading of the pandemic (Bereitschaft and Scheller, 2020; UN-HABITAT, 2021). Residents who are affected by poor service delivery are more vulnerable to the pandemic

as they use communal water and sanitation facilities and consequently have chances of contracting COVID-19 through sharing the facilities (Mukarram, 2020). The evidence from a recent study shows that Mumbai, India, was hard hit by the pandemic because of improper sanitary conditions wherein in some suburbs, 75 to 100 residents share one toilet (Bhattacharjee and Sattar, 2021). This deficit makes it difficult for them to avoid coming into contact with viral discharges of COVID-19 positive people (Lingam and Sapkal, 2020). This level of poor service delivery is characteristic of cities in the global south where a significant number of residents live in slum conditions, thereby exposing them to the pandemic.

The other factor that contributes to the spread of COVID-19 is poverty among the urbanites. The issue of poverty makes the residents vulnerable to the pandemic in several ways. The impoverished residents have limited or no access to better health facilities and services, basic services, nutrition and housing, thereby making them susceptible to the pandemic(Lingam and Sapkal, 2020; Bhattacharjee and Sattar, 2021). In addition, the marginalised communities do not have timely access to information about the pandemic which is important for taking preventive action and responding to infection (*ibid*.). In addition, they have limited resources to cope with lockdown measures and this forces them to go out frequently, thereby exposing them to the pandemic. The impoverishment of citizens is compounded by high levels of unemployment, poor economic conditions, and the absence of sound social protection systems to bail them out. The high-level poverty levels explain the severity of the COVID-19 pandemic in some cities, particularly in developing countries.

More so, the poor housing situation characterised by a shortage of living space, homelessness, and poor housing design cause the spread of COVID-19. The shortage of housing causes overcrowding, making it difficult to practice social distancing among occupants (Mukarram, 2020; Afrin, Chowdhury and Rahman, 2021). Besides that, homelessness makes it difficult to manage the pandemic through contact tracing and surveillance as the homeless people are ever wandering (Kang *et al*., 2020; Bhattacharjee and Sattar, 2021). The poor housing design relates to, among other issues, poor ventilation and unsanitary conditions that

aggravate the spread of the pandemic. A recent study amply shows that poor housing conditions contribute to the vulnerability of residents to COVID-19 (Kang *et al*., 2020). For instance, in Singapore, a large number of migrant workers who resided in congested dormitories were infected by the pandemic (*ibid*.). The narratives around the causes and spread of the COVID-19 indicate that poor housing conditions contribute to the spreading of the pandemic.

The issue of poor governance plays a major role in aiding the spread of COVID-19. Governance relates to how various stakeholders involved in containing and preventing the pandemic are organised and interact to achieve the common goals of tackling it. COVID-19 is a complicated pandemic that requires collaboration among stakeholders and multi-level coordination of governments (UN-HABITAT, 2021). It permeates the whole system of dealing with the pandemic from prevention, preparedness, reaction to the outbreak and rebuilding in the post-pandemic period. There is convergence among researchers that uncoordinated action among stakeholders and governments partly contributes to the spreading of the pandemic (Connolly, Ali and Keil, 2020; Afrin, Chowdhury, and Rahman, 2021; UN-HABITAT, 2021). For instance, uncoordinated action among government agencies worsened the scourge of the pandemic in the United Kingdom and the United States (Connolly, Ali and Keil, 2020). The lack of coordination stalled the effective implementation of strategies to prevent and contain the spreading of the disease (*ibid*.). This shows that the fight against COVID-19 goes beyond the issue of density but hinges on issues of organisational capacity of governments and other stakeholders.

The spreading of COVID-19 is attributable to dysfunctional health delivery systems at local and national levels. This challenge is manifested by inadequate health facilities that are insufficiently resourced in terms of medical staff, equipment and medical stocks(Lingam and Sapkal, 2020; Afrin, Chowdhury and Rahman, 2021). The poor condition of the health delivery system is exacerbated by a lack of policy capacity to design and develop sound response strategies during the pandemic (Connolly, Ali and Keil, 2020). Further, the lack of capacity adversely affects the implementation of vital preventive and curative activities in fighting the

pandemic (*ibid.*). Thus, it can be argued that even where densities are low, it is difficult to contain and prevent the pandemic with a shambolic health delivery system in place. Conversely, the low COVID-19 mortality in Singapore, despite high infections, demonstrates the importance of a strong health system in fighting the pandemic (Das and Zhang, 2021).

The enhanced public transit system and excessive connectivity that consequently leads to mass interaction in cities constitute risk factors in the spreading of the COVID-19. The mass interaction among local people in cities is partly caused by unsustainable urban design forms that are monocentric and consequently encourage a congregation of people in focal points (Afrin, Chowdhury, and Rahman, 2021). The impact of the pandemic is worsened by a deficient public transport system that is overcrowded, thereby affecting the practice of social distancing and lacking resources to test and screen passengers for the COVID-19 infection and disinfection the facilities (UN-HABITAT, 2021). From this analysis, it is noteworthy that reducing the risk of exposure to the pandemic goes beyond the issues of density but involves addressing issues of mobility and public transit.

The underdeveloped communication and information systems partly contribute to the transmission of COVID-19. The rapid nature of the COVID-19 pandemic requires an effective dissemination system of sharing information in real-time between the public and the governments about hotspots infection data, immunisation programmes and behavioural aspects among, other issues, to effectively contain and prevent it (Connolly, Ali and Keil, 2020; Kang *et al*., 2020). The availability of information about hotspots, and infection data is essential as it assists governments and other stakeholders in directing their responses to needy areas (Connolly, Ali, and Keil, 2020). The continued use of the traditional media systems is not effective in aiding the dissemination of information required to combat the pandemic (*ibid.*). Working from home, online shopping, and e-learning are measures to reduce the vulnerability of residents to the pandemic (Kang *et al*., 2020). The challenge is worsened by the absence of smart technologies in most cities in the global south (*ibid*.). This poor communication and information system is thus a major

setback in developing countries in combating the disease even in areas where density is not a risk factor in spreading the disease.

The pre-existing health conditions of residents are a risk factor in the spread of COVID-19 as they undermine the immunity of the people affected by both communicable and non-communicable diseases. The high prevalence of co-morbidities complicates the fight against infection by COVID-19. Recent studies show strong evidence of an association between pre-existing health conditions and vulnerability to COVID-19 morbidity and mortality (Lingam and Sapkal, 2020; Bhattacharjee and Sattar, 2021). This is the case in India where residents of slum settlements who were suffering from communicable diseases like diarrhoea, tuberculosis and pneumonia, were major victims and causalities of the pandemic because of their compromised health status (*ibid*.). The poor health conditions of the residents are worsened by malnutrition, poor service delivery, inadequate housing and poverty that limit access to health services (*ibid.*). Thus, besides the risk factor posed by high density in the spread of COVID-19, pre-existing health conditions are a complicating factor that need to be addressed in tackling the pandemic.

The analysis of the relationship between the spread of COVID-19 and its mortality, on one hand, and densification, on the other hand, has shown an interconnectedness of issues. The analysis reveals that besides high density, other factors contribute to the transmission of the pandemic and its mortality although the impact of these factors varies in context. In some areas, a certain factor contributes to the high severity of the pandemic but in others it is insignificant. Notwithstanding the varying impacts of these factors on the spreading of the pandemic, they have general implications on many facets of cities. One of the facets relates to the appropriate spatial pattern of cities between compact form and low-density development.

From the scholarly evidence reviewed, there is a convergence of thinking that, given the multiplicity of factors contributing to the spreading of COVID-19 and its mortality, there is no one solution to the pandemic(Afrin, Chowdhury and Rahman, 2021). There are several complementary solutions to containing and preventing the pandemic and

similar infections, hence all merit considerations (*ibid.*). With special focus on this research, the scholarly evidence indicates that discarding densification practice based on the pandemic is not a viable option given its benefits to cities (Fang and Wahba, 2020; UN-HABITAT, 2021). This view is more compelling as the experience elsewhere has shown that the pandemic can still be managed in denser conditions provided other risk issues about it are addressed (Das and Zhang, 2021). This notion has implications for measures that need to be taken to be able to contain and prevent the pandemic in denser urban setups.

One of the measures that need to be implemented in combating COVID-19 in dense urban conditions is improving service delivery (Mukarram, 2020; UN-HABITAT, 2021). The provision of adequate and clean water and proper sanitation within residential premises enables residents to stay safe at home, thereby reducing the chances of contracting COVID-19. One study indicates that global cities were able to mitigate the impact of the pandemic through the enhanced provision of these basic services (Bereitschaft and Scheller, 2020). This implies that areas with service delivery deficits have to prioritise the provision of the basic services in both existing and newly developed areas. Poverty alleviation is an important component in building resilient cities that can cope with the shock of pandemics like COVID-19. Evidence from recent studies indicates that addressing poverty is at the root of tackling the pandemic as this address other risk factors like poor access to basic services, limited access to health services and information, malnutrition, poor housing conditions and vulnerability to co-morbidities (Bereitschaft and Scheller, 2020; Bhattacharjee and Sattar, 2021). This implies that adopting planning principles that reduce poverty through implementing various strategies is imperative in building resilient, sustainable and compact cities.

Housing plays a crucial role in the life of all people in general. However, its role has become more central during the pandemic-induced lockdowns because besides providing living space it is the locus for tele-working, recreation and e-learning, among other uses (Bereitschaft and Scheller, 2020). In some instances, housing provides space for recuperating patients (*ibid.*). Based on the importance of housing in facilitating the

management of COVID-19, it implies that urban local authorities need to prioritise the provision of adequate housing. The focus of housing should be affordability, good quality and sufficient quantity to meet the needs of marginalised citizens who are susceptible to the pandemic because of limited resources. The contribution of poor housing to the transmission of COVID-19 among migrant workers in Singapore shows the importance of improved housing in fighting the pandemic (Kang *et al*., 2020).

The existence of a functional and sound health delivery system is important in dealing with the COVID-19 even in highly populated areas (Woo, 2020). This is demonstrated by the city-states of Hong Kong and Singapore that managed to tackle the pandemic because they had improved their health delivery systems based on experience with similar pandemics (Connolly, Ali and Keil, 2020). Singapore in particular was able to build a sound health delivery system to manage the COVID-19 because of its high levels of analytical, political and operational capacities (Woo, 2020). Similarly, this implies that other countries can still adopt densification initiatives but they have to build the capacity of their health delivery systems, ranging from sound policies and public administration, infrastructure, adequate equipment, staffing, and medical supplies, among other issues, in anticipation of future pandemics and other disasters.

The availability of modern communication and information systems are important factors that influence the response to pandemics like the COVID-19. Social media, the internet and mobile phones are such modern media platforms that assist in efforts to fight pandemics. For instance, Hong Kong and Singapore developed websites that disseminated real-time information on COVID-19 infection data and hotspots that aided government action to be responsive and change the behaviour of citizens (Connolly, Ali and Keil, 2020). These experiences show that other countries need to improve their information and digital systems in building compact and resilient cities. Pre-existing health conditions constitute a risk factor in the transmission of COVID-19. The adverse effect of the co-morbidities in the spreading and mortality of COVID-19 was demonstrated in India where patients with tuberculosis succumbed to the pandemic (Bhattacharjee and Sattar, 2021). This

implies that tackling the pandemic is not only an issue of controlling density but requires the proper management of chronic diseases.

RESEARCH METHODOLOGY

The study sought to examine the implications of COVID-19 on the efforts by urban local authorities in Zimbabwe to implement densification in the context of the pandemic. The study was informed by the social interpretivism philosophy and employed the qualitative approach to investigate the research problem. The case study research design that examined the spread of COVID-19in selected urban centres in Zimbabwe, namely Mutare, Kadoma, and Rusape, was applied. These three urban centres were purposefully selected to represent large, medium, and small urban centres in Zimbabwe. The issue of size was considered important in the selection of the urban centres because they experience problems differently. Primary data was collected through key informant interviews with town planning and environmental health officials in the local authorities of the three urban centres and from central government officials in the ministries responsible for spatial planning and the provision of housing and social amenities. Apart from that, primary data was collected from in-depth interviews with residents from suburbs of different densities in the selected urban centres who provided insights into the research problem through their lived experiences under the COVID-19 pandemic. The data were analysed through content and thematic analysis.

RESULTS

The research aimed at examining the implications of the proposal by urban local authorities in Zimbabwe to adopt the densification strategy in the context of COVID-19. To investigate the problem, it was necessary to analyse the occurrence and mortality of the pandemic in purposefully selected cities in Zimbabwe. To this end, studies were conducted in Mutare, Kadoma, and Rusape to analyse the occurrence and mortality of the pandemic in these areas since it started up to the end of August 2021.

The study reveals that COVID-19 infections and mortality were higher in high-density residential areas of the three urban areas. In Mutare, the total number of infections was 2024 in the high-density areas compared to

1011 in the low-density areas. There were 133 deaths in Mutare in the high-density areas and 54 deaths in the low-density areas. For Kadoma and Rusape, there were 23 and 275 infections in the high-density areas, respectively and 34 and 129 infections in the low-density areas in the same urban areas over the period under review.

The study further examined the factors that explain the spatial pattern of the pandemic in the three urban areas in the period under review to understand the role of density. The study reveals that high population concentration in the high-density areas partly explains the greater number of infections and mortalities in these areas. The high population is connected with massive interactions of residents in these, areas thereby increasing transmission of the virus and contracting the disease. The worst affected areas were Dangamvura and Chikanga in Mutare, Vengere in Rusape and Rimuka in Kadoma the most populous suburbs in these urban areas.

Apart from density, the study reveals that poor service provision was a major factor that contributed to high incidences of infection and mortality in the high-density suburbs in the three urban areas. The role of poor service delivery is evidenced in Dangamvura and Rimuka suburbs that were hard hit by the pandemic. For instance, the Dangamvura suburb has a perennial water problem spanning two decades where the residents get water once in three days for very few hours. The water problem in Dangamvura was worsened by the fact that this suburb shares little potable water resources with residents from the Gimboki South suburb who do not have access to municipal water since 2008. The residents from the two suburbs share some of the protected and unprotected water sources and this made them vulnerable to contracting the disease. Residents in the Rimuka suburb in Kadoma were exposed to COVID-19 because the majority of them share unimproved sanitation facilities.

The study reveals that the poor housing situation in the three cities contributed to the greater transmission of the disease and its high mortality, particularly in the high-density suburbs. The evidence from secondary sources indicates that the three cities have serious housing backlogs of 49 000, 8 000, and 4500 in Mutare, Kadoma, and Rusape

respectively. The massive shortage of housing has resulted in multiple occupations and consequently overcrowding. This overcrowding problem was corroborated by the interviewed council officials who indicated that most houses in the affected suburbs were shared by at least two households. Both key informants and residents who were interviewed lamented the overcrowded conditions of the houses made it difficult to observe social and physical distancing and practise other hygiene measures as the occupants shared sanitary facilities, thereby increasing the risk of contracting the disease. The poor housing situation is more serious in Rimuka, Kadoma, a city which is grappling with sanitation challenges.

Further, the study reveals that weak health delivery systems caused the severity of the pandemic in the areas of study. The key informants indicated that while municipalities are mandated to provide health facilities and services to the inhabitants, they were confronted by challenges of understaffing, dejection among the available staff, inadequate equipment and medical supplies, and poor health facilities. The gravity of the problem is demonstrated by the lack of the non-existence polyclinics to offer primary health services in the populous suburbs of Gimboki South and Hobhouse in Mutare at the time of the outbreak of the pandemic. Additionally, it was indicated that Mutare Infectious Diseases Hospital, a critical facility that deals with contagious health cases, was dilapidated and did not have adequate equipment and medical supplies. It was explained that the weak health delivery systems were due to poor pre-disaster planning that was compounded by poor governance systems.

Furthermore, the results of the study indicated the severity of the pandemic in the three cities was caused by the underdeveloped communication and information technology systems. The depth of this problem was revealed by key informants who intimated that all the councils relied heavily on traditional media like the door-to-door awareness campaigns to disseminate information. In the context of deficient information and digital systems, it was difficult to communicate timeously vital information on the pandemic to the residents, thereby undermining efforts to fight it. It was revealed that the poor technology and information systems made it difficult for people to work from home

and this was exacerbated by the erratic and non-availability of electricity, thereby forcing people, particularly in the high-density, to continue going to work and increasing the risk of contracting the virus.

The evidence from the field studies showed that the severity of the pandemic in the three cities was caused by pre-existing health conditions among the residents. Key informants interviewed on this issue pointed out that the most common co-morbidities among the affected residents were HIV/AIDS, diabetes and asthma. These co-morbidities compromised the immunity of the patients, thereby increasing their risk of being infected by the virus or succumbing to it. Further, intimated that the risk of co-morbidities was aggravated by the chronically ill patients who missed the medication for their illnesses because it was too expensive or it was out of stock. As such, it was difficult to manage the disease in such people once they contracted it. Besides that, other diseases like tuberculosis and diarrhoea that are associated with unsanitary living conditions, contributed to the severity of the pandemic in the three cities, particularly in the high-density areas.

Poverty was mentioned as one of the major issues that affected the efforts to combat the pandemic in the study areas. The residents who were engaged in the in-depth interviews had no reliable source of income and as such, they depended on informal activities, mainly vending and menial jobs. These types of livelihoods forced the poor residents to go out and conduct livelihood activities, thereby exposing themselves and their families to the pandemic. Key informants mentioned that poverty compounded efforts to contain and prevent the pandemic by forcing the poor residents to live in slums and overcrowded conditions that increased the risk of contracting the virus. Further, they intimated that poverty made it difficult for the poor to access better health facilities and services and information on the pandemic.

DISCUSSION

The study found out that poor service delivery, together with housing conditions rather than high density in the study areas, exposed residents more to the risk of contracting COVID-19 and succumbing to it. These findings mirror scholarly evidence from similar recent studies that show

that overcrowded slum conditions in high-density areas are some of the major contributory factors to the spreading and mortality of the pandemic in developing countries (Bereitschaft and Scheller, 2020; Lingam and Sapkal, 2020; UN-HABITAT, 2021). This empirical and scholarly evidence suggests that interventions to combat infectious diseases should focus on improving urban service provision and housing conditions besides addressing the issue of density. It emerged from this study that weak governance, coupled with a multifunctioning health delivery system, contributed to the severity of the COVID-19 in the three cities that were studied in Zimbabwe. These findings compare well with recent studies that indicated poor governance, combined with health delivery systems, affected efforts to fight the pandemic even in some developed countries(Connolly, Ali and Keil, 2020; UN-HABITAT, 2021). However, similar studies show contrast in this aspect as better health systems supported by good governance aided in fighting the pandemic in the city-states of Singapore and Hong Kong, as shown by low mortalities despite high infections(Sharifi and Khavarian-Garmsir, 2020; Woo, 2020; Das and Zhang, 2021). The contribution ability of Singapore and Hong Kong in containing the pandemic shows the importance of better health capacity as part of disaster preparedness to mitigate health shocks even in densely populated areas.

Further, the study reveals that besides high-density, the transmission of the pandemic in the three cities was worsened by the underdeveloped communication and information technology. This study compares well with recent studies that indicated that poor communication and digital networks compounded the fight against the pandemic in developing countries in contrast with developed countries like Singapore, Australia, and Canada that capitalised on modern technology to combat it(Connolly, Ali, and Keil, 2020; Das and Zhang, 2021; Philip, Garth and Alison, 2021). For instance, these developed countries used dedicated websites to disseminate information and digital networks to carry out surveillance, contact tracing and promote tele-working (*ibid.*). The experiences in Singapore, Australia and Canada demonstrate that with advanced technology, pandemics can still be managed in dense urban settlements.

The study showed that in addition to high-density, the pre-existing health conditions among the urbanites in the study areas contributed to the heightened transmission and mortality of COVID-19. These results resonate with findings of previous research on the same issue in India that indicated that co-morbidities aggravated the COVID-19 pandemic in high-density areas (Bereitschaft and Scheller, 2020; Bhattacharjee and Sattar, 2021). This implies that efforts to fight the pandemic and future health crises in cities should focus on preventing and controlling co-morbidities in addition to achieving well-planned and managed densities (*ibid.*). It emerged from the study that apart from high-density, poverty among the citizens in the residents in the study area, contributed to their vulnerability to the pandemic in various ways. These findings support the scholarly evidence on the role of poverty in contributing to greater transmission of the pandemic and its high mortality in densely populated suburbs (Mukarram, 2020; Bhattacharjee and Sattar, 2021). Thus, efforts to address the pandemic and other infections should tackle poverty and its attendant consequences besides focusing on land management issues only as noted by these recent researches (*ibid.*).

CONCLUSION AND RECOMMENDATIONS

Urban local authorities face complex challenges in seeking to implement densification strategies. The COVID-19 pandemic has come as the biggest challenge in the new millennium affecting the making of decisions about the adoption of densification now and in the future. Following the outbreak of the pandemic, there have been raging debates in the academic and policy arena about the future of densification as a mode of the development pattern of cities in the context of COVID-19. These debates have been prompted by the notion that higher density contributes to greater transmission and mortality of the pandemic. Based on recent extensive scholarly research on the problem there is little evidence to connect higher density with the severity of the COVID-19 pandemic and its mortality. Rather the available ample evidence indicates that multiple factors make certain groups of people more susceptible to COVID-19 and at the same time constrain them and the authorities to fight the pandemic. These factors include poor service delivery and housing conditions, weak health delivery system, poor governance, co-morbidities, poverty,

improper public transport system and excessive connectivity and poor communication and information systems.

In light of this analysis, it is concluded that density is not the only determinant factor for the transmission and mortality of COVID-19. As such, it will be fallacious to focus on density only in attempting to address the pandemic as there are many solutions to the pandemic and its causes. In any case, the scholarly evidence reveals that well-planned and managed density can still be healthy and sustainable in the face of virulent pandemics like COVID-19. Therefore, it is recommended that urban local authorities in Zimbabwe should adopt densification as a strategy for the development of their cities. This recommendation is made subject to the condition that they adopt urban planning, development and management measures that foster sustainability and resilience to enable the cities to fight the current pandemic and prepare for future health shocks. The measures that should be taken include improving basic service and housing delivery, building the capacity of health delivery and governance systems, ending poverty, reducing morbidity, improving the public transport system and adopting modern communication networks.

While COVID-19 has adversely affected cities, it will be erroneous to abandon densification because of its effects. This is so because densification remains a precondition for achieving environmentally sustainable and cost-effective development and management of cities.

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