

Combating COVID-19 Pandemic: Role of Local Government Institutions of developed and developing countries and assessing the activities of Ward 28 of Dhaka from this perspective

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ABSTRACT

COVID-19 brought unprecedented challenges in the lives of people all over the world. Governments all across the globe acted actively to overcome the challenges and curb the disastrous effects of the COVID-19 pandemic. The challenges were manifold in densely populated urban areas. Dhaka, the capital of Bangladesh, is one of the most densely populated cities of the world. Local government institutions of Dhaka faced severe challenges to address COVID-related health and socio-economic issues. However, unlike the developed nations, which are quite resourceful, the local government institutions (LGIs) of the developing countries had limited resources during the pandemic. This study aimed to comprehend the level of services of the LGIs worldwide in tackling the pandemic and the differences in their activities. Extensive literature reviews were conducted for a comparative analysis of the LGIs' initiatives in 30 developed and developing countries. Furthermore, Ward 28 of Dhaka South City Corporation was studied as a case study to assess the activities of local government institutions in Dhaka in light of the roles played by global LGIs. This ward was purposefully chosen for its unique features, such as: being one of the world's most densely populated neighbourhoods, having a diverse employment nature and multiple local organisations that had actively worked with the LGIs, and having a high vulnerability to COVID-19 spreading. The response actions of LGIs in this ward were investigated through several key informant interviews and focus group discussions. This study reveals that both developed and developing countries' LGIs made effective provisions for food, finance and medical aid, enforced restrictions, disseminated up-to-date information, increased awareness, and managed infectious wastes carefully to contain the virus. However, developing countries had drawbacks in direct service provisions, such as monetary assistance, home delivery of food and medicine, and community helpline service. Some commendable measures of Ward 28 of DSCC include controlling vaccination rumours and discreetly aiding respectable families. Moreover, the active participation of Community-Based Organisations is quite laudable. Strong interrelationships among stakeholders, building financial, technical and institutional capabilities, technological advancement, education, training and awareness programs are identified as some of the prerequisites for efficient pandemic management. This study's insights can be instrumental in addressing similar crises, particularly in Asia's developing countries.

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1. Introduction

The unprecedented COVID-19 pandemic brought immense challenges for all levels of government to trade-off between health, economy, and social security (ADB, 2021; Allain-Dupré et al., 2020; Bouhlel, 2021; Espia et al., 2021; Hossain, 2021; Maharaj & Reddy, 2020; Mainali et al., 2021). Globally, over 700 million individuals were infected with COVID-19, and more than 6.9 million died (As of June 7, 2023) (WHO, 2023a). More than 2 million COVID infection cases were officially reported in Bangladesh (WHO, 2023b); in Dhaka alone, the number was about 0.73 million (DGHS, 2023). Millions of people were pushed into extreme poverty by health spending, global food insecurity peaked, and people in both urban and rural settings were severely affected (WHO, 2021).

The first COVID case in Bangladesh was confirmed on March 8, 2020 (Paul, 2020). Bangladesh initially faced many challenges in tackling this fearsome disease due to insufficient testing facilities, safety equipment, skilled human resources, treatment facilities, health service providers, lack of public awareness and the prevalence of a large number of disadvantaged and poor people (Islam et al., 2020). Despite those challenges, local governments remained more active during the pandemic (Hossain, 2021; Sohel et al., 2022).

Local governments in Bangladesh are mandated to provide support and reduce risk during disasters and other extreme events. The Standing Orders on Disaster 2019 specified the duties and functions of the City Corporation and Ward Disaster Management Committee in disaster risk management (Ministry of Disaster Management and Relief, 2020b). The Local Government (City Corporation) Act 2009 specified the health issue-related activities of the City Corporations. Additionally, this act briefly described the stakes of City Corporations in controlling contagious diseases and the penalties for citizens who violate safety measures. Furthermore, during the pandemic, the DSCC (Dhaka South City Corporation) authority circulated many office orders to the ward councillors' office in order to ensure child food, food relief, and monetary aid for COVID victims and poor citizens (DSCC, 2021).

Some recent studies examined the responses of the Local Government Institutions (LGIs) in Bangladesh during the pandemic. Hossain (2021) evaluated that the service areas of the LGIs were mainly health, food, and environmental sectors. This study was based on the perceptions of people residing in rural and urban areas of Bangladesh. Sohel et al. (2022), Panday and Mojumder (2022), Saleheen (2022), Biswas and Mukharjee (2021), and Islam (2020) revealed the COVID-tackling activities of the LGIs in rural Bangladesh. Previous studies have primarily focused on the LGIs of rural areas. However, dense urban areas are more susceptible to infectious diseases, like the COVID-19 pandemic, as local needs and vulnerabilities in urban settings are quite different from rural ones. Though a study by Fatema (2021) summarised the major activities of City Corporations in Bangladesh, however, to the best of the authors' knowledge, no study has examined COVID-response activities at the ward level (the lowest tier of urban local government in Bangladesh). This study addresses this gap and investigates the activities of the local government of Dhaka from the perspective of LGIs (e.g., ward office, local club, and *panchayat*), using Ward 28 of DSCC as a case study. This area is selected as it is one of the most densely populated neighbourhoods in the world, and there exists various *panchayets*, local clubs, and other committees that actively work along with the ward office (Sawe, 2017). Its location, diverse employment nature, and dense population make it a good representative of an urban area of a developing nation. Moreover, the high level of community gathering and engagement makes it highly suitable for assessing local activities during COVID-19. This study also reviews the responses of local governments of several developed and developing countries during the pandemic to provide a comparative analysis of their activities. Furthermore, the COVID-tackling activities of the local governments of Ward 28 of DSCC are assessed from the perspectives of global LGIs.

2. Local government institutions (LGIs) of Bangladesh

The governance system of Bangladesh is broadly divided into two categories: national and local (LGED, 2018). At the rural level, there are three levels of local administration: Zila Parishad (District office), Upazila Parishad, and Union Parishad (Ehsan, 2020). At the urban level, the eleven largest cities are City Corporations, while the rest are known as Paurashavas or Municipalities (Ehsan, 2020; Panday, 2017). Each City Corporation is subdivided into several wards, the smallest administrative unit in urban areas of Bangladesh (Iqbal & Asikunnaby, 2015; Rahaman & Hasan, 2014). Apart from these institutions, *panchayats* were once a form of local governance that carried out public orders and participated in several welfare activities (Islam, 2015; Rahaman & Hasan, 2014). Though the *panchayat* system disappeared over time, some *panchayats* still work as social organisations in Bangladesh and perform several voluntary works, specifically in the study area – Old Dhaka (Shafique, 2022; Sultana, 2018).

In Bangladesh, the Standing Orders on Disasters (SOD) (2019) emphasized the involvement of local authorities in disaster risk management. SOD also specified some responsibilities of local-level authorities, such as the Ward Disaster Management Committee, including the formation of 'ward-based volunteer teams', identification of the most at-risk or vulnerable groups, identification of open spaces for alternative use during a disaster, taking necessary steps to train volunteers and advise people, providing accurate and real-time disaster-related information to the people, and distributing essential materials during and after disasters (Ministry of Disaster Management and Relief, 2020b). These activities are also effective in tackling communicative diseases.

3. Methods

3.1. Study area

In this research, thirty countries (19 developing countries and 11 developed countries) were selected to get a deeper understanding of the COVID-19 response activities of LGIs worldwide. These countries were selected because of their ease of access to information from reliable online sources.

Ward 28 of Dhaka South City Corporation (DSCC) was chosen purposefully as it is one of the most densely populated neighbourhoods in the world, with approximately 1545 inhabitants per hectare (Ahsan et al., 2018; BBS, 2015; Sawe, 2017). This ward is under Chawk Bazar Thana and has an area of 17.8 hectares (Fig. 1). Moreover, various *panchayats*, local clubs, and other community-based organisations actively work for their communities in collaboration with the ward office in this ward. This ward's main features are congested and dense residential areas and narrow alleys with dimensions of about 5–12 ft (Fig. 2).

In Bangladesh, localities with more than 40 COVID cases per 1,00,000 population were declared a 'red zone' (Shawon, 2020). Ward 28 of DSCC was not marked as a 'red zone' during the first pandemic wave (Saha, 2020). However, it was marked as one of the red zones with a high risk of coronavirus transmission during the second wave (Nahar, 2021).

3.2. Data collection and analysis

Qualitative data for this study were collected from both primary and secondary sources. At first, a desk-based literature review was conducted. Several types of practices of local governments in various countries during the COVID-19 pandemic were reviewed. Both monetary and non-monetary aid activities were taken into consideration. For this, literature was obtained from reliable sources, including journal articles from renowned publishers, government publications, and reports from reputed organisations and research institutes. All the relevant literature were accessed online. While searching for literature, some specific keyword combinations were used: 'Local Government + COVID-19', 'Activities + Local Government + Pandemic', 'Role + Local Government + COVID-19', and 'Response + Local Government + Pandemic'. These keyword combinations were searched on several websites, including Elsevier, Springer, Sage, Frontiers, Wiley Online, Taylor & Francis Online, and Google Scholar. All the searches were performed in English. This study included the recent literature regarding LGIs activities during the pandemic, which was published between 2020 and 2024. Table 1 outlines the inclusion and exclusion criteria of this study.

A total of 84 articles from 30 countries (19 developing countries and 11 developed countries) were selected for review based on the inclusion and exclusion criteria whose information has been extracted and summarised in Table 2. Several recent qualitative studies indicate that the number of articles reviewed in this study is adequate to provide a general understanding of the local governments' activities around the world (Gebrekidan, 2024; Kayesa & Shung-King, 2021; Kazapoe et al., 2023; Lu & Diab, 2023). Country-wise detailed sources of the reviewed documents are provided in Appendix A. To better understand the variation in COVID-response activities all over the world, LGIs' activities in developed and developing countries were compared and discussed elaborately. In this study, the country classification by the United Nations (2020c) was followed to classify the study areas into two categories: 1. developing countries and 2. developed countries.

To assess the activities of local governments in Dhaka in light of the roles played by global LGIs, Ward 28 of Dhaka South City Corporation was selected as a case study. Three focus group discussions, five key informant interviews, and field surveys were conducted between December 2021 to January 2022 to identify the activities of local government during the first and second waves of the pandemic in Ward 28 of DSCC. These interviews and field surveys were carried out, maintaining social distancing measures. Local government officials, local clubs, and *panchayats* who actively worked for their community during the pandemic were invited to participate in this study. A total number of three representatives of local government officials and five representatives of local community-based organisations participated in this study. Participation in this study was completely voluntary, and informed consent was obtained from each participant. Firstly, the COVID-tackling activities of the local government institutions in Ward 28 were listed. Then, more detailed information (e.g., aid distribution procedure, target group selection) on each activity were collected. From the discussion, the local government's response activities during the pandemic in Ward 28 of DSCC were categorized into several broad themes and then compared with the activities of LGIs worldwide to identify the prospects for improvements in tackling similar situations in the future. In light of the study's findings, prerequisites for effective pandemic responses at the local level in densely populated communities like Ward 28 of DSCC were identified. Insights from other countries were also used to corroborate the requirement of these components for effective pandemic response, specifically in developing countries. The conceptual framework of this study is shown in Fig. 3. A wide range of relevant literature were studied and followed to develop the research framework for this study (Ahmed et al., 2024; Amarokoon et al., 2023; Arrieta, 2022; Breek, 2024; Farazmand & Danaeeffard, 2021; Kurniawan et al., 2023; Mutanda, 2022). Global frameworks, national plans, and guidelines were also studied to understand the prerequisites for effective responses and management at the local level during disasters like the COVID-19 pandemic. *Sendai Framework for Disaster Risk Reduction 2015 – 2030* emphasized the empowerment of local authorities and strengthening their capacities for disaster risk reduction and management at the local level (United Nations, 2015). This framework also highlighted the involvement and collaboration of local authorities and community-based organisations. *Hyogo Framework for Action 2005–2015* prioritised the empowerment of local authorities and the enhancement of their capacities and resilience through ensuring access to information and resources, use of technologies, knowledge, and education, and arrangement of training activities at the community level (United Nations, 2007). Bangladesh's national plan for disaster management also specified the requirement of adequate resources and capacities for better response and risk reduction at the local level (Ministry of Disaster Management and Relief, 2020a). This plan underlined the importance of cooperation and coordination among local agencies, including local government, community-based organisations, civil society, and communities for disaster risk management. Moreover, in Bangladesh, *Standing Orders on Disaster 2019* specified the responsibilities and functions of a Ward Disaster Management Committee during risk reduction, response, and recovery stages of a disaster (Ministry of Disaster Management and Relief, 2020b). Several *COVID-19 Containment Guidelines* were issued in Bangladesh during the pandemic, which emphasized the requirement of multidisciplinary and participatory approaches to combat this disease effectively and ordered the local authority to increase awareness through campaigns and regular miking (Directorate General of Health Services, 2020; Ministry of Health & Family Welfare, 2020b). All these global and national frameworks and relevant literature were followed to develop the conceptual framework of this study.

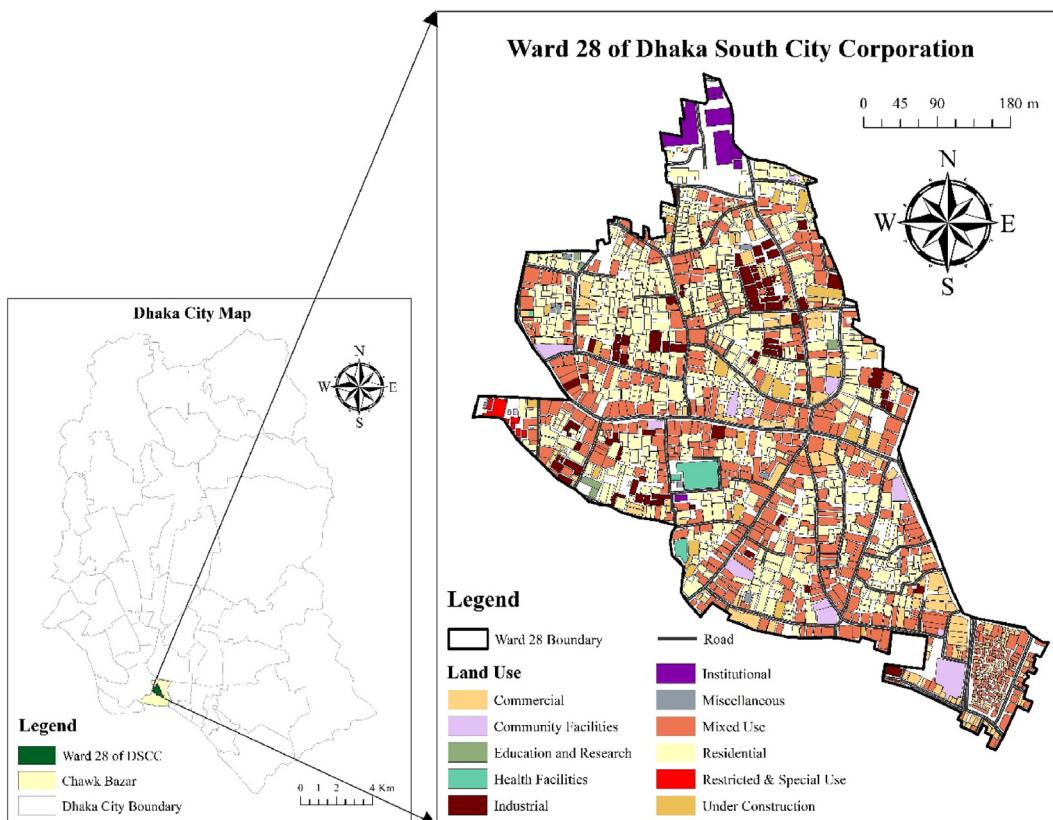


Fig. 1. Location and landuse of DSCC Ward 28 (Source: Authors' construction from RAJUK, 2022).



Fig. 2. Social and physical features of Ward 28 of DSCC (a) Congested residential area (b) Narrow alleys (c) Garbage dumping on the road (d) Panchayat office (Source: Authors, 2022).

Table 1
Inclusion and exclusion criteria for literature selection.

Criteria	Inclusion	Exclusion
Publication Year	2020–2024	Prior to 2020
Language	English	Outside English
Publication Type	Journal articles, govt. publications, and reports of reputed international organisations and research institutes.	Personal blog, Webpage, Newspaper
Study Population	Local government(s) of various countries who were involved in COVID-tacking activities.	
Study Outcome	The aid and supporting mechanisms of local governments worldwide during the COVID-19 pandemic.	

(Source: Authors' construction, 2024)

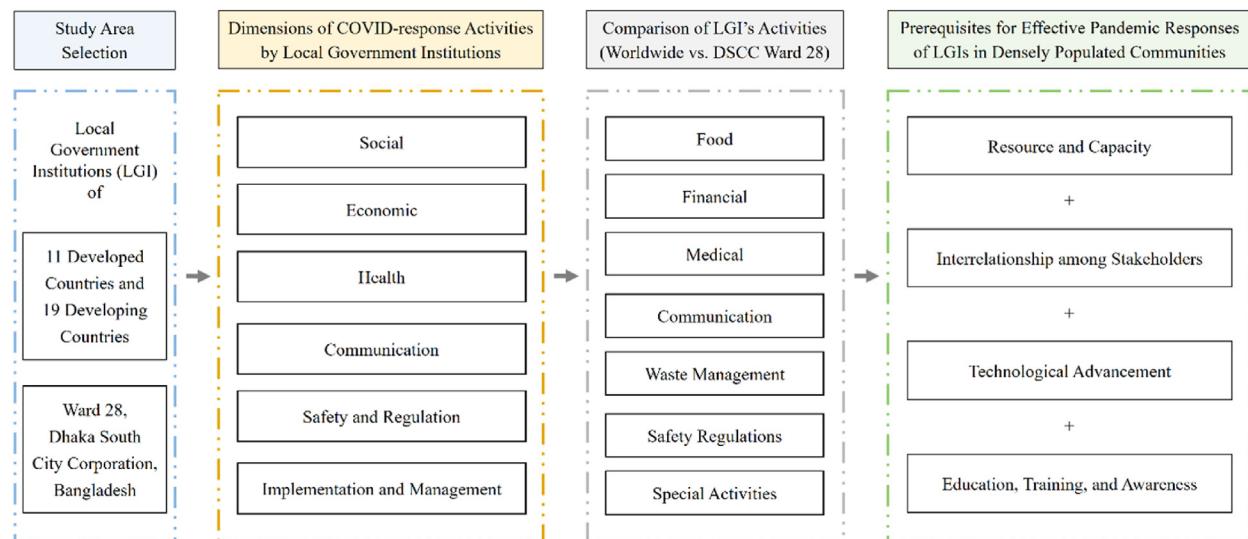


Fig. 3. Conceptual framework of the study (Source: Authors' construction, 2024).

4. Comparing COVID-response activities of local governments in developed and developing countries

Worldwide, local governments were comparatively more active and played a prominent role in tackling the COVID-19 pandemic. A wide range of literature revealed that ensuring food security, providing economic support, distributing protective equipment, disseminating up-to-date information, raising awareness about COVID-19, managing infectious wastes, and imposing restrictions to ensure social distancing were the top priorities of the local government all over the world. However, the literature review indicates disparities in the COVID-response efforts of local governments between developed and developing countries (Table 2), which have been discussed elaborately in the following sections.

4.1. Ensuring food security

Food aid distribution was the most common COVID-response activity of the local government in developing countries, which was relatively less popular in developed countries. In developing countries (e.g., India, Nepal, Sri Lanka, Africa, and Mexico), food relief was provided in various forms, such as free foods, subsidised grocery packs, vouchers for food items, and rations, to daily waged workers, migrant labourers, senior citizens, and poor people (Beerman & Welborn, 2020; Devkota et al., 2020; Sen & Palit, 2020; UCLGA, 2020a). In India and Nepal, local governments also established community kitchens and feeding centres to feed vulnerable groups (Adhikari & Budhathoki, 2020; Dutta & Fischer, 2021). In Argentina, the municipal government assigned volunteers to help poor and senior citizens buy food and medicines (Ramírez de la Cruz et al., 2020). Similarly, in Slovakia, the local government provided social assistance (e.g., food and shopping) to elderly and isolated individuals in collaboration with NGOs and volunteers (Buček, 2022).

Along with food relief, local governments in several developing countries like South Africa, Congo, Mexico, and Kenya provided potable water, especially in informal settlements and remote areas, during the pandemic (Hlati & Maziwisa, 2020; UCLGA, 2020b; United Nations, 2020b; Yilmaz & Boex, 2021). In contrast, home delivery of food items was also introduced by the local government, mostly in developed countries (e.g., Hungary and the United Kingdom), to support the elderly and isolated individuals (Bouhlel, 2021; Gore et al., 2021).

4.2. Providing economic support

In the case of financial aid, reductions in taxes and rents were the most common initiatives of local governments both in developed and developing countries to support small local businesses and vulnerable families during the pandemic. In China, the United States, the United Kingdom, and Europe, the local governments reduced rental fees, social security fees, utility expenses, taxes, loan interest fees, parking fees, and licence fees for SMEs and local entrepreneurs (Abrams, Lalot, Broadwood, & Hayon, 2021; Allain-Dupré et al., 2020; Beerman & Welborn, 2020; Gore et al., 2021; Liu et al., 2020; Moore, 2021; Patton et al., 2022; Plaček et al., 2020; Ramírez de la Cruz et al., 2020). Some local governments in South Africa and Canada delayed revenue collection from residents and local businesses during the pandemic (Orr, 2023; Pozhidaev, 2021). Despite facing financial constraints, local governments in developing countries also did not disconnect utility services for those who could not pay their bills (SALGA, 2020).

During the pandemic, some local governments opened jobs for poor and unemployed people. In New Delhi, India, the local government hired unemployed people to clean and disinfect public spaces, whereas in Nepal, the local government created daily-paid jobs for daily-wage workers (Adhikari & Budhathoki, 2020; Wray et al., 2021).

Table 2

Summary of key activities of local governments worldwide during the COVID-19 pandemic from reviewed literature.

Country	Financial Aid	Food Aid	Medical Aid	Communication	Waste Management	Safety Regulations	Special Activities
South Africa	Cash assistance Jobs for poor and unemployed people Tax/ rent/ loan interest rate/ utility bill reduction & commercial rates waivers	Community kitchen Feeding centres Free foods/ grocery packs/ food vouchers	Free portable water, standpipes and water tanks	Provided up-to-date information	Designated bins and vehicles for COVID-19 wastes	Restricted access to public places and issued fines	Surveillance points to check people
Congo				Awareness raising through making, posters, community visits, website, text message, and social media	Collected wastes from COVID-19 treatment centres	Sanitization of public spaces and transport facilities	Wide destination badge for tourism sites
Egypt					PPE/ masks/ gloves hand sanitizers for waste management workers	Regulated operating time of groceries, pharmacies, markets, and social institutions	Designated vehicles to transport migrants and medical personnel
Indonesia	✓		✓	✓	Training programs for citizens and large-scale waste producers	Banned temporary markets, sidewalk sales and dine-in restaurants	Delivery apps to help local restaurants
Nepal	✓	✓	✓	✓	Routinely inspected hospitals and waste treatment facilities	Imposed and implemented lockdowns	Arranged emergency shelters
India	✓	✓	✓	✓	Disinfected waste collection vehicles and tools	Relocated markets to larger streets	Developed a comprehensive plan
China	✓	✓	✓	✓			
Sri Lanka							
Mexico	✓	✓	✓	✓			
Kenya							
Thailand							
Vietnam	✓	✓					
Nigeria							
Chile							
Philippines							
Colombia	✓						
Zimbabwe							
Argentina		✓	✓				
Saudi Arabia							
The United States	✓	✓					
The United Kingdom		✓					
Hungary	✓	✓					
South Korea							
Japan							
Ireland	✓						
Germany							
England	✓		✓				
Czechia		✓					
Slovakia							
Canada	✓	✓					

(Source: Authors' construction, 2024)

Direct monetary assistance and the provision of soft loans were most prevalent in developed countries. In Hungary, a one-time allowance was provided to permanent residents, and the Coronavirus Charity Fund was established for vulnerable groups and the elderly (Baranyai et al., 2021). In the United States, the local government provided cash assistance to vulnerable families and soft loans to local businesses during the pandemic (City of Dallas, 2020; Dzigbede et al., 2020; Perez et al., 2021; Permanasari et al., 2022).

4.3. Distributing protective equipment

Local governments worldwide played a crucial role in ensuring the availability of protective equipment and disinfected materials to their communities. Both in developed and developing countries, local governments were actively involved in providing personal protective equipment, establishing hand-washing basins, roadside testing facilities, sample collection centres, health check-up desks, and quarantine facilities (Adhikari & Budhathoki, 2020; Ahmed et al., 2020; Allain-Dupré et al., 2020; Bouhlel, 2021; Fridayani & Soong, 2021; Gore et al., 2021; Mainali et al., 2021; MoIS, 2020; Mutsakani & Mironga, 2022; Perez et al., 2021; Pláček et al., 2020; Rayamajhee et al., 2021; Smoke et al., 2023; Talabis et al., 2021; UCLGA, 2020a). In this case, the target groups of local government were mainly poor, vulnerable community people and frontline workers, to whom protective equipment were sometimes delivered door-to-door (United Nations, 2020b). In addition, face masks, medicines and other protective equipment were provided to senior citizens and affected people by the local authorities in coordination with other volunteering organisations (Buček, 2022; Ramírez de la Cruz et al., 2020).

Some local governments established temporary coronavirus hospitals and quarantine centres in closed schools, college campuses, hotels, and other unused spaces. In the United States, hospital beds were placed in closed schools to increase hospital capacity (Perez et al., 2021). In China, along with new temporary hospitals, some existing hospitals were designated exclusively for COVID-19 diagnosis (Li, Yue, & Crabbe, 2021). In Vietnam, the subnational government set up field hospitals and converted hotels and student dormitories into quarantine centres (Huynh et al., 2020).

Medical aid provision activities were quite similar in both developed and developing countries. However, developed countries prioritised the needs of elderly and isolated individuals, which was not a common practice in developing countries. In Hungary, the local government ensured home delivery of medicine to elderly citizens living alone (Bouhlel, 2021). In the United Kingdom, the local government supported those who felt isolated (LGA, 2021).

4.4. Disseminating real time information

To increase COVID awareness, local governments in developing countries (e.g., India, China, Nepal, Thailand, and Vietnam) used both online and offline platforms. They provided COVID-related information to their citizens through social media, websites, text messages, mailing, and posters (Adhikari & Budhathoki, 2020; Dutta & Fischer, 2021; Ha et al., 2021; Laochankham et al., 2021; Li, Chandra, & Fan, 2021; Sarkar, 2021; Satispi et al., 2021; Yang et al., 2020).

In developed countries (e.g., Korea, Hungary, the United States, and Georgia), local governments ensured prompt dissemination of confirmed COVID cases and regulatory information via websites and mobile text messages (Baranyai et al., 2021; Bouhlel, 2021; Dzigbede et al., 2020; Shaw et al., 2020; Weng et al., 2020). In Tokyo, whenever new COVID cases reached double digits, the local government warned the community and red-tagged several sites (Tashiro & Shaw, 2020). The local authorities in developing countries (e.g., Saudi Arabia) arranged virtual awareness events, especially to educate industrial workers (Banjar et al., 2024). In Vietnam, local authorities developed a mobile application to provide real-time updates on COVID-19 cases (Huynh et al., 2020).

In Ireland, local governments successfully handled community call helplines for home delivery, social isolation, health, and other services (Shannon & O'leary, 2021). Moreover, in the United Kingdom, the local government routed residents' support requests to the appropriate organisations (LGA, 2021). In England, local governments took initiatives such as a customer hotline named 'Golden Number' and the 'Everyone In' program to support self-isolating and homeless people (Arrieta, 2022; Machin, 2023). Such practices were not much prevalent in developing countries during the pandemic.

4.5. COVID-waste management

COVID-waste management initiatives were relatively less focused in the reviewed literature compared to other aid activities. Some local governments in China, Korea, and Indonesia used special bags and designated bins and vehicles for COVID-19 waste collection (Das et al., 2021; Tsukiji et al., 2020; UNESCAP, 2020). In Japan and South Africa, the local government provided PPE, hand sanitizer, gloves, and masks to waste management workers (Das et al., 2021).

Local governments in developed countries inspected COVID-19 treatment centres to understand whether infectious wastes were managed following the guidelines (UNESCAP, 2020). The local government was also concerned about the safety of the workers and thus disinfected medical waste collection vehicles and tools regularly in Korea and Indonesia and four times a day in China. This practice was less prevalent within the local governments of developing countries (Das et al., 2021; Tsukiji et al., 2020; UNESCAP, 2020). Moreover, in China and Japan, the local government arranged training programmes and public awareness campaigns to educate residents and large-scale waste producers about the safe disposal of COVID-19 waste (Das et al., 2021; Tsukiji et al., 2020).

4.6. Safety and regulatory measures

Local authorities both in developed and developing countries, imposed several restrictions to ensure social distancing during the

pandemic. All over the world, local governments were responsible for implementing lockdown measures enforced by the state government. In some cases, they also imposed lockdowns within their respective jurisdictions (Huynh et al., 2020; Palma & Araos, 2021; Rode & Flynn, 2020; Sevindik et al., 2021; UCLGA, 2020a).

Some local governments restricted access to public spaces to ensure the safety of residents. In Canada, parks and playgrounds were closed, and local authorities issued fines for violating the restriction (Lynn et al., 2022; Moore, 2021). In Hungary, the local government specified the number of people allowed for gathering (100 people indoors and 500 people outdoors) (Bouhlel, 2021).

In addition, local governments took other regulatory and safety measures during the pandemic, such as limiting the operating hours of groceries, pharmacies, and markets (Bouhlel, 2021; Lynn et al., 2022; Rayamajhee et al., 2021; UCLGA, 2020a), closing of schools, kindergartens, libraries, bars and other social institutions (Anttiroiko & Haveri, 2022; Ko, 2021; Plaček et al., 2020; Weng et al., 2020), banning informal markets on sidewalks (UCLGA, 2020a), installing signage in public spaces (Gore et al., 2021), sanitising public spaces and transport facilities (Buček, 2022; Carampatana & Tuazon, 2020; Jüptner & Klimovský, 2022; Ramírez de la Cruz et al., 2020; SALGA, 2020; Senaratne et al., 2020; Smoke et al., 2023), prohibiting dine-in restaurants (Permanasari et al., 2022), relocating markets to larger streets (UCLGA, 2020a), and establishing surveillance points to check visitors (Laochankham et al., 2021).

In some developed countries, local governments (e.g., The United Kingdom and Canada) reallocated street spaces to create wide paths for walking and cycling during the pandemic (Samji et al., 2021; United Nations, 2020b). This measure is highly effective in increasing public space and promoting social distancing. However, the local government in developing countries did not exercise such measures.

Along with these activities, local governments took several special and innovative measures to support their communities during the pandemic. In developing countries like India, local authorities designated vehicles for transporting migrants from stations to quarantine centres and developed a health plan with other frontline workers (Dutta & Fischer, 2021). In Indonesia, contingency plans were developed to better manage COVID-response activities at the local level (Sevindik et al., 2021). Special shuttle services were established in South Korea to carry travellers from the airport to some hotels in order to facilitate self-quarantine (Kim & Jeong, 2022). During the pandemic, local governments mostly prioritised the needs of vulnerable citizens, including elderly individuals living alone, people with disabilities, patients, poor people, and BAME (Black, Asian, and Minority Ethnic) communities (Gore et al., 2021; Joyce et al., 2020). To address economic and social issues, various special measures were taken by local governments in some countries, such as the development of rehousing programmes for homeless people, delivery apps to help local restaurants, an emergency helpline, and a WhatsApp service to reduce domestic violence (Benavides & Nukpezah, 2020; Kim & Jeong, 2022; Lima, 2020; Ramírez de la Cruz et al., 2020; United Nations, 2020a, 2020b).

5. Role of LGIs of Ward 28 of DSCC in tackling the COVID-19 pandemic

During the whole pandemic time, the local government institutions of Ward 28 of Dhaka South City Corporation were actively involved in a wide range of activities to reduce local vulnerabilities. All those activities can be broadly divided into four categories.

5.1. Providing social and economic relief with support from central government and CBOs

The first COVID case was confirmed in April 2020 in DSCC Ward 28. Despite lacking formal approval, the local government took the initiative to distribute food aid from the ward office's fund to help those in need.

Later, the ward office received aid and funds from the Prime Minister, the City Corporation, and their Member of Parliament. They assembled food relief packs consisting of rice, oil, pulses, onions, potatoes, and other daily necessities, enough to sustain a family for a week. The packing process took place in unused school classrooms, the basements or garages of nearby buildings, and hospital premises.

Before distributing the relief, the local government of Ward 28 of DSCC made a list of poor and needy families in this ward and provided relief cards to them to ensure a more systematic aid distribution. In some cases, food relief was also provided to poor people who came to receive aid but did not get a relief card. During Ramadan and Eid festival, the local government provided special food relief consisting of vermicelli, chicken, and polao rice to poor people.

For COVID-affected people, a team from the ward office delivered food relief at their door, as they could not come out of their homes to collect aid. Also, for the families who faced significant business or job losses during the pandemic and couldn't queue up for relief due to social circumstances, food relief was sent discreetly to their houses. The total procedure of food aid distribution is summarised in Fig. 4.

Compared to food relief, the amount of financial aid was relatively low due to the lack of funding. However, as most Ward 28 residents are engaged in business activities, they experienced a severe financial crisis during the initial lockdown (April–May 2020) due to the abrupt shutdown of their stores. Again, during the second lockdown, they faced a moderate financial crisis. Therefore, the local government and CBOs rendered them financial aid. They identified the people suffering from financial problems and, along with panchayats, local clubs, and wealthy individuals, provided between BDT 3,000-10,000 to selected people only during the first pandemic wave.

5.2. Preventing COVID-19 spread through protective equipment distribution and vaccination

The local government of DSCC Ward 28 distributed free masks and hand sanitizer to poor people during both waves. The people of this ward however displayed negligence and continued their Jummah prayers (Friday prayer performed in congregation by Muslims) throughout the pandemic in the conventional manner, violating the central government's restrictions. In order to keep their residents

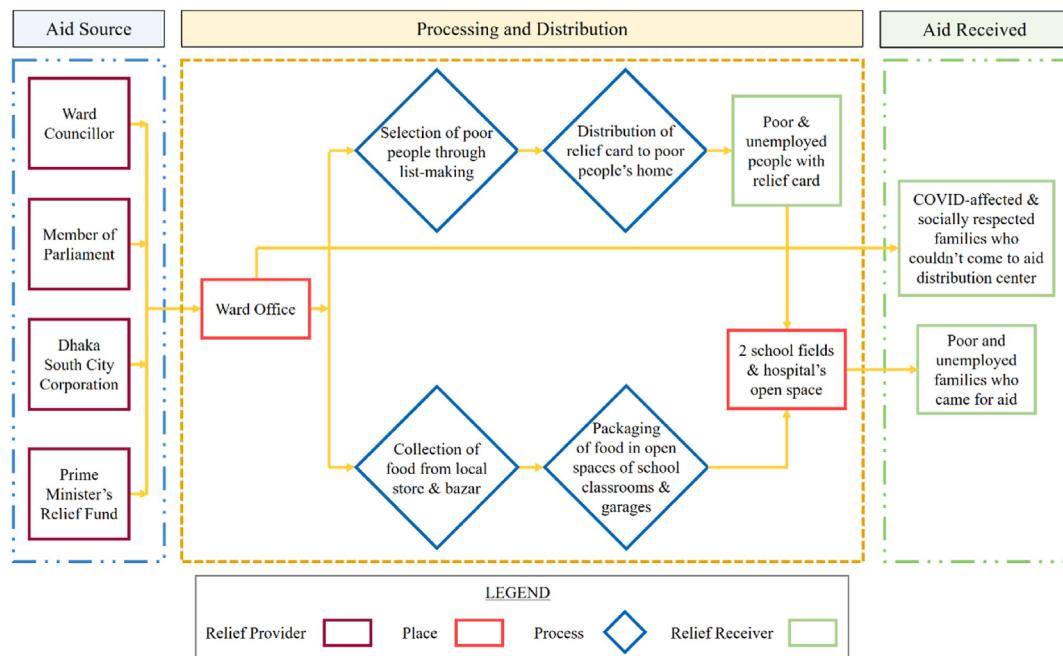


Fig. 4. Process map of providing food aid in Ward 28 of DSAC (Source: Authors' construction, 2024).

safe, the local government installed disinfecting tunnels at the entrance of each mosque and established hand-washing basins outside the mosque. Moreover, disinfectants were sprayed on the roads throughout both waves of the pandemic.

In this ward, the vaccination programme started during the second pandemic wave (February 2021). However, local people were hesitant to take vaccines because of various online misinformation. Many people thought vaccination would make them sicker or even cause death. But, without vaccination, it was quite impossible to fight against the pandemic.

Hence, ensuring vaccination to all people in such a densely populated area was quite difficult during the pandemic. For that, the directives of the central government were followed strictly. At first, people were categorized based on their age. Individuals aged more than 40 were given the highest priority. Then, they were directed to be registered through online using their National ID (NID) number. However, due to misconceptions and rumours regarding vaccines, people were reluctant to register. In response, vaccine awareness campaigns were started by the local government in April 2021. To abolish peoples' fear or misconceptions and to set an example, the ward councillor, along with other officials, publicly received the vaccine and shared photos of that event on social media. Gradually, misconceptions regarding vaccines were dispelled, and people began to acknowledge its' effectiveness and started registration for vaccines. Then, in November 2021, mass vaccination programmes started at the school and hospital premises. The whole vaccination process in Ward 28 is presented in Fig. 5.

5.3. Increasing awareness and communication with local people: Special focus on COVID-infected individuals

The local government of Ward 28, DSAC conducted various awareness campaigns to encourage people to wear masks and maintain safety measures. Particularly whenever national COVID cases were higher, they tried to make their community aware using loudspeakers, distributing leaflets, and using social media platforms. Moreover, they marked distancing squares in front of shops during the first pandemic wave to ensure social distancing.

In addition, the local government of Ward 28 of DSAC increased interaction with local people during the pandemic. Supporting COVID-infected people was the top priority of the local government in this ward. Maintaining social distance, the local government tried to help COVID-infected families, particularly those facing financial instability. The local government team even delivered food relief to their door, considering their inability to travel during the pandemic. CBOs also tried to reduce negative perceptions among local people regarding COVID-infected families, helping them to return to normalcy. Moreover, due to social status concerns, many needy people abstained from queuing for aid. The ward office opened a hotline service to serve them during the first wave. After receiving any call, the ward authority verified the caller's situation and provided support in secret.

5.4. Ensuring national lockdown decisions at local level

To reduce the spread of the Coronavirus, the Bangladesh government imposed a nationwide lockdown. However, keeping people at home was difficult for the local government of Ward 28 due to the community's custom of engaging in gossip and socializing at *panchayats*, tea stalls, and markets. To manage these gatherings, the authorities closed the market, bazaar, and plastic industries during the

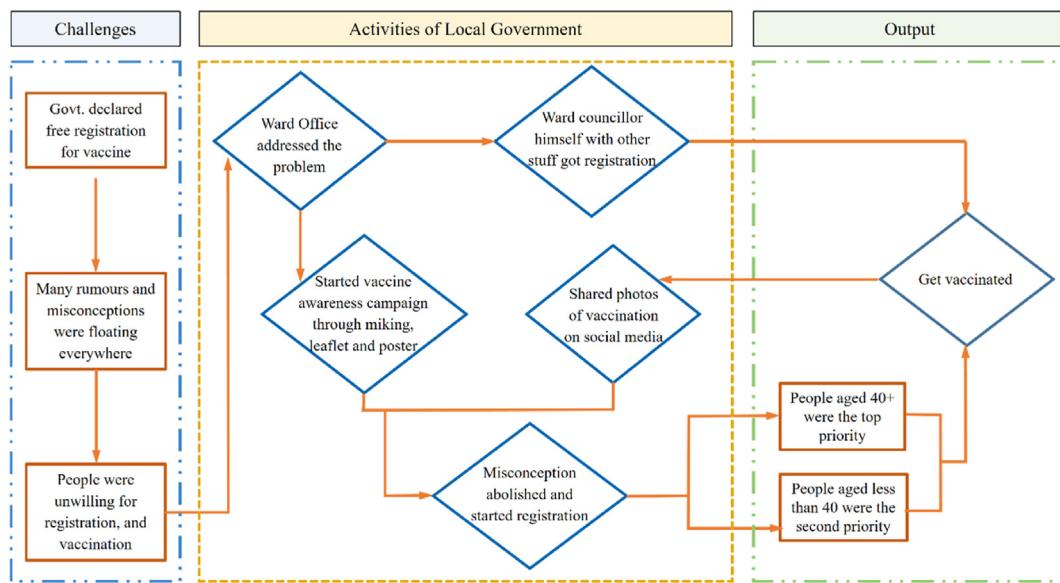


Fig. 5. Process map of vaccination in Ward 28 of DSCC (Source: Authors' construction, 2024).

first lockdown. Moreover, the local government of Ward 28 also provided food relief support to the shopkeepers and employees during this time period. Over time, the residents of this ward became accustomed to the pandemic, and thus they did not follow restrictive measures during the second wave.

6. Assessment of COVID-tackling activities of Ward 28 of DSCC in light of global LGIs' roles

Overall activities of LGIs of Ward 28 of DSCC were assessed from the perspectives of global LGIs' roles to identify the prospects for improvements in tackling similar situations in the future (Table 3). In this ward, along with the local government authority, local clubs and traditional social organization-*panchayats* were also actively involved in COVID-response activities. The involvement of such non-government social organisations in tackling crises at the local level is a unique strength of this ward.

During the pandemic, the local government of Ward 28 of DSCC raised awareness through loudspeakers, posters, and leaflets and provided food and money to poor people and vulnerable groups, which was very similar in other developed and developing countries. The local governments of developed countries also used websites and text messages to increase public awareness, which was not found in Ward 28. Like other countries, the local government body of this ward introduced a special hotline service for its residents during the first wave. In crisis situations, this service can facilitate more interaction between local people and local government.

Compared to food aid distribution, financial assistance in this ward was relatively limited. Moreover, tax and rent reductions, common measures in many developed and developing countries, were not observed in Ward 28, despite the presence of various businesses and plastic industries in this ward.

Misleading vaccination news and rumours were widespread in both developing and developed countries. The ward councillor's wise approach of getting vaccinated first and sharing it on social media proved effective, especially in developing and underdeveloped nations, where trust in political leaders is very high and they have a significant following. Such actions could dispel misconceptions among the general public.

Many local government bodies worldwide established quarantine and isolation zones for COVID-affected patients during the pandemic. However, no such activity was undertaken by the local government of Ward 28. As one of the most densely populated neighbourhoods in the world (Sawe, 2017), with a high risk of virus transmission, a dedicated isolation centre in the ward area was necessary. If herd immunity had not been developed, the absence of isolation centres could have led to the worst pandemic scenario.

During the pandemic, relocating markets to open space to reduce the spread of the virus was a common practice in both developed and developing countries. However, the authority of Ward 28 of DSCC could not do so due to a lack of open space or fields under their jurisdiction. Because of people's predilection towards religious beliefs, weekly gatherings in the prayer hall were also inevitable. Thus, crowds or gatherings were unavoidable, impeding the local government's initiatives for social distancing.

Moreover, during the pandemic, the practice of safe and separate disposal of medical waste, COVID patients' clothes, and other infectious wastes was widely practised in almost all developed and developing countries. In Bangladesh, specific guidelines and response plans were served from the central government to manage medical waste in coordination with the local government during the pandemic (Ministry of Health & Family Welfare, 2020a). However, no special measures were taken in Ward 28 of DSCC. Untreated medical waste was a common scenario in the country, as a study shows that only 6.6 % COVID-19 related wastes were managed in Bangladesh (BRAC, 2020).

In conclusion, local government institutions of Ward 28 also provided food and medical aid like other countries worldwide.

Table 3

Comparison of worldwide local governments' COVID-tackling activities with Ward 28 of DSCC.

Support Type	Developed Countries	Developing Countries	Ward 28, DSCC
Food Aid	<ul style="list-style-type: none"> Special program for elderly citizens, isolated people, and BAME (Black, Asian, and Minority Ethnic) communities 	<ul style="list-style-type: none"> Provided food relief and potable water to vulnerable groups (e.g., migrant labourers, daily-waged workers, and poor people) Ran community kitchen and feeding centres Direct monetary support Daily paying jobs for poor Tax and rent reduction for SMEs and other businesses 	<ul style="list-style-type: none"> Food relief for COVID-affected and needy people Door-to-door facilities for COVID-affected and people who hesitated to receive aid openly Direct monetary support on a small scale (e.g., BDT 3000 and 10,000)
Financial Aid	<ul style="list-style-type: none"> Soft loan and cash assistance Exempted taxes, utility bills, and license bills Targeted groups: mostly small-scale businessmen and vulnerable families 		
Medical Aid	<ul style="list-style-type: none"> Provided medicines, personal protective equipment Established roadside testing, temporary hospital beds and telehealth facilities Home delivery of medicine Targeted groups: volunteers, elderly and isolated people 	<ul style="list-style-type: none"> Distributed protective equipment and disinfected materials Established hand-washing systems, sample collection centre, and quarantine facilities Set-up health checkup desk for migrant workers 	<ul style="list-style-type: none"> Free mask and hand-sanitizer Disinfecting tunnels Hand-washing basins Vaccine awareness campaigns
Communication	<ul style="list-style-type: none"> Channelled residents' support requests to relevant organizations Disseminated COVID information via website and mobile text message Community call helplines 	<ul style="list-style-type: none"> Used social media, text messages, and websites Increased awareness through milking, posters, and WhatsApp groups Established information centres 	<ul style="list-style-type: none"> Used loudspeakers Distributed leaflets Used social media platforms for raising awareness
Waste Management	<ul style="list-style-type: none"> Designated bins, bags and vehicles for COVID-19 wastes collection Provided protective equipment to waste management workers Disinfected COVID-waste collection vehicles and tools Routinely inspected COVID treatment centres 	<ul style="list-style-type: none"> Designated bins, bags and vehicles for COVID-19 wastes collection Provided protective equipment to waste management workers Disinfected COVID-waste collection vehicles and tools 	<ul style="list-style-type: none"> No special measures were taken to handle infectious wastes
Safety Regulations	<ul style="list-style-type: none"> Restricted public space use, number of people at markets, and installed signage Prohibited dine-in restaurants Safe destination badges for tourism sites 	<ul style="list-style-type: none"> Restricted access to public spaces and operating time of groceries, pharmacies, and markets Relocated markets Set up surveillance points Monitored and imposed social distancing Designated vehicles to transport migrants Developed a comprehensive health plan Emergency helpline and WhatsApp service to address domestic violence 	<ul style="list-style-type: none"> Closed the market, bazar, and plastic industries during the first lockdown Marked distancing squares in front of shops
Special Activities	<ul style="list-style-type: none"> Special shuttle service from the airport Rehousing scheme for homeless Delivery apps to help local restaurants 		<ul style="list-style-type: none"> Special helpline via phone call only during the first wave

(Source: Authors' construction, 2023)

However, they could not provide sufficient financial aid and home delivery services during the pandemic due to the lack of financial and human resources. LGIs of Ward 28 took several measures to communicate with the local people and to increase COVID awareness, similar to other developed and developing countries. The local authority also initiated a special hotline service but did not continue with that service during the second wave. Implementing safety regulations was quite challenging for the LGIs of this ward due to their socio-cultural traditions and misconceptions about COVID-19. Adequate measures for managing the infectious COVID-wastes were not observed in this ward. The lack of institutional capacities and resources at the local level could be one of the reasons behind this mismanagement.

7. Prerequisites for effective pandemic responses of LGIs in densely populated communities

7.1. Local government capacity and resources

Worldwide, a large number of studies highlighted that the lack of resources and institutional capacity of local authorities was a major reason that created barriers to effective pandemic management, specifically in developing countries (Amarakoon et al., 2023; Arrieta, 2022; Kurniawan et al., 2023; Mutanda, 2022; Yilmaz & Boex, 2021). Similarly, this study found that Ward 28 of DSCC could not provide sufficient social and economic relief to their community due to the lack of financial resources and support from the central government during the second wave. Moreover, they also faced shortages in health services during the pandemic due to inadequate facilities in the nearby hospitals and shutting down of the pharmacies and local doctors' chambers in this area. Furthermore, the COVID help team of this ward was affected by the disease. Thus, local authorities also faced shortages of human resources (e.g., volunteers) to distribute the relief. In addition, despite having clear instructions from the City Corporations to form a Disaster Management Committee, this ward office had no such committee dedicated to handling emergency situations. Therefore, special focus should be provided on improving local governments' technical, financial, and institutional capacities so that they can easily bear the emergency requirements, for example, providing social and economic relief, establishing temporary health facilities, and employing skilled human resources during crisis situations.

7.2. Strong interrelationship among stakeholders

Collaborative approaches are the most effective in combating disasters like the COVID-19 pandemic. There exist a wide number of examples around the world where the local authorities worked with the private sector, NGOs, and volunteers to contain the spread of the pandemic (Arrieta, 2022; Bućek, 2022; Huynh et al., 2020; Ramírez de la Cruz et al., 2020; Smoke et al., 2023; Yilmaz & Boex, 2021). In Ward 28 of DSCC, the active participation of the *panchayats*, CBOs, and local youth clubs greatly assisted the local government in carrying out their duties during the pandemic. Moreover, wealthy businessmen and families living in Ward 28 also came forward willingly during the pandemic time. They distributed food aid to their known poor and needy families and also donated a good amount of money to CBOs to help poor and vulnerable communities. Fig. 6 shows the interrelationship between local people and local government institutions in Ward 28 of DSCC. During the pandemic, local clubs and welfare organisations, law enforcement authorities, mosque committees, market committees, wealthy businessmen and families collaborated with the local government to raise funds, distribute aid, and enforce social distancing measures. The presence of active local clubs, strong social bonding, and interaction are the unique features of this ward, which contributed to efficiently managing COVID-tackling activities compared to the majority areas of Dhaka.

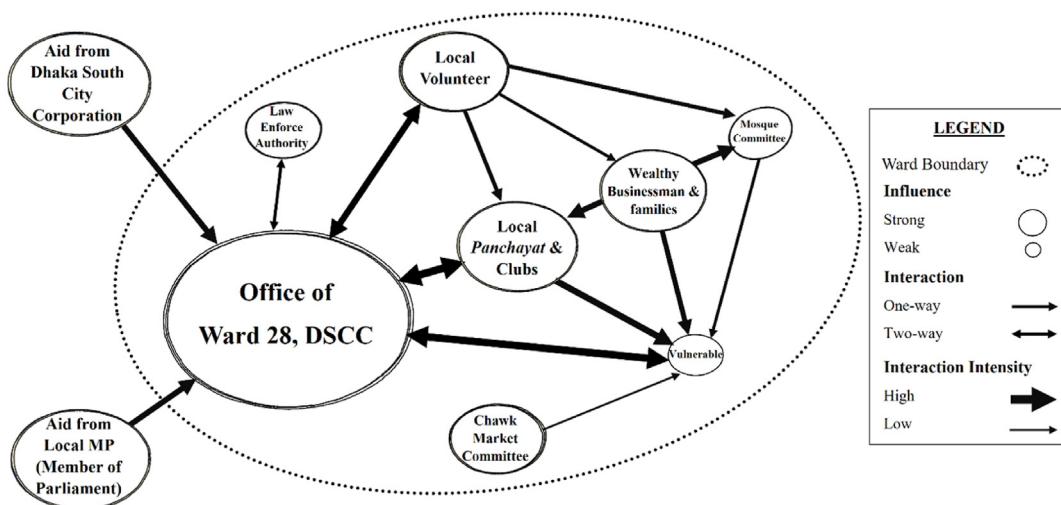


Fig. 6. Venn diagram showing linkages among institutions and individuals in Ward 28 of DSCC (Source: Authors' construction, 2024).

7.3. Technological advancement

The use of digital technology was a common measure adopted all over the world at the local level to provide real-time information and connect with local people. Several local authorities developed mobile applications and QR codes to track COVID cases and health-related information, locate open stores, offer medical guidance, and identify the spare capacity of hospitals (Ramírez de la Cruz et al., 2020; United Nations, 2020a). This study shows that the local government of Ward 28 still lacks the resources to adopt digital technologies like the developed countries worldwide. Though they launched a special helpline service, they did not continue that service during the second wave. Moreover, they did not have any digital documents regarding the overall aid collection and distribution process, which caused difficulties for them. Thus, internet usage needs to be promoted in this ward, which will help them in various ways during crisis situations, such as increasing interactions and social connectivity, selling products, shopping, consulting with doctors, avoiding public gatherings and maintaining social distancing.

7.4. Education, training, and awareness

Ward 28 is situated in old Dhaka, which has a rich tradition of socio-cultural customs and values. However, during the pandemic, this rich social culture and systems had become a large barrier to COVID-19 control. People were more likely to make crowds, gossip at tea stalls, and visit neighbours on a regular basis rather than following safety measures and staying at home. Moreover, they had several misconceptions regarding COVID-19 disease and vaccination and thus wilfully violated regulations. Though local government took several awareness campaigns to address this issue, these types of programs should be conducted periodically to educate the communities about contagious diseases and health safety measures.

8. Conclusion

As COVID-19 is a highly contagious disease, the entire world was frightened about the future of densely populated cities and communities. This study compiled the activities of local governments of 30 developed and developing countries and identified the differences in their response activities to address challenges during the COVID-19 pandemic. The study reveals that worldwide local governments of both developed and developing countries were more active and responsible than usual during the pandemic. Providing social and economic relief, distributing protective equipment, ensuring social distancing, disseminating real-time information about COVID-infections, and increasing public awareness were some common activities of local authorities around the world. The way local authorities immediately responded and came up with various innovative solutions to reduce local vulnerabilities was very impressive. However, this study also finds some variances in the activities of local governments of developed countries with developing ones. Direct monetary assistance, provision of soft loans, home delivery of food and medicine to elderly and isolated individuals, and special hotline service to interact with people were less prevalent in developing countries. Lack of adequate resources and institutional capacities were major issues for local authorities in developing countries.

Being a densely populated city of a developing country like Bangladesh, Dhaka was more susceptible to infectious diseases. In this research, Ward 28 of Dhaka South City Corporation was studied, which is one of the world's most densely populated areas. The activities of local government institutions of Ward 28 were further assessed from the perspective of global LGIs' roles. In this ward, local government institutions include elected local government authorities and several social and voluntary organisations such as hundred-year-old *panchayats* and local clubs. Like other developing communities, Ward 28 also faced several challenges, including the lack of funding, inadequate relief from central authorities, and COVID-infection of front liners and members of emergency teams. Moreover, the reluctance of local people to maintain safety measures due to misconceptions and the socio-cultural tradition of gathering outside were critical to manage during the pandemic. However, local government institutions took several measures to support their communities, such as providing social and economic relief and protective equipment, raising awareness and ensuring social-distancing measures. The active participation of community-based organisations and the involvement of wealthy residents greatly helped to lessen the challenges the local authorities faced in combating the COVID-19 pandemic. CBOs and local influential persons assisted the local government in several ways. They distributed food aid, raised funds, donated money, and worked to reduce negative perceptions among local people regarding COVID-infected families. These unique roles of CBOs supported the local authorities substantially in managing COVID-tackling activities efficiently at the local level in resource-limited settings. Some common measures that were practised worldwide, including tax and rent reduction, providing soft loans, the establishment of quarantine and isolation zones, relocation of public markets, and safe disposal of COVID-waste, were not observed in the study area due to insufficient resources. Untreated infectious medical waste increases public health and environmental risks by spreading the contagious disease among the community (Barua & Hossain, 2021; Faisal et al., 2021; Ministry of Health and Family Welfare, 2021; Shammi & Tareq, 2021), which was a major concern for this ward as well. Hence in situations like the COVID-19, the use of color-coded bins, adequate facilities for the waste handlers, supply of essential logistics, and proper disposal of infectious wastes are to be ensured through public and private collaboration to reduce health hazards in densely populated developing areas (DSCC, 2020; Ministry of Health & Family Welfare, 2020a).

The findings of this study offer valuable insights for local government institutions to combat disasters, especially in developing countries. There were variations in COVID-response activities performed in developed and developing countries around the world. Developing countries often lack institutional capacities as well as financial and human resources. Only central government support is not sufficient to combat disasters like the COVID-19 pandemic in densely populated communities of developing countries. The active involvement of community-based organisations, strong social bonding, and interactions with the local authorities in Ward 28 of DSCC contributed significantly to reducing local vulnerabilities and tackling infectious diseases at the local level. The response pattern of

elected local government authority in Ward 28 is quite similar to other developing countries. However, the unique role played by community-based organisations through raising funds, distributing aid, and increasing awareness in this ward can be cited as good practice for other such communities and local institutions. Moreover, influential and wealthy individuals and families also came forward to address the financial limitations of the local authority. In such old communities with enriched cultures and customs like Ward 28 of DSCC, people place more trust in their community leaders or elected local government representatives than in central government personnel. Therefore, establishing and promoting such community organisations in developing cities worldwide could help mitigate any crisis situation. Moreover, the prompt approaches and innovative actions taken in developed countries might be contextualised for other countries during such crisis events. Nevertheless, it is true that many of the activities were designed as a temporary response to the pandemic situation. Most of them were aid, relief, or waive types of response as all the economic activities were almost shut down. In case of a long-term pandemic than COVID-19, these measures might fail to provide a sustainable and effective solution.

This study acknowledges certain limitations which could be addressed in future research. Firstly, a single case study area was chosen to assess the activities of local government institutions during the pandemic in densely populated communities. In-depth qualitative data were collected and analysed for a single case study area. Secondly, the data of this study heavily relied on focus group discussions and secondary sources. Perceptions and opinions of local authorities, local clubs, and CBOs could have had personal biases. Lastly, the information regarding the activities of LGIs worldwide was completely based on secondary sources from thirty developed and developing countries. Thus, findings may not be fully generalized to all countries worldwide. Further studies are required to figure out more permanent and effective solutions that will control such pandemics and keep economic activities functioning at the same time. Local government institutions of developing countries should focus on the prerequisites for effective pandemic responses outlined in this study. They must take strategies to strengthen their institutional capacity, improve their interactions with CBOs and local people, try to take advantage of technology and educate their communities. These activities will certainly help relevant authorities to respond more proactively and efficiently during such a crisis situation.

CRediT authorship contribution statement

Farzana Faiza Farha: Writing – review & editing, Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Mohammad Ashraf Ali:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Fyroz Anika Khan:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Ishrat Islam:** Writing – review & editing, Supervision, Conceptualization. **Paromita Shome:** Supervision.

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Declaration of competing interest

None.

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Appendix A

Table A.1
Country-wise detailed sources of the reviewed documents

Country	Sources
South Africa	(Das et al., 2021; Hlati & Maziwisa, 2020; Khambule, 2022; Pozhidaev, 2021; SALGA, 2020; UCLGA, 2020a; United Nations, 2020b)
Congo	(UCLGA, 2020a; Yilmaz & Boex, 2021)
Egypt	(Beschel, 2021; UCLGA, 2020a; UNDRR, 2020)
Indonesia	(Fridayani & Soong, 2021; Pradana et al., 2020; Satispi et al., 2021; Sevindik et al., 2021; Tsukiji et al., 2020)
Nepal	(Adhikari & Budhathoki, 2020; Allain-Dupré et al., 2020; Mainali et al., 2021; Rayamajhee et al., 2021)
India	(Chowdhury & Jomo, 2020; Das et al., 2021; Dutta & Fischer, 2021; Ehsan, 2020; Wray et al., 2021; Yilmaz & Boex, 2021)
China	(Beerman & Welborn, 2020; Das et al., 2021; Li et al., 2021a, 2021b; Liu et al., 2020; United Nations, 2020a; Weng et al., 2020; Yang et al., 2020; Yilmaz & Boex, 2021)
Sri Lanka	(Separatne et al., 2020)
Mexico	(Beerman & Welborn, 2020; Ramírez de la Cruz et al., 2020; Roever & Ogando, 2022; UCLG et al., 2020)
Kenya	(UCLGA, 2020a; United Nations, 2020b; Yilmaz & Boex, 2021)

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Table A.1 (continued)

Country	Sources
Thailand	(Laochankham et al., 2021; Sarawut, 2020)
Vietnam	(Ha et al., 2021; Huynh et al., 2020; United Nations, 2020b)
Nigeria	(Ahmed et al., 2020; United Nations, 2020b; Wray et al., 2021)
Chile	(Palma & Araos, 2021; Ramírez de la Cruz et al., 2020)
Philippines	(ADB, 2022; Carampatana & Tuazon, 2020; Espia et al., 2021; Flores & Asuncion, 2020; Hapal, 2021; IGF, 2022; Red Cross & Red Crescent, 2020; Talabis et al., 2021)
Colombia	(Beerman & Welborn, 2020; Cárdenas & Martínez B, 2020; Ramírez de la Cruz et al., 2020; Turner et al., 2022)
Zimbabwe	(Mutshakan & Mironga, 2022; UCLGA, 2020a)
Argentina	(Bianchi, 2021; Ramírez de la Cruz et al., 2020)
Saudi Arabia	(Banjar et al., 2024; Neve, 2020)
The United States	(Allain-Dupré et al., 2020; Anttiroiko & Haveri, 2022; Benavides & Nukpezah, 2020; City of Dallas, 2020; Dzigbede et al., 2020; Patton et al., 2022; Perez et al., 2021; Permanasari et al., 2022; Weng et al., 2020; Yilmaz & Boex, 2021)
The United Kingdom	(Gore et al., 2021)
Hungary	(Baranyai et al., 2021; Bouhlel, 2021)
South Korea	(Kim & Jeong, 2022; Ko, 2021; MoIS, 2020; Shaw et al., 2020; UNESCAP, 2020; Yilmaz & Boex, 2021)
Japan	(Das et al., 2021; Tashiro & Shaw, 2020; Tsukiji et al., 2020)
Ireland	(Shannon & O'leary, 2021)
Germany	(Anttiroiko & Haveri, 2022; Kuhlmann & Franzke, 2021)
England	(Arrieta, 2022; Fyans, 2020; Machin, 2023; Wray et al., 2021)
Czechia	(Jüptner & Klimovský, 2022; Pláček et al., 2020)
Slovakia	(Buček, 2022; Jüptner & Klimovský, 2022; Nemec, 2022)
Canada	(Moore, 2021; Orr, 2023; Rode & Flynn, 2020; Samji et al., 2021; Stoney et al., 2023; United Nations, 2020b; Wray et al., 2021; Yilmaz & Boex, 2021)

(Source: Authors' construction, 2024)

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