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Overcrowding in Public Places: Lessons Learnt From COVID-19 Era

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Abstract

Overcrowding impacts on health of humans. It is a major issue in the world today considering the insurgence of corona virus cases globally. Covid-19 is mostly spread through air and a greater number of Covid-19 cases were infected by air and in public places. Overcrowding comes with so much noticed and unnoticeable impacts on humans. Some of these effects are transients while some could last for a life time. The most impacting effect of overcrowding is the impact it has on the respiratory tract. Respiratory tract infections, coughs, asthma, influenza, tuberculosis and diarrhea are among the health issues caused by overcrowding. Impairment on mental health is also associated with overcrowding as it renders both adults and children in unstable psychological state. Most of the associating effects of overcrowding on humans become severe with COVID-19 infection. It was recommended that approved nose masks be used and visits to public places be avoided in this season except there is no other alternative.

Keywords: Overcrowding, COVID-19 era, Public places

Introduction

Overcrowding of humans is almost unavoidable in major public places but come with its unforeseen and unnoticeable impact on humans and properties. Crowding and overcrowding can be used interchangeably. Anand (2020) and Marshy (1999) defined overcrowding or crowding as the presence of too many people in a particular place at a point. Overcrowding can be seen as having lack of privacy or an undesirable interactions and psychological distress that keeps increasing (Jazwinski, 1998). Overcrowding can bring direct and indirect consequences that are transient, lasting, compounding, complex, numerous, mutually reinforcing and critical (Marshy, 1999). Crowding comes with impacts that are unhealthy for both man's physical and mental well being (Myers et al, 1996). Overcrowding is not seen as a serious issue (House of Commons Transport Committee, 2003) though a threat to public health and can serve as an avenue for the outbreak of any airborne disease.

Seen and unseen impact of overcrowding might pose serious threats on the health of both the young and old populations with either immediate or long-term health consequences. When living in a crowded place becomes a lifestyle, it does not only leave one with immediate effect but becomes a canker worm that eats up the body. Overcrowding poses serious risk to humans most especially during coronavirus disease 2019 (COVID 19) era. COVID 19 is a contagious disease caused by evolving new strains of the virus known as Severe Acute Respiratory Syndrome coronavirus 2 (Hu, Guo, Zhou, & Shi, 2021). It was first discovered in Wuhan, China in December, 2019 (Page, Hinshaw, & McKay, 2021). It spreads easily through contact with infected air droplets and contaminated surfaces (Africa Centre for Disease Control, 2020). The rate of contamination is high when in close range with the infected or contaminated surfaces.

From its first discovery at China in 2019, the number of cases has risen tremendously globally with no exceptions in population (World Health Organization, 2021).

Global Development Institute (2020) reports that 95% of all COVID-19 cases globally occurred in public places. Daily businesses are transacted in public places, hence the need to maintain checks and balances to obtain healthy environment. Public places are spaces where more than two persons from different backgrounds and locality meet for varying and similar aims, goals and purposes. Public places are locations that are physically and socially accessible to all for use and various activities (Rahman, 2014). Malls, markets, schools, motor parks, offices, general workplaces, among others are referred to public places. A place becomes public when it is no longer within the confines of your apartment. This makes the spread of Covid-19 fast and vast.
Crowded areas experienced more spread of COVID-19 even with larger number of cases compared to cases in less populated areas (Rader, et al, 2020). Increase in cases of COVID-19 infection tends to be high in crowded public places such as social and religious gatherings, markets, banks, public transport, schools and different work public places. Airborne diseases are transmitted by air and its pathogens travel faster than other pathogens because of the path of transmission. This is why the rate and number of COVID-19 cases were on the increase at the onset of the pandemic, and resulted in the cases of lockdowns of territories, just to curb the continuous spread of the virus. Controlling the spread of COVID-19 in public places might be difficult especially seeing that man and his activities cannot be fully controlled. Hence, it is imperative for one to take safety and precautionary measures in this period just to safeguard ones live against continuous exposure to COVID-19. Some places like banks, markets, schools, religious and social gatherings are mostly overcrowded and experience rapid spread of COVID-19.

Overcrowding in Public Transports

Transportation is key to survival in any city or region. Human transportation services undoubtedly are conveyed from one points to the other to achieve services deem fit for human survival. Cars, motorbikes, buses, canoes, ships and aircrafts are used to convey people from one place to another. Transport services with great customer-friendly services are admired. Overcrowding in public transport can be seen as a sign of success as some passengers accept overcrowding as fact of life. (House of Commons Transport Committee, 2003). Transport services should be done in accordance with safety measures and not to maximize profit at the detriments of passenger's safety and wellbeing. Staying in confined spaces, as well as having body contact with other passenger increases the possibility of contracting COVID-19.

The safety and approved standard for carrying passengers on motor bikes should be one per fleet; saloon cars- two passengers at the back and one in the front; buses-three passengers at each row and one at the front. There should be enough space for passengers to move. Airplanes, ships and trains should not be overloaded with passengers, and should abide by the standards and regulations governing their various transport services and bearing in mind their passengers' safety and comfort.

Overcrowding in Schools

With regards to accommodation in institutions of learning, a lot is begging for attention. In developing and underdeveloped climes, most government schools from primary level to tertiary levels exceed the number of students per class with little and in most cases no space to move

around. This situation places the learners and their tutors in high risks of contracting COVID-19. The misnomers emanating from overcrowding in schools tend to triple when those in consideration are children who might not comprehend all the safety measures that the school authorities might have put in place to curb the spread of the pandemic. This of course underscored the need to completely leave most institution of learning in this category locked down, till the wave of the pandemic died down, or the necessary facilities to curb the spread were provided.

Overcrowding in Banks

Banking halls in developing and underdeveloped climes are other platforms where overcrowding cannot be easily avoided. Most banks in these climes are rarely concerned about space management. They erect their structures in any strategic space despite the constraints they might encounter with space management. Despite the extent to which banks might enforce the "no-nose-mask-no-entry" mantra, there is definitely a very high risk of contracting COVID-19 in an overcrowded banking hall.

Overcrowding in Markets

Market, considered in this context to be a public place where transactions of goods and services are carried out with financial returns and rewards is also another place where people are at a high risk of exposure to contracting COVID-19. The disarray often observed in markets (in developing and underdeveloped countries and even in most developed countries) is very conducive for ease of transmission of air-borne diseases from carriers to others.

Overcrowding in Offices (Workplaces)

People spend a great part of their waking hours in offices at work places, whatever description anyone might choose to give an office. Most of these workplaces are made of small rooms and cubicles that accommodate as much as four to six workers. This is unsafe and becomes an easy channel for the transmission of any air-borne disease. The advent of the corona virus pandemic heightened the awareness about overcrowding at work places, and has resulted in more decisive actions towards ensuring that office spaces are not overcrowded. The danger in overcrowded work places has of course yielded the much celebrated "work-from-home" mantra which heralded the post-COVID-19 pandemic. Arguably though, not all job-types are effectively executed from home. Thus, the need still persists, to ensure that as much as we can, work places are kept as sparsely populated as the standard required for health safety.

Overcrowding at Religious Gatherings

The corona virus pandemic came with it, a thirst and hunger for divinity that has not been witnessed in recent times. Churches, Mosques and other centers of religious gatherings were considered by many as a last resort when all known civilization was completely overturned by the pandemic. The COVID-19 curbing measures that were initiated by stakeholders at the onset of the pandemic faced very stiff opposition in most places when these places of worship were at the receiving end of these measures. However, these oppositions seemed to fluctuate as the pandemic continued, with the practitioners being divided among them. These resulted in narratives and counter narratives in their responses, as aptly captured by Idler et al, (2022) in their computational text analysis of these narratives and counter narratives in religious responses to COVID-19.

Overcrowding at Social Gatherings

With civilization chased indoors by the COVID-19 pandemic, all social gatherings at beaches, sports centers, bars, event places, etc was dealt a blow that ultimately affected the humans that gather in these places. The necessity to reduce gatherings in these places was fostered by the fact that transmission of COVID-19 in the gatherings was very easy due to the almost impossible caution of maintaining the stipulated social distancing.

Effects of Overcrowding on Physical Health

The standard of accessing and determining the effects of overcrowding is still under debate for over a century (Myers, et al, 1996). Crowding has both advantages and disadvantages on health. Crowding can be advantageous to health as the protective effect of against some infections is increased by the simulation of the immune system (Gray, nd). It can be disadvantageous as a result of insufficient circulation of fresh air thereby causing or exacerbating respiratory illnesses (Marshy, 1999). In a post-covid era, it is imperative for researchers to access these effects and see the side that outweighs to help in proper and healthy living. In Covid-19 era, it's undoubtedly seen and experienced that Covid-19 spreads faster and at a rapid and greater rate in crowds.

People become susceptible to diseases and illnesses when they are inhaling unclean and contaminated air. When people stay too close to each other over short whiles, there is high rate of disease transmission (UNCHS, 1995).

Clauson-Kaas et al (1997) enlisted the following effects of overcrowding. Thus:

"increase the risk of multiple infections because the number of potential transmitters
- increase proximity and hence the risk of disease transmission
-increase risk of infection early in life which may lead to more severe infections
-increase risk of prolonged exposure and severe disease
-increase risk of long-term adverse effects of infections"

Overcrowding is associated with some health challenges ranging from mental health problems to respiratory tract infections and even higher mortality rates among women (Weinberg, 2016). For pregnant women that are often exposed to overcrowded environments and conditions, they might give birth to children who have low birth weight (Clauson-Kaas et al., 1997). The effect of overcrowding can be more on children. These effect can be seen in the child's live even throughout adulthood (Solari, & Mare,2012). Some children in crowded environs suffer from coughs, asthma, influenza and diarrhea (Clauson-Kaas et al., 1997, Martin, 1976 & Kearns et al., 1992).

Colosia et al. (2012) posited that overcrowding in houses can lead to respiratory tract diseases. Overcrowding can lead to increased respiratory problems such as bronchitis, tonsillitis and rhinopharyngitis in children between age one to three (Krinstensen, & Olsen, 2006; Fonseca, 2016: Ranson, 1991). Respiratory infectious disease in children (Fonseca et al, 2016; Bruden, 2015; Tam, 2014; Mortensen, 1988). Some of these infectious diseases include pneumonia, acute respiratory illness, respiratory syncytial virus and flu-related illnesses. Whooping cough, cold, asthma, influenza, Hepatitis A, Hepatitis B, polio, diarrhoea, malaria, meningitis, acute lower

respiratory infections (ALRI), influenza, hepatitis A, hepatitis B, helminth diseases, stunting, chronic diseases, and stress may be related to crowding (Bradley et al., 1992; Smith et al., 1992). Morales et al. (1992) confirmed that crowding can also lead to increase number of Hepatitis A patients.

Tuberculosis has been identified to have a correlation with overcrowding (Harling & Castro, 2011; Irfan, 2017; Elender et al, 1998). Some tuberculosis patients were infected just by contact or being in the same area with a patient. In the era of COVID-19, most of the associated overcrowding problems become worst especially when the person becomes infected with COVID-19.

Effects of Overcrowding on Mental Health

One of the most pronounced effect of overcrowding is noticed in the mental health of all affected across race and age. Crowding can impact negatively on the behavioral and cognitive development of children. Children who are exposed to overcrowding experience poor educational attainment (Goux & Maurin, 2005). Overcrowding can lead to behavioural and cognitive developmental problems in children (Maxwell, 1995). Some children might develop some behavioural challenges and would have issues with coping in school.

In adults, it can lead to psychological stress, anxiety and depression (Lepore, 2012, Adegoke, 2014). With the associating effect of overcrowding on health, it might also lead to psychiatric disorders. Cabieses et al, (2012) found an association between crowding and psychiatric disability. Overpopulation can lead to the stretching and depletion of natural resources. In the COVID-19 pandemic era, a few evidence showed symptoms of depression, anxiety, disturbed sleep and stress as reactions to the pandemic (Rajkumar, 2020). According to Bao et al., 2020, COVID-19 has increased distress and symptoms of mental illness.

Effects of Overcrowding on Transportation

House of Commons Transport Committee (2003) listed two ways in which overcrowding could impact on humans' health and safety. These include increased severe consequences to passengers in events of accident and stress associated with overcrowding and even injury from overcrowding. Passengers in overcrowded vehicles experience different levels of stress associated with overcrowding. Some of the overcrowded vehicles are might not be in their proper state , hence more discomfort from noises, sounds and shakings from the vehicles, lack of proper and adequate ventilation and raised environmental temperatures. Accidental deaths might occur from overcrowding in transportation services. Tang (2020) in his studies, affirmed that curtailing certain movements can drastically reduce the spread of COVID-19.

Lessons learnt in COVID-19 era

Overcrowding in public places can hardly be prevented. Therefore it behooves everyone to take preventive measures that could help reduce the spread of COVID-19 in public place. Such preventive measures include, proper social distancing, proper hygiene and correct use of face mask (Hollingsworth, Klinkenberg, Heesterbeek & Anderson, 2011). A study showed that physical distancing reduced the spread of COVID-19 by 25% (Lau, Khosrawipour, & Kocbach, et al., 2020).

Others include:

Shortening ones stay in public places can be quite helpful in reducing ones exposure to the virus.

Use recommended nose masks to enable filtration of air. Unavoidably, the recommended nose masks should be properly used and at all times when in public places.

Avoid public places unless there is a strong need to be there. Since lockdown is not healthy for the economic welfare of the people, it is advisable to limit exposure to public places except or otherwise with cogent reasons.
Choose alternatives to public places for now until everything gets back to normalcy. For religious and social gatherings, a suitable alternative could be joining in such meetings through online platforms.

References

Adegoke, A. (2014). Perceived effects of overcrowding on the physical and psychological health of hostel occupants in Nigeria. *IOSR Journal of Humanities and Social Science,19*; 01-09

Africa Centre for Disease Control, 2020. https://africacdc.org/covid-19

Anand, P. (2020).Overcrowding. Retrieved from https://www.worldyouthcouncil. org/post/overcrowding~

Bao Y., Sun Y., Meng S., Shi J., Lu L. (2020). -nCoV epidemic: address mental health care to empower society. *Lancet, 22*(395):e37–e38.

Bradley, D., Stephens, C., Harpham, T., and Cairn Cross S. (1992). A Review of Environmental Health Impacts in Developing Country Cities. *The World Bank, p.* 6.

Bruden, D, Singleton R, Hawk CS. (2015). Eighteen years of respiratory syncytial virus surveillance. *Pediatric Infectious Disease Journal, 34*(9):945–50

Cabieses B, Pickett KE, Tunstall H. (2012).Comparing sociodemographic factors associated with disability between immigrants and the Chilean-born: are there different stories to tell? *International Journal of Environmental Research & Public Health, 9*(12):4403–32.

Clauson-Kaas, J., Dzikus, A., Surjadi, C., Jensen, H., Hojlyng, N., Aaby, P., Baare, A. and Stephens, C. (1997). Crowding and Health in Low-Income Settlements. United Nations Centre for Human Settlements (Habitat), Avebury, England

Colosia, AD, Masaquel A, Hall CB, Barrett AM, Mahadevia PJ, Yogev R (2012). "Residential crowding and severe respiratory syncytial virus disease among infants and children: a systematic literature review". *BMC Infectious Diseases. 12*: 95. doi:10.1186/1471-2334-12-95. PMC 3405464. PMID 22520624.

Crothers, C. Kearns, R. and Lindsey, D. (1993) *Housing in Manukau City: Overcrowding, Poor Housing and Their Consequences* Working Papers in Sociology No. 27 University of Auckland.

Fonseca Lima, EJ da, Mello, MJG, Albuquerque, M de FPM de, et al. Risk factors for community-acquired pneumonia in children under five years of age in the post-pneumococcal conjugate vaccine era in Brazil: a case control study. *BMC Pediatrics,16*(1):157.

Ganesh, B., Scally, C. P., Sopec, L.,& Zhu, (2017). The relationship between housing and asthma among school-age children.: Analysis of the 2015 American Housing Survey. Urban Institute.

Global Development Institute (2020). Overcrowding, not density, makes cities more vulnerable to Covid-19. Retrieved from http://blog.gdi.manchester.ac.uk/

Goux DM, Maurin E. (2005). The effect of overcrowded housing on children's performance at school. *Journal of Public Economics, 89*(5):797–819.

Gray A (2001). *"Definitions of crowding and the effect of crowding on health" (PDF)*. Ministry of Social Policy, New Zealand. Retrieved from www.mosp.govt.nz.

Harling G, Castro MC. (2011). A spatial analysis of social and economic determinants of tuberculosis in Brazil. *Health Place, 25:*56–67.

Hollingsworth TD, Klinkenberg D, Heesterbeek H, Anderson RM. (2011). Mitigation strategies for pandemic influenza A: balancing conflicting policy objectives. *PLoS Comput Biol* ;*7*:e1001076-76. 10.1371/

House of Commons Transport Committee (2003). Overcrowding on public transport. Seventh Report of Session 2002-03. Volume 1. Retrieved from www.parliament.uk/parliamentry_committees/transport_committee.cfm

Hu, B., Guo, H., Zhou, P. and Shi, Z.L. (2021). Characteristics of SARS-CoV-2 and COVID-19. *Nature Reviews. Microbiology, 19*(3): 141-154

Idler E, Bernau JA, Zaras D (2022) Narratives and Counter-narratives in Religious Responses to COVID-19: a Computational text analysis. *PLoS ONE* 17(2): e0262905. Doi:10. 1371/journal.pone.0262905

Irfan SD, Faruque MO, Islam MU, Sanjoy SS, Afrin D, Hossain A. (2017). Socio-demographic determinants of adult tuberculosis: a matched case-control study in Bangladesh. *American Journal of Infectious Diseases.13*(3):32–7.

Jazwinski, C. (1998) Crowding http://condor.stcloud.msus.edu/~jaz/psy373/7.crowding.html

Kearns, R. A., Smith C. J. and Abbott, M. (1992) The stress of incipient homelessness, *Housing Studies,* 7(4); 280-298.

Kristensen IA, Olsen, J. (2006). Determinants of acute respiratory infections in Soweto-a population-based birth cohort. *SAMJ, 96*(7):633–40.

Lau H, Khosrawipour V, Kocbach P, et al. (2020). The positive impact of lockdown in Wuhan on containing the COVID-19 outbreak in China. *J Travel Med,27*:taaa037. 10.1093/jtm/taaa037.

Lepore, S.J. (2012). Crowding: Effects on Health and behaviour. In: Ramachandran, V.S. (ed.). *Encyclopedia of Human Behaviour, 1;*638-643

Marshy, M. (1999). Social and Psychological Effects of Overcrowding in Palestinian Refugee Camps in the West Bank and Gaza. Literature Review and Preliminary Assessment of the Problem. prepared for the International Development Research Centre. Retrieved from https://prrn.mcgill.ca/prrn/marshy.html

Martin, A.E. (1976) *Housing, the Environment and Health: An Annotated Bibliography*, WHO.

Maxwell, L. (1995) Crowded homes and daycare centres located on http://www.news.cornell.edu/science.

Mortensen, A. (1988) Housing: A primary health care issue - report of an exploratory surveyconducted by public health nurses in inner city Auckland, *Nursing Praxis in New Zealand 3*; 26-28.

Myers D., Baer William C. and Choi Seong-Youn (1996) The changing problem of overcrowded Housing, *Journal of the American Planning Association*, I (1) Winter

Nkosi, V., Haman, T., Naicker, N. & Mathee, A. (2019). Overcrowding and health in two impoverished suburbs of Johannesburg, South Africa. *BMC Public Health, 19*:1358.

Page J, Hinshaw D, McKay B (2021). "In Hunt for Covid-19 Origin, Patient Zero Points to Second Wuhan Market – The man with the first confirmed infection of the new coronavirus told the WHO team that his parents had shopped there". *The Wall Street Journal.*

Rader B., Scarpino S.V., Nande A. (2020). Crowding and the shape of COVID-19 epidemics. Nat. Med.

Rahman, M. (2014). The changing nature of urban public places in Dhaka City. *Urbanism.* Architecture. *Constructions,5*(4):5-16

Rajkumar, R. P. (2020). COVID-19 and mental health: A review of the existing literature. Asian J Psychiatr. 52:102066. doi: 10.1016/j.ajp.2020.102066. PMID: 32302935; PMCID: PMC7151415.

Solari, C.D. & Mare, R.D. (2012). Housing crowding effects on children's wellbeing. *Soc Sci Res*, *41*(2):464-478

Smith, C., Kearns, R. and Abbott, M. (1992) A tale of two cities: The experience of housing problems in Auckland and Christchurch, *New Zealand Geographer, 48* (1):2-10.

Ranson, R. (1991) *Healthy Housing: A practical guide* E. & F. N. Spon and WHO, London. Is parent–child bed-sharing a risk for wheezing and asthma in early childhood?

Tam K, Yousey-Hindes K, Hadler JL. Influenza-related hospitalization of adults associated with low census tract socioeconomic status and female sex in New Haven County, Connecticut, 2007–2011. Influenza & Other Respiratory Viruses. 2014;8(3):274–81.

Tang KHD. (2020). Movement control as an effective measure against Covid-19 spread in Malaysia: an overview. *Z Gesundh Wiss.* 10.1007/s10389-020-01316-w

Maartje, P.C.M. Luijk, Agnes M.M. Sonnenschein-van der Voort, Viara R. Mileva-Seitz, Pauline W. Jansen, Frank C. Verhulst, Albert H, Vincent W.V. Jaddoe, Johan C. de Jongste, Marinus H. van IJzendoorn, Liesbeth D, and Henning, T. (2015).

European Respiratory Journal, *45*: 661-66.

Marshy, M. (1999). Social and psychological effects of overcrowding in Palestinian refugee camps in the West Bank and Gaza. *International Development Research Centre.* https://prrn.mcgill.ca/prrn/marshy.html

UNCHS (Habitat) (1995). Human Settlement Interventions Addressing Crowding and Health Issues. Nairobi.

Weinberg, N. (2016). How can cities be preemptive and effective in preventing overcrowding? Retrieved from https://datasmart.ash.harvard.edu/news/article/

World Health Organization (2021). Coronavirus (COVID-19) Dashboard. https://covid19.who.int/ www.washingtonpost.com