

Article

Mental Health and the City in the Post-COVID-19 Era

Jakub Bil ¹, Bartłomiej Buława ^{2,*}  and Jakub Świerzawski ² 

¹ Inclusive Habitat Project, Mjr. Lupaszki Street 8/5, 30-198 Kraków, Poland; jakubbil@inclusivehabitat.com

² Faculty of Architecture, Civil Engineering and Applied Arts, University of Technology, Rolna 43, 40-555 Katowice, Poland; jakub.swierzawski@wst.com.pl

* Correspondence: bartlomiej.bulawa@wst.pl

Abstract: The article describes the risks for the mental health and wellbeing of urban-dwellers in relation to changes in the spatial structure of a city that could be caused by the COVID-19 pandemic. A year of lockdown has changed the way of life in the city and negated its principal function as a place of various meetings and social interactions. The danger of long-term isolation and being cut-off from an urban lifestyle is not only a challenge facing individuals, but it also creates threats on various collective levels. Hindered interpersonal relations, stress, and the fear of another person lower the quality of life and may contribute to the development of mental diseases. Out of fear against coronavirus, part of the society has sought safety by moving out of the densely populated city centres. The dangerous results of these phenomena are shown by research based on the newest literature regarding the influence of COVID-19 and the lockdown on mental health, urban planning, and the long-term spatial effects of the pandemic such as the urban sprawl. The breakdown of the spatial structure, the loosening of the urban tissue, and urban sprawl are going to increase anthropopressure, inhibit access to mental health treatment, and will even further contribute to the isolation of part of the society. In addition, research has shown that urban structure loosening as a kind of distancing is not an effective method in the fight against the SARS-COV pandemic. Creating dense and effective cities through the appropriate management of development during and after the pandemic may be a key element that will facilitate the prevention of mental health deterioration and wellbeing. It is also the only possibility to achieve the selected Sustainable Development Goals, which as of today are under threat.

Keywords: COVID-19; mental health; wellbeing; spatial development; urban sprawl; dispersed settlement; rural area protection; Sustainable Development Goals



Citation: Bil, J.; Buława, B.; Świerzawski, J. Mental Health and the City in the Post-COVID-19 Era. *Sustainability* **2021**, *13*, 7533. <https://doi.org/10.3390/su13147533>

Academic Editors: Chenghe Guan and Sumeeta Srinivasan

Received: 16 May 2021

Accepted: 29 June 2021

Published: 6 July 2021

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

The COVID-19 outbreak has changed human life and activity [1–3], especially in urbanised areas that have not experienced any epidemics in recent decades. Protective measures (social distancing and isolation) that have been globally implemented has caused the isolation of millions. They help to slow down the dynamics of the disease and as a result, allow many people to survive. However, this comes at the expense of mental health, psycho-physical conditions, wellbeing, and social relations within societies [4]. It has also massively cut off the access of city dwellers to goods, while at the same time deteriorating the economic condition of many people and households. Human experiences acquired during social isolation may lead to new (anti) urban trends, causing long-term spatial effects of the COVID-19 pandemic, such as urban sprawl, individual transport (car) systems development and landscape fragmentation, if not properly managed. This will increase the anthropo-pressure on the planet, which is in opposition to the Sustainable Development Goals (SDG) [5–7], especially “Promoting mental health and wellbeing” (SDG 3.4), “Making cities and human settlements safe, stable, sustainable and inclusive” (SDG 11) as well as other SDGs which are threatened by urban sprawl [7–9] (pp. 19–30).

The question we ask is if this long-term spatial effect of the COVID-19 pandemic in itself may be a reason for the further worsening of mental health and multiplication of mental health problems caused by the pandemic. Therefore, relations between spatial structure and development of cities and regions with the mental health of whole societies in the context of the COVID-19 pandemic are the topic of the present article.

The intensive, designed and coordinated development of cities has led them to become advanced structures of concentrated functions based on a comprehensive exchange of services and goods thanks to efficient communication. In recent decades prosperous cities, especially in developed regions of the world, have become more and more effective, and dense [10]. Just before the COVID-19 outbreak, city centres and districts offered a high-quality life with a wide range of services, utilities, public and green spaces, as well as city parks [11]. City residents received many forms of activities in exchange for narrowing their private space to a multi-family space, usually a small apartment. A high level of socialisation in public spaces provided constant intense interactions among inhabitants, allowing them to maintain relations [2]. Suddenly, this modern urban standard of living was challenged. Social distancing took place at several levels: at home and at work, and, in the city, in the street and on public transport. Everything created for urban life changed and became uncertain. Societies got used to sharing common spaces, often crowded, and everyone was cut off from everyday socialisation. The isolation forced millions of individuals and families to remain at home, causing them to change their routines, rituals, and habits [3]. In dense urban areas, this mostly meant locking people in cramped apartments, cut off from everyday physical activity outside the home [2]. Do we have a city trap? Does the apparent exit seem to be the “outside of the city”?

Even in places where the lockdown is lifted, there is a visible change in human behaviour. Public gatherings, transport, shopping, and other everyday activities, where people had an opportunity to socialise, remain places of isolation [3]. These places used to be an everyday “safety valve”, providing not only comfort but also the realisation of mental and social needs, they were an indispensable element of living in a location that allows its inhabitants and users to maintain mental health [12]. Prohibitions on leaving an apartment, restrictions on the freedom of staying outside, moving around, using services, highlighted the disadvantages of multi-family housing in a dense urban environment. The unpleasant experiences of isolation have often turned into traumatic ones related to the state of mental health [13,14].

In dispersed settlements starting with urban and ending with the distanced countryside, managing mental health may be difficult and quality of healthcare and wellbeing are under threat in terms of healthcare accessibility [15–17]. Living in highly urbanised zones that have contributed to social disintegration and disorganisation has always been an issue, and now it has become even more challenging. Nevertheless, issues generated by the pandemic in terms of mental health, give a completely new perspective on mental health and urban planning and design [18].

2. Materials and Methods

A review of the literature and an additional critical review were conducted in fields of urban planning and mental health with a focus on the latest research concerning COVID-19 influence on social and urban–spatial transformation and its influence on mental health and wellbeing. For the purposes of this article, a thorough database search has been made. The databases used were PubMed, ClinicalKey, Mendeley, Google Scholar.

Selection criteria included full-text publications beginning from January 2020, which were updated in March 2021. Selection criteria consisted of the following keywords: COVID-19, post-COVID-19, mental health, wellbeing, lockdown, isolation, anxiety, infection rates, density, spatial development, urban sprawl, urban density, urban form, urban structures, architectural design, solutions, dispersed settlement, rural area protection and landscape. Authors focused on qualitative research available until March 2021.

There were 223 articles. Analysis was performed based on the PRISMA algorithm. Search criteria, using the above mentioned keywords, were set up to show articles published from January 2020 until March 2021, regardless of the type of articles. The first level of exclusion was the appearance of the same text in different databases. That allowed us to exclude 33 articles. The next level was to select the most relevant articles based on content suitability. That allowed us to exclude a further 56 articles. The remaining 144 articles underwent critical analysis, which included a verification of the results presented. Confirmation was performed and resulted in the elimination of 63 articles. Verification criteria included both the inability to confirm the presented data with newer or relevant research, as well as updated research being published. Finally, 71 positions were selected for consideration as the basis of this paper, which has been reflected in references.

Critical analysis of collected data allowed us to exclude research published at the beginning of the pandemic whose results were not confirmed by research published in late 2020 and the beginning of 2021. This mainly included relations of space to the rates of infections, as well as trends in human behaviour that emerged and were not possible to be fully observed until one year after the onset of the pandemic. Up-to-date research was taken into consideration, including publications and research confirmed in other scientific resources until March 2021. Both terms and diagnostic criteria used in the article are based on ICD10. Any reference to disease and/or its symptoms follow ICD10 [19].

3. Results

3.1. Multi-Aspect COVID-19 Effects

The pandemic has implemented a change in the daily habits and collective behaviour of people. It revealed the disadvantages of living in the modern world, especially in central and downtown districts with high-intensity, multi-family housing. All that may change the perception of a city as a solution for human existence. In this context, the issue of mental illness stigma with a misunderstanding of neighbours in the countryside becomes a great social problem. This causes embarrassment and unwillingness to share problems, and therefore can force people to face diagnosis and treatment.

As a result, it threatens the social and spatial structure of the city and the countryside, as well as whole regions. This can drive spatial development into the risky direction of loosening its coherency, uncontrolled development, and insufficient open space protection, creating an increasing anthropo-pressure on greenfields, the countryside, and protected areas. On the other hand, health care services, including mental health as well as its prevention, are of a higher quality in cities or even in regions of the spatially coherent structure of the settlement [17,20].

There is a need to focus on spatial development in terms of community, region, and country. The spatial structure may play a key preventive role and may be an effective reaction against the new mental health pandemic with a decline in wellbeing, mental health, and care services [1,9,17,20]. These should be considered as compact, effective structures, in contrast to open natural areas and the countryside, and not as a random endless area of settlements.

Mental health prevention, treatment, and wellbeing issues that need to be highlighted include ecology, environment protection, economy, pollution reduction, and spatial development control awareness [21]. It is of utmost importance on a level never before seen, as it influences effective mental health disaster prevention and management. On the other hand, dispersed amorphous spatial structures may become a key factor obstructing mental illness treatment and mental health prevention. Otherwise, COVID-19 effects such as: “settlement spatial changes with urbanity loosening” and “mental health worsening” separately, and especially synergistically, seriously risk the sustainable development of societies in high and middle-income countries over the world.

3.2. Mental Health and COVID-19

Mental health as the least acknowledged health problem has not been as visible as other health issues during the COVID-19 outbreak [22–26]. The silence surrounding mental health is empowered by stigma, fears, and labelling which cause individual and lonely suffering [27,28]. This is especially true in the context of the rapidly growing problem of mental health of whole societies [29–31]. Despite the large number of publications, as well as recently undertaken actions by the UN and its agency WHO (World Health Organisation), including for example very good publications such as the WHO Quality Rights [32] and MhGap toolkit [33,34] global mental healthcare is still underfinanced and in many countries neglected [35]. Existing disparities in the distribution of mental healthcare globally, as well as its accessibility and affordability, still need to be highlighted. The pandemic and its consequences for mental health on various populations have shown enormous disproportions in both possibilities of provision of care, as well as in rising concerns about its accessibility [26,36].

A wider picture of the influence of the pandemic on mental health is also reflected by the increase in the number of mental health issues raised by patients, which is reflected in higher numbers of people seeking help [37]. The WHO reported an increase in loneliness, anxiety, depression, insomnia, harmful alcohol, drug use, and self-harm or suicidal behaviour [38,39]. An increase in mental health issues can be observed globally [40], including in China [41,42], India [43], and others. The impact of the COVID-19 pandemic on global mental health is significant, as are the consequences for individuals.

The abrupt increase in mental health issues caused directly and indirectly by the outbreak [44] has left many people without the care they used to receive. People with pre-existing mental health issues suddenly lost the possibility of sustained treatment [45]. Proper care in urbanised areas has become less accessible. The outbreak has changed the therapeutic model with partial e-mental health to a full virtual one [46]. For many people, that model of care is hardly acceptable and is difficult to use, which might cause their mental health to worsen [47,48].

High- and middle-income countries, especially in urbanised zones, were able to organise mental healthcare delivery in a virtual way [49,50]. That shift in many places, such as in rural and low urbanised zones, was not always efficient or possible. Globally, many un-urbanised zones, including ones in high and middle-income countries, have access to the internet with sufficient speed to perform e-mental health care consultations. Another issue is the e-illiteracy of many people. This leads to e-exclusion as well as to difficulties with managing populations' mental health needs [51,52].

Nevertheless, even if mental healthcare was/is accessible in a virtual way, it was/is different to personal contact. Many people who were locked in their homes, very often struggling with preexisting conditions, abandoned their treatment [53,54]. In many cases, doubts about the efficiency of e-healthcare were rising [55–57]. For those who previously had no mental health issues, loneliness and social isolation became the biggest struggle, despite physical closeness in densely inhabited areas.

Another factor that plays a role in the global picture of the mental health burden is healthcare illiteracy [58,59]. This is connected with a level of access to education, as well as to the development of certain societies. While in high and middle-income countries more people are seeking help, in other countries, this number is lower. Similarly, the more urbanised the zone, the higher the number of users of mental health services. This is closely combined with a mental health stigma, which is present in all societies [60]. Mental health stigma very often is a cause of either fear related to mental health issues on an individual level, and is also a factor that influences the approach of whole societies to mental health issues [61]. Mental health stigma is one of the most significant factors which prevents people from seeking help [62,63].

Both possibilities of provision of e-mental healthcare, as well as ambulatory or other forms of in-person consultations, are largely determined by overall accessibility to mental health professionals [64,65]. Globally, it is still not sufficient. The distribution of mental

health professionals is directly connected with both urbanisation and the level of development. Of course, as mentioned above, access to education, healthcare literacy and the level of stigma associated with mental health are all derivatives of the accessibility and efficiency of mental healthcare delivery.

Urbanisation has created another issue and another derivative influencing mental health and wellbeing, namely limited access to nature in urbanised zones. Despite a large number of green areas in the cities, highly urbanised areas do not provide sufficient access to nature, which is key for wellbeing and mental health. Yet, such access influences positively not only on mental health, but also on overall wellbeing, reducing stress levels, providing clean air, and providing space for outdoor activities [66]. Nevertheless, for non-urbanised zones, this factor is not considered to be as important as it is for urbanised ones. A fact that is worth highlighting is that for those who do not have constant access to nature, this might become one of the key indicators of their mental health and wellbeing [67]. Especially when whole societies were suddenly locked in cities, access to nature became one of the most important issues influencing people's mental health. Millions of people were locked in the very limited space of their flats, cut off from nature and the possibility of participation in outdoor activities. Together with a high level of diverse stressors, both everyday ones as well as those connected with the pandemic, they became even more vulnerable to mental health issues [12].

The pandemic has influenced the global mental health burden, as it has highlighted disparities and all other issues related to mental healthcare. The inequalities related to state income and issues related to urbanisation. Sudden, forced isolation, together with issues related to it, especially in urbanised zones, became even more visible and triggered even more concerns. This resulted in a shift in urbanisation perception and highlighted its consequences, as societies strove to deal with increasing mental health issues.

3.3. Space: Shift into Virtuality and Mental Health Issues

Human activities, limited by multiple lockdowns with the recommendation of physical distancing, have become a trigger of mental health issues for many [68,69]. The sudden lockdown forced people to limit their social interactions to a minimum. Social distancing and isolation were followed by moving the physical interpersonal contact into the virtual world [70] to sustain both economic and social relations.

Communication conditions and access ceased to matter. As a result, the urban structure, urban transport, and the offer of services in the city lost their importance, at least during the COVID-19 pandemic. From a horizontal perspective, the epidemic and its stigma on the mental health of mankind may put pressure on the development of cities, metropolises, and regions in Europe by reducing the interest in advanced urban structures in favour of looser ones, offering a wider zone of private space and access to nature. This will be a kind of reaction to the need for the guarantee of access to open space: or public space in the city or even undeveloped areas outside the city. This is a danger for city societies and may drive urban structure into laxity [6,8].

For millions of people globally, a sudden cut-off from social interactions might mean the worsening of their mental health condition. Long-term isolation is no longer a disturbance of comfort, but a threat to mental health and social balance [71,72]. In consequence, this might be the first step towards a social drift and the deterioration of socioeconomic status [40,73,74]. Even if mental health is not a visible aspect of the COVID-19 pandemic, it remains one of the long-term threats that is to be faced as a consequence.

The socialisation that had, before the pandemic, sustained social relations (sports events), as well as economic growth (industry), has become a threat to human health. What earlier was a standard everyday activity has now become a cause of anxiety and fear. Forced changes following physical distancing requirements and the imbalance of the pre-epidemic model of living, may bring about long-term changes in the physical construction of public spaces and urban models. They influence the perception of an intensely functioning and densely populated city as a safe and stable place to live in the future.

Everything that has emerged from daily life in terms of human interactions suddenly became a potential threat. Another person became a possible source of infection, especially for vulnerable health groups [75,76]. Being cut off from the commonly available forms of relaxation, sports, rituals, as well as services and goods, often turns this unpleasant experience into a traumatic one influencing people's sense of safety, stability, and freedom. It also might expose vulnerable people to serious stressors, causing anxiety, as well as fear [4,77]. An increased number of stressors, along with strict physical isolation, may also potentially generate post-traumatic stress disorder [78,79]. All of these mental health issues may cause a creeping mental health pandemic [80]. Declining mental health, together with other effects of social distancing, impact social bonds and neighbourly relations, and is a danger for urban communities.

Physical isolation, a shift into virtual reality, loneliness, and fear of being infected causes more than just anxiety [70]. Those who have lost contact with their peers have started to exhibit antisocial behaviour and isolation, often leading to an addiction to social media, and as a consequence, to a loss in socialisation [81]. Little contact with the real-world may not only trigger an appearance of diverse symptoms related to mental health and behaviour disorders, but may also destroy confidence and raise fears of physical contact, as the other person might become a potential source of an infection, which could be a deadly threat, especially for the most vulnerable groups [12]. Social distancing and isolation are followed by rapidly evolving virtualisation due to the pandemic [82,83]. The great threat is that permanent changes in space, like dispersed settlement and urban sprawl, easily turn into human loneliness. Together with the virtualisation of human activities, it may drive people as well as communities into the further deterioration of mental health. A remote lifestyle with a "screen world" is a long-term threat to social bonds and wellbeing [79,84].

If whole societies are constantly afraid of being infected then they will attempt to isolate. Otherwise, if communities and particular people are afraid of being isolated, cut off from the city and its life, then they will attempt to isolate themselves even more within their own little outer space, hoping not to be cut off anymore, by staying outside the city, surrounded by nature. The possible trend of changes in urban structures from concentrated to loose, overflowing single-family areas does not guarantee protection against infection [85,86]. However, a single-family dwelling guarantees the possibility of using the private open space. Even when that is prohibited, it is less enforceable than in a public space. The real risk of infection does not generally result from the form of habitation and population density, but from direct contact with other people [85]:

- Sports facilities are a good example [87–89]. It is worth mentioning that the match of the 1/8 final of the Champions League between Atalanta Bergamo (IT) and Valencia (ES) at San Siro in Milan on 19 February 2020 [90] played a key role in the development of the epidemic in Europe in the initial phase, with about 45,000 fans at the stadium. The number of fans from Bergamo at this event (about 40,000) compared to the number of fans from Valencia (about 5000) who came back to their homes after a loud celebration of victory significantly contributed to a faster outbreak of the disease in Lombardy and the whole of Italy, and a little later in Spain. It must be noted that 40,000 fans from Bergamo are approximately 1/3 of the total population of this city.
- Another example, from Poland, shows that the monocentric capital Warsaw (1.7 million) was the leader in the number of identified cases (March 2021) at the beginning of the pandemic until polycentric GZM Conurbation in Silesian Voivodeship (2.2 million) [91] had outbreaks of the disease in coal mines and other industries (in a specific collective work condition). The development of the disease in Silesia does not result from living in a dense city, but from the functioning of the characteristic labour and spatial structures at work—mining. In consequence, the particular increase in COVID-19 cases did not only occur in the GZM conurbation itself, but also in cities and even in smaller satellite towns and villages that are inhabited by coal miners.

Both examples show social interactions, which earlier constituted an obvious and very common human activity. Nowadays, both have become examples of SARS-CoV-2

infection clusters. Because of this, a lot of people will attempt to settle outside the city [92]. This is also driven by the threat of isolation without access to urban equipment and open spaces. It is strengthened by the necessary sense of independence and self-sufficiency. This should be considered as a potential new wave of urban sprawl [93], which should bring about the appropriate reaction. The real threat of infection gives way to mental needs and the fears of being isolated without access to public spaces and green areas. Fear of being infected with SARS-CoV-2 [94], together with a need for more personal freedom (limited in cities—people locked in flats with limited access to nature), forced people to change and move into less urbanised areas with better access to nature [95].

As one of the basic human activities is socialisation, it might raise a threat of deterioration of their mental health. Despite constant contact with nature and having more space at their disposal, the inability of sustaining relations with others, virtualisation of almost all activities has become another factor influencing both the mental health and wellbeing of individuals. All of these factors might have significant consequences for the individual's mental health, mental conditions, and social relations of present and future generations. Prolonged and repetitive isolation may mean a significant long-term cost of that shift [96].

While population density related to spatial development intensity as an indicator seems to be one of the key factors influencing the spread of the Coronavirus (SARS-CoV-2) [85], it seems to overlap with factors mainly related to SARS-CoV-2 infection rates in industrial zones, communication hubs and long-term care settings, as well as with human activity and interactions outside the home, e.g., meetings, practices and parties—especially on a large scale [85]. Among those relations, both communication hubs and industrialized zones seem to be key factors of emerging Coronavirus clusters, while densely inhabited areas with easy-to-control and enforced physical distancing may avoid intensive viral transmission. Another factor is that more dense cities and regions with good healthcare infrastructure have lower mortality concerning COVID-19 [86].

A key determinant is the spatial and architectural organisation of places forcing face-to-face interactions with a large number of other people offering high efficiency and intense point-focused social contacts [86,97] including:

- public communication nodes and public places;
- employee-spatial structures (collective work), e.g., heavy industry centres, mines, sewing rooms, sorting plants, where, due to their function and specificity, it is not possible to create conditions for social distancing;
- office work;
- large sports and event facilities;
- collective residence facilities and hospitals.

It is about a direct human–human physical relationship, measured in centimetres and meters in places of intense interpersonal contact in which particular people come in contact with each other or with elements of the physical space. These are more important than the statistical population density and building intensity of a district, city, or even a region. This means that sparse living in a block of flats is not the problem, but the problem is how people behave after leaving their residence. It does not matter whether they live in a suburban house or a flat in the city center. The level of safety for the inhabitant and the risk of the epidemic development depends on detailed architectural, organisational, and technical solutions (e.g., ventilation) as well as on the lifestyle and discipline of social behaviour [85].

3.4. Urban Sprawl and Mental Health

For decades (and currently), for various reasons, European cities have been facing a recurring problem of depopulation of the centres of inner-city districts in favour of filling the suburbs with single-family carpet housing. As an urban sprawl, this is not a new problem [5,8], but the offer and quality of services, public spaces, and city parks have prevented and reversed this trend.

In the next few years, we can expect a change in the housing preferences of residents of many cities, in favour of living in single-family houses in smaller towns, which guarantees that they will be at home and will be more self-sufficient [92,95]. This is related to providing direct access to a private small green recreation area. The barometer of these trends will be the tendency to migrate outside large urban centres, changes in the real estate market, and urban sprawl. That means the list of drivers of urban sprawl [8] (pp. 31–33) will be additionally extended by anti-COVID-19 social restrictions. It will take place at the expense of limited resources such as space, undeveloped land, green spaces, landscape and ecosystems [5,8] and biotopes, as well as environmental quality [98]. At the same time, the phenomenon of urban sprawl is unfavourable for sustainable development, ecological and climatic balance.

The possible dispersion of buildings generates less efficient public transport [8] (p. 31, box 1.2). This will be combined with an aversion to it as a potentially dangerous space, which can strengthen the role of individual communication. Thus, it will shape the tendency to use one's own means of transport. It will also stop the reduction in car use. On a local scale, the use of bicycles will not be dangerous, as a part of sustainable development [5,6]. However, in the supra-local area, we can expect a decrease in enthusiasm for public transport, especially in cities (areas) where the process of transformation from individual to collective transport has just started or is under development. Resident users will be less likely to change. Additionally, implemented remote working, meetings and entertainment allow the transformation of the place of residence (even if it is a temporary place) into a remote workplace not physically and communicationally related to the headquarters of a company (mostly in the city). Because of the "freezing" of city assets and the real risk of another "freezing", cities are in danger of a second wave of urban sprawl [93].

At the same time, they might prevent and minimise the effects of social isolation and allow the maintenance of social relations and social bonds [79]. Regarding spatial relations, as architectural and urban design regulated them, creating sociopetal or sociofugal zones [20], they may now face a shift towards sociofugal ones. Both sociopetal and sociofugal solutions allow an individual to regulate the level of socialisation, influencing mental health balance. Disruption of one of those becomes an indicator of a change in behaviour. Strengthened by stimuli which are related to both the pandemic and the stressors it triggered, it is one of the factors that changes overall behavioural patterns. That shift influences individual and also collective behaviour and finally, changes a perception of urban structures, cities and mental health disorder prevalence [99,100]. In terms of mental health, the regulation of personal space and its control is crucial, but that shift needs to be valued individually.

It also has economic consequences—it is a land-consuming, expensive form of residence—for the society and communities of specific communes (expensive infrastructure) [98]. Quality of life for the current inhabitants and settlers in the dispersed settlement may suddenly change for the worse in the upcoming decades as far as the quality of life for the ageing society and less independent elderly people.

An urban sprawl resulting in the deterioration of quality of life might lead to a social drift phenomenon [101]. This happens when in an individual's life, and the quality of life, suddenly deteriorates. Both the social and economic environment is influenced, resulting in a lower socialisation and limitations in access to goods, healthcare, and cultural activities. This phenomenon is especially present in urbanised zones, leading to the development of a number of mental health disorders, including (but not limited to), alcohol addiction, depression and psychotic spectrum disorders [102–104] (pp. 151–166).

Implemented changes and the imbalance of the model of living we are used to also seem to force long-term changes in the physical construction of public spaces. As a result, it will be important to develop such urban and architectural solutions and models that will reduce the actual threat of disease and the risk of infection [97,105] in a wide range of spatial scales, starting with interior design and industrial design and ending with an urban design scale as well as transport solutions on a local and regional scale.

As a result, on a macro scale, it may hurt urban structures, social bonds, and quality of life, as well as mental health conditions. Therefore, the awareness of the sociopetal aspect of future architecture and urbanism is emerging [21,97]. In consequence, this is an important tool to manage mental health and wellbeing as a part of an appropriate innovative policy [106].

Urban sprawl and rural sprawl (countryside settlement loosening) may be responsible for increased mental health problems of societies around the world, as well as for managing COVID-19-related health care. Failures in the area of spatial planning will create conditions for the development of the mental health pandemic and at the same time, will not provide conditions to deal effectively with rescuing the mental health of entire communities [20,105]. Suppressing an unleashed mental health pandemic may be difficult in a dispersed settlement structure.

4. Discussion

The COVID-19 pandemic has created an unprecedented number of issues we have to face globally. It has disrupted our habits, health and wellbeing. As societies attempted to manage the new situation, reorganise life, habits and space to fight the virus, other new issues appeared. Suddenly it turned out that any other individual might become a threat or a source of infection, and any crowded place became severely dangerous. Peoples' activities were driven by the development of the pandemic. Urbanised zones, communication hubs and public transport became clusters of infections. Although some researchers have noted a link between urban density and pandemic development, many studies have shown that density alone is not a major risk factor for virus spread [11].

Isolation became a temporary solution. Lockdowns implemented globally, isolation, millions of deaths, and other millions affected, directly or indirectly, resulted not only in one significant shift in societies' and individuals' behaviour, but created a shift in space perception as well. Lockdowns, especially in urbanised zones, have become, for many, a trigger in the deterioration of their mental health, despite the fact that highly concentrated mental health services, especially in high- and middle-income countries, became virtual. While in-person contact was lost and almost every aspect of life became virtual, deterioration of peoples' mental health was growing.

Urban and rural sprawl may worsen the quality of life for new residents and ageing societies. Rising mental health problems are now a great challenge to manage, but the negative synergy of both of them may seriously change the societies in a developed country and may cause a mental health pandemic as a result of the synergy of loneliness, virtuality, the decline of social bonds, dispersed settlement, and difficulties in providing aid in such spatial conditions [99].

Escape from the city seems to be a solution for some people [92]. Nevertheless, the escape that was to improve their mental health state might create other issues, and mental health improvement might be doubtful. Rural zones have less access to mental healthcare, general healthcare and access to culture. Therefore, moving to the country might mean a deterioration in quality of life. It might also be a cause of further deterioration of mental health. All stimuli, related to social drift, fear and pandemic-related stressors, as well as changes in environment and life, cause a risk of development of mental and behaviour disorders [40,101,107,108].

Escape from the city as from an "urban trap" may not be the solution, while the loosening of cities and new settlements all over the countryside are ineffective measures of pandemic fighting, but rather are an expression of people's fears. They are a reaction to isolation and urban life suspension with the urban quality crisis. The lower population density in itself (e.g., suburbs and satellite cities) does not make any place more secure. The incidence of the disease in the suburbs is not lower than in the centres and downtown or even in the countryside, as it dependent on a small-scale spatial solution and human behaviour and people to people direct contact. From this perspective, relaxing the development intensity at the expense of new green-fields will have little effect. The dispersed

amorphous spatial structure may become a key factor obstructing mental illness treatment and mental health prevention. This is another reason why spatial development should not be realised as an unreflective loosening of spatial structures, making them less effective (in terms of communication, settlement structure, landscape protecting), and absorbing more greenfields for settlement while raising global pressure on the planet. This is of particular danger in rural areas [8] (pp. 102–116). In this way, they may be quickly transformed into a build-up rural pattern, losing their character while covering up the rapidly growing issue of the mental health of whole communities. Improving the quality of the public spaces system, including green areas with the idea of a smart city seems to be a solution to convince people to live in the city [11]. Although it does not work in the case of a total lockdown, it may limit the crisis of perception of the modern city as a place to live. For future societies/generations and their wellbeing, as well as for good mental health, we advocate [21,86] the following:

- a dense city as an effective (economically, organizationally, communicatively) environment which can allow the use of commonly known measures of prevention, treatment and care of mental health;
- the protection and expansion of green area systems in densely urbanised areas (especially in dense residential districts) as an important factor influencing mental health (prevention and treatment), wellbeing and in persuading people to live in the city;
- the landscape outside the city, rural and protected areas as a safety valve for the wellbeing of whole societies and good mental health conditions, as well as for natural, environmental and ecological reasons.

Despite the evidence showing a direct relationship between mental health and urbanization, as well as the possibility of providing a list of adverse effects, more research is needed. Specifically, the global burden of selected disorders linked to the pandemic would need to be investigated in terms of new evidence on this topic. As we are still observing the ongoing development of new COVID-19 infections globally, further effects will be emerging and it may only be possible to investigate them in the future.

Author Contributions: Conceptualization, methodology, formal analysis, investigation, resources, writing—original draft preparation, writing—review and editing, project administration, J.B., B.B., J.Š. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

References

1. Moreno, C.; Wykes, T.; Galderisi, S.; Nordentoft, M.; Crossley, N.; Jones, N.; Cannon, M.; Correll, C.U.; Byrne, L.; Carr, S.; et al. How mental health care should change as a consequence of the COVID-19 pandemic. *Lancet Psychiatry* **2020**, *7*, 813–824. [CrossRef]
2. Portegijs, E.; Keskinen, K.E.; Tuomola, E.; Hinrichs, T.; Saajanaho, M.; Rantanen, T. Older adults' activity destinations before and during COVID-19 restrictions: From a variety of activities to mostly physical exercise close to home. *Health Place* **2021**, *68*, 102533. [CrossRef]
3. McCay, L. (Compilation). Built environment changes during the COVID-19 pandemic: A photoessay. *J. Urban Des. Ment. Health* **2020**, *6*, 4. Available online: <https://www.urbandesignmentalhealth.com/journal-6-covid-photoessay.html> (accessed on 12 April 2021).
4. Champion, J.; Javed, A.; Sartorius, N.; Marmot, M. Addressing the public mental health challenge of COVID-19. *Lancet Psychiatry* **2020**, *7*, 657–659. [CrossRef]
5. Transforming Our World: The 2030 Agenda for Sustainable Development, United Nations Resolution A/RES/70/1. 21 October 2015. Available online: https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E (accessed on 14 June 2021).

6. United Nations Portal. Available online: <https://sdgs.un.org/goals> (accessed on 9 April 2021).
7. The Lancet Public Health. Will the COVID-19 pandemic threaten the SDGs? *Lancet Public Health* **2020**, *5*, e460. [CrossRef]
8. Hennig, E.I.; Soukup, T.; Orlovicova, E.; Schwick, C.H.; Kienast, F.; Jaeger, J.A.G. *Urban Sprawl in Europe. Joint EEA-FOEN Report*; European Environment Agency: Luxembourg, 2016. [CrossRef]
9. Lambert, H.; Gupte, J.; Fletcher, H.; Hammond, L.; Lowe, N.; Pelling, M.; Raina, N.; Shahid, T.; Shanks, K. COVID-19 as a global challenge: Towards an inclusive and sustainable future. *Lancet Planet. Health* **2020**, *4*, e312–e314. [CrossRef]
10. Brenner, N. *New Urban Spaces. Urban Theory and the Scale Question*; Oxford University Press: New York, NY, USA, 2019. [CrossRef]
11. Sharifi, A.; Khavarian-Garmsird, A.R. The COVID-19 pandemic: Impacts on cities and major lessons for urban planning, design, and management. *Sci. Total Environ.* **2020**, *749*, 2020. [CrossRef]
12. Brooks, S.K.; Webster, R.K.; Smith, L.E.; Woodland, L.; Wessely, S.; Greenberg, N.; Rubin, G.J. The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *Lancet* **2020**, *395*, 912–920. [CrossRef]
13. Hawton, A.; Green, C.; Dickens, A.; Richards, S.; Taylor, R.S.; Edwards, R.; Greaves, C.; Campbell, J.L. The impact of social isolation on the health status and health-related quality of life of older people. *Qual. Life Res.* **2011**, *20*, 57–67. [CrossRef] [PubMed]
14. Hwang, T.J.; Rabheru, K.; Peisah, C.; Reichman, W.; Ikeda, M. Loneliness and social isolation during the COVID-19 pandemic. *Int. Psychogeriatr.* **2020**, *32*, 1217–1220. [CrossRef] [PubMed]
15. Linard, C.; Gilbert, M.; Snow, R.; Noor, A.M.; Tatem, A.J. Population distribution, settlement patterns and accessibility across Africa in 2010. *PLoS ONE* **2012**, *7*, e31743. [CrossRef] [PubMed]
16. Shah, T.I.; Bell, S.; Wilson, K. Spatial accessibility to health care services: Identifying under-served Neighbourhoods in Canadian urban areas. *PLoS ONE* **2016**, *11*, e0168208. [CrossRef] [PubMed]
17. Corburn, J. Reconnecting Urban Planning and Public Health. In *The Oxford Handbook of Urban Planning*; Weber, R., Crane, R., Eds.; Oxford University Press: New York, NY, USA, 2012.
18. Kulu, H.; Dorey, P. Infection rates from Covid-19 in Great Britain by geographical units: A model-based estimation from mortality data. *Health Place* **2021**, *67*, 102460. [CrossRef]
19. World Health Organisation. *The ICD-10 Classification of Mental and Behavioural Disorders*; WHO: Geneva, Switzerland, 1993; ISBN 9789241544559.
20. Dehkordi, S.T.; HeidariSoureshjani, M. From sociopetal to sociofugal: A reverse procedure of Tehran urban spaces. *J. Urban Des. Ment. Health* **2017**, *3*, 7. Available online: <https://www.urbandesignmentalhealth.com/journal-3---sociopetal-spaces-in-iran.html> (accessed on 11 June 2020).
21. McCay, L.; Lai, L. Urban design and mental health in Hong Kong: A city case study. *J. Urban Des. Ment. Health* **2018**, *4*, 9. Available online: <https://www.urbandesignmentalhealth.com/journal4-hk-case-study.html> (accessed on 12 April 2021).
22. Kohn, R.; Saxena, S.; Levav, I.; Saraceno, B. The treatment gap in mental health care. *Bull. World Health Organ.* **2004**, *82*, 858–866. Available online: <https://pubmed.ncbi.nlm.nih.gov/15640922/> (accessed on 11 June 2021).
23. Proto, E.; Quintana-Domeque, C. COVID-19 and mental health deterioration by ethnicity and gender in the UK. *PLoS ONE* **2021**, *16*, e0244419. [CrossRef] [PubMed]
24. Correa, H.; Malloy-Diniz, L.F.; da Silva, A.G. Why psychiatric treatment must not be neglected during the COVID-19 pandemic. *Braz. J. Psychiatry* **2020**, *42*, 449. [CrossRef] [PubMed]
25. Goyal, K.; Sheoran, S.; Chauhan, P.; Chhikara, K.; Gupta, P.; Singh, M.P. Mental health in India: Neglected component of wellbeing in COVID-19 era. *Asian J. Psychiatry* **2020**, *54*, 102341. [CrossRef]
26. Kola, L.; Kohrt, B.A.; Hanlon, C.; Naslund, J.A.; Sikander, S.; Balaji, M.; Benjet, C.; Cheung, E.Y.L.; Eaton, J.; Gonsalves, P.; et al. COVID-19 mental health impact and responses in low-income and middle-income countries: Reimagining global mental health. *Lancet Psychiatry* **2021**, *8*, 535–550. [CrossRef]
27. Javed, A.; Lee, C.; Zakaria, H.; Buenaventura, R.D.; Cetkovich-Bakmas, M.; Duailibi, K.; Ng, B.; Ramy, H.; Saha, G.; Arifeen, S.; et al. Reducing the Stigma of Mental Health Disorders with a Focus on Low-and Middle-Income Countries. *Asian J. Psychiatry* **2021**, *58*, 102601. [CrossRef] [PubMed]
28. Boxell, O. Social context affects mental health stigma. *Open Health* **2020**, *1*, 29–36. [CrossRef]
29. Patel, V.; Saxena, S.; Lund, C.; Thornicroft, G.; Baingana, F.; Bolton, P.; Chisholm, D.; Collins, P.Y.; Cooper, J.L.; Eaton, J.; et al. The Lancet Commission on global mental health and sustainable development. *Lancet* **2018**, *392*, 1553–1598. [CrossRef]
30. Jack, H.E.; Myers, B.; Regenauer, K.S.; Magidson, J.F. Mutual capacity building to reduce the behavioral health treatment gap globally. *Adm. Policy Ment. Health Ment. Health Serv. Res.* **2020**, *47*, 497–500. [CrossRef]
31. Lora, A.; Hanna, F.; Chisholm, D. Mental health service availability and delivery at the global level: An analysis by countries' income level from WHO's Mental Health Atlas 2014. *Epidemiol. Psychiatr. Sci.* **2017**, *29*, E2. [CrossRef]
32. World Health Organization. *WHO Quality Rights Tool Kit: Assessing and Improving Quality and Human Rights in Mental Health and Social Care Facilities*; World Health Organization: Geneva, Switzerland, 2012; ISBN 9789241548410.
33. World Health Organization. *MhGAP Humanitarian Intervention Guide (mhGAP-HIG): Clinical Management of Mental Neurological and Substance Use Conditions in Humanitarian Emergencies*; World Health Organization: Geneva, Switzerland, 2015; ISBN 9789241548922.
34. World Health Organization. *mhGAP Training Manuals for the mhGAP Intervention Guide for Mental, Neurological and Substance Use Disorders in Non-Specialized Health Settings (No. WHO/MSD/MER/17.6)*; World Health Organization: Geneva, Switzerland, 2017.

35. Robertson-Preidler, J.; Biller-Andorno, N.; Johnson, T.; Trachsel, M.; Gaab, J.; Tekin, S.; Sadler, J.Z. Mental health care funding systems and their impact on access to psychotherapy. In *The Oxford Handbook of Psychotherapy Ethics*; Trachsel, M., Gaab, J., Biller-Andorno, N., Tekin, S., Sadler, J., Eds.; Oxford University Press: New York, NY, USA, 2020. [CrossRef]
36. Gautam, M.; Thakrar, A.; Akinyemi, E.; Mahr, G. Current and Future Challenges in the Delivery of Mental Healthcare during COVID-19. *SN Compr. Clin. Med.* **2020**, *2*, 865–870. [CrossRef]
37. Duan, L.; Zhu, G. Psychological interventions for people affected by the CoViD-19 epidemic. *Lancet Psychiatry* **2020**, *7*, 300–302. [CrossRef]
38. Li, W.; Yang, Y.; Liu, Z.H.; Zhao, Y.J.; Zhang, Q.; Zhang, L.; Cheung, T.; Xiang, Y.T. Progression of Mental Health Services during the COVID-19 Outbreak in China. *Int. J. Biol. Sci.* **2020**, *16*, 1732–1738. [CrossRef]
39. Moukaddam, N.; Shah, A. Psychiatrists beware! The impact of COVID-19 and pandemics on mental health. *Psychiatr. Times* **2020**, *37*. Available online: <https://www.psychiatristimes.com/view/psychiatrists-beware-impact-coronavirus-pandemics-mental-health> (accessed on 25 June 2021).
40. Lee, A.M.; Wong, J.G.; McAlonan, G.M.; Cheung, V.; Cheung, C.; Sham, P.C.; Chu, C.-M.; Wong, P.-C.; Tsang, K.W.; Chua, S.E. Stress and psychological distress among SARS survivors 1 year after the outbreak. *Can. J. Psychiatry* **2007**, *52*, 233–240. [CrossRef]
41. Wang, C.; Pan, R.; Wan, X.; Tan, Y.; Xu, L.; Ho, C.S.; Ho, R.C. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int. J. Environ. Res. Public Health* **2020**, *17*, 1729. [CrossRef]
42. Yao, H.; Chen, J.; Xu, Y. Patients with mental health disorders in the COVID-19 epidemic. *Lancet* **2020**, *7*, e21. [CrossRef]
43. Loiwal, M. 20% increase in patients with mental illness since coronavirus outbreak: Survey. *India Today*. 2020. Available online: <https://www.indiatoday.in/india/story/20-per-cent-increase-in-patients-with-mental-illness-since-coronavirus-outbreak-survey-1661584-2020-03-31> (accessed on 11 June 2021).
44. Cullen, W.; Gulati, G.; Kelly, B.D. Mental health in the COVID-19 pandemic. *QJM Int. J. Med.* **2020**, *113*, 311–312. [CrossRef]
45. Summers-Gabr, N.M. Rural–urban mental health disparities in the United States during COVID-19. *Psychol. Trauma Theory Res. Pract. Policy* **2020**, *12*, S222–S224. [CrossRef]
46. Zhou, X.; Snoswell, C.L.; Harding, L.E.; Bambling, M.; Edirippulige, S.; Bai, X.; Smith, A.C. The role of telehealth in reducing the mental health burden from COVID-19. *Telemed. E-Health* **2020**, *26*, 377–379. [CrossRef] [PubMed]
47. Apolinário-Hagen, J.; Harrer, M.; Dederichs, M.; Fritsche, L.; Wopperer, J.; Wals, F.; Loerbroks, A.; Lehr, D.; Salewski, C.; Angerer, P.; et al. Exploring the influence of testimonial source on attitudes towards e-mental health interventions among university students: Four-group randomized controlled trial. *PLoS ONE* **2021**, *16*, e0252012. [CrossRef] [PubMed]
48. Vereenoghe, L.; Trussat, F.; Baucke, K. Applying the technology acceptance model to digital mental health interventions: A qualitative exploration with adults with intellectual disabilities. *J. Ment. Health Res. Intellect. Disabil.* **2021**, 1–26. [CrossRef]
49. Rahman, A.; Waqas, A.; Nisar, A.; Nazir, H.; Sikander, S.; Atif, N. Improving access to psychosocial interventions for perinatal depression in low-and middle-income countries: Lessons from the field. *Int. Rev. Psychiatry* **2020**, 1–4. [CrossRef]
50. Merchant, R.; Torous, J.; Rodriguez-Villa, E.; Naslund, J.A. Digital technology for management of severe mental disorders in low-income and middle-income countries. *Curr. Opin. Psychiatry* **2020**, *33*, 501–507. [CrossRef]
51. Christensen, H.; Griffiths, K. The Internet and mental health literacy. *Aust. N. Z. J. Psychiatry* **2000**, *34*, 975–979. [CrossRef] [PubMed]
52. Sogomonjan, M. Challenges and opportunities for e-mental health policy: An Estonian case study. *Contemp. Soc. Sci.* **2021**, *16*, 185–198. [CrossRef]
53. Rains, L.S.; Johnson, S.; Barnett, P.; Steare, T.; Needle, J.; Carr, S.; Taylor, B.L.; Bentivegna, F.; Edbrooke-Childs, J.; Scott, H.; et al. Early impacts of the COVID-19 pandemic on mental health care and on people with mental health conditions: Framework synthesis of international experiences and responses. *Soc. Psychiatry Psychiatr. Epidemiol.* **2021**, *56*, 13–24. [CrossRef] [PubMed]
54. Uvais, N. Mental Healthcare Delivery during Coronavirus Disease 2019 Pandemic. *World Soc. Psychiatry* **2020**, *2*, 232. [CrossRef]
55. Mezzina, R.; Sashidharan, S.P.; Rosen, A.; Killaspy, H.; Saraceno, B. Mental health at the age of coronavirus: Time for change. *Soc. Psychiatry Psychiatr. Epidemiol.* **2020**, *55*, 965–968. [CrossRef]
56. Walter, Z.; Tung, Y.A. E-healthcare system design: A consumer preference approach. *Int. J. Healthc. Technol. Manag.* **2002**, *4*, 53–70. [CrossRef]
57. Huang, N.; Yan, Z.; Yin, H. Effects of Online–Offline Service Integration on e-Healthcare Providers: A Quasi-Natural Experiment. *Prod. Oper. Manag.* **2021**. [CrossRef]
58. Reeves, E.; Fyfe, A.; Bain, A. Health Literacy in the United States of America: Cost Perspectives. *Health Care* **2020**, *19*, 34.
59. Zhang, Q. The cost of illiteracy: A causal inference study on how illiteracy affects physical and mental health. *Health Educ. J.* **2020**, 0017896920949894. [CrossRef]
60. Bharadwaj, P.; Pai, M.M.; Suziedelyte, A. Mental health stigma. *Econ. Lett.* **2017**, *159*, 57–60. [CrossRef]
61. Sickel, A.E.; Seacat, J.D.; Nabors, N.A. Mental health stigma: Impact on mental health treatment attitudes and physical health. *J. Health Psychol.* **2019**, *24*, 586–599. [CrossRef] [PubMed]
62. Bil, J.S. Stigma and architecture of mental health facilities. *Br. J. Psychiatry* **2016**, *208*, 499–500. [CrossRef]
63. Schomerus, G.; Stolzenburg, S.; Freitag, S.; Speerforck, S.; Janowitz, D.; Evans-Lacko, S.; Muehlan, H.; Schmidt, S. Stigma as a barrier to recognizing personal mental illness and seeking help: A prospective study among untreated persons with mental illness. *Eur. Arch. Psychiatry Clin. Neurosci.* **2019**, *269*, 469–479. [CrossRef] [PubMed]

64. Rudd, B.N.; Beidas, R.S. Digital mental health: The answer to the global mental health crisis? *JMIR Ment. Health* **2020**, *7*, e18472. [[CrossRef](#)] [[PubMed](#)]
65. Pfender, E. Mental Health and COVID-19: Implications for the Future of Telehealth. *J. Patient Exp.* **2020**, *7*, 433–435. [[CrossRef](#)] [[PubMed](#)]
66. Bratman, G.N.; Anderson, C.B.; Berman, M.G.; Cochran, B.; De Vries, S.; Flanders, J.; Folke, C.; Frumkin, H.; Gross, J.J.; Hartig, T.; et al. Nature and mental health: An ecosystem service perspective. *Sci. Adv.* **2019**, *5*, eaax0903. [[CrossRef](#)]
67. Olszewska, A.A.; Bil, J.S. Therapeutic garden design for patients with neurodegenerative diseases. *Przestrz. Forma* **2016**, *25*, 259–270. [[CrossRef](#)]
68. Turabian, J.L. Implications on mental health by the coronavirus disease 2019 (COVID-19) pandemic: The role of general practitioner. *Arch. Psychiatr. Ment. Health* **2020**, *4*, 35–41. [[CrossRef](#)]
69. Ornell, F.; Halpern, S.C.; Kessler, F.H.P.; Narvaez, J.C.D.M. The impact of the COVID-19 pandemic on the mental health of healthcare professionals. *Cad. Saude Publica* **2020**, *36*, e00063520. [[CrossRef](#)]
70. Siva, N. Loneliness in children and young people in the UK. *Lancet Child Adolesc. Health* **2020**, *4*, 567–568. [[CrossRef](#)]
71. Banks, J.; Xu, X. The mental health effects of the first two months of lockdown and social distancing during the Covid-19 pandemic in the UK (No. W20/16). *IFS Work. Pap.* **2020**. Available online: <http://hdl.handle.net/10419/223292> (accessed on 11 June 2021).
72. Elmer, T.; Mepham, K.; Stadtfeld, C. Students under lockdown: Comparisons of students' social networks and mental health before and during the COVID-19 crisis in Switzerland. *PLoS ONE* **2020**, *15*, e0236337. [[CrossRef](#)]
73. Bierman, A.; Upenieks, L.; Glavin, P.; Schieman, S. Accumulation of economic hardship and health during the COVID-19 pandemic: Social causation or selection? *Soc. Sci. Med.* **2021**, *275*, 113774. [[CrossRef](#)] [[PubMed](#)]
74. Lasaulce, S.; Zhang, C.; Varma, V.; Morărescu, I.C. Analysis of the tradeoff between health and economic impacts of the Covid-19 epidemic. *Front. Public Health* **2021**, *9*. [[CrossRef](#)]
75. Van Doremalen, N.; Bushmaker, T.; Lloyd-Smith, J.O.; De Wit, E.; Munster, V.J.; Morris, D.H.; Holbrook, M.G.; Gamble, A.; Williamson, B.N.; Tamin, A.; et al. Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. *N. Engl. J. Med.* **2020**, *382*, 1564–1567. [[CrossRef](#)] [[PubMed](#)]
76. Tabatabaeizadeh, S.A. Airborne transmission of COVID-19 and the role of face mask to prevent it: A systematic review and meta-analysis. *Eur. J. Med. Res.* **2021**, *26*, 1. [[CrossRef](#)] [[PubMed](#)]
77. Ye, B.; Wu, D.; Im, H.; Liu, M.; Wang, X.; Yang, Q. Stressors of COVID-19 and stress consequences: The mediating role of rumination and the moderating role of psychological support. *Child. Youth Serv. Rev.* **2020**, *118*, 105466. [[CrossRef](#)] [[PubMed](#)]
78. Evans, G.W. Environmental stress and health. In *Handbook of Health Psychology*; Baum, A., Revenson, T., Singer, J.E., Eds.; Erlbaum: Mahwah, NJ, USA, 2001; pp. 571–610.
79. Chena, X.; Zou, Y.; Gao, H. Role of neighborhood social support in stress coping and psychological wellbeing during the COVID-19 pandemic: Evidence from Hubei, China. *Health Place* **2021**, *69*. [[CrossRef](#)]
80. Choi, K.R.; Heilemann, M.V.; Fauer, A.; Mead, M. A second pandemic: Mental health spillover from the novel coronavirus (COVID-19). *J. Am. Psychiatr. Nurses Assoc.* **2020**, *26*, 340–343. [[CrossRef](#)]
81. Rossi, R.; Socci, V.; Talevi, D.; Mensi, S.; Ntoli, C.; Pacitti, F.; Di Marco, A.; Rossi, A.; Siracusano, A.; Di Lorenzo, G. COVID-19 pandemic and lockdown measures impact on mental health among the general population in Italy. *Front. Psychiatry* **2020**, *11*, 790. [[CrossRef](#)]
82. Mishkind, M.C. How telemental health delivered to non-traditional locations helped prepare for responses to COVID-19. *Mhealth* **2021**, *7*. [[CrossRef](#)]
83. Smith, K.; Ostinelli, E.; Macdonald, O.; Cipriani, A. Covid-19 and telepsychiatry: Development of evidence-based guidance for clinicians. *JMIR Ment. Health* **2020**, *7*, e21108. [[CrossRef](#)]
84. Puchenko, O. Covid-19: Transformation of educational technologies in the new conditions of a globalizing world. In *Education in the Post-Coronavirus World: The Place of Information and Innovative Technologies*; Ostenda, A., Dzhus, O., Eds.; House of Katowice School of Technology: Katowice, Poland, 2020; Available online: <http://www.wydawnictwo.wst.pl/uploads/files/e65c66723e9c5d3733f19bdc5fa7d924.pdf> (accessed on 22 April 2021).
85. Bhadra, A.; Mukherjee, A.; Sarkar, K. Impact of population density on Covid-19 infected and mortality rate in India. *Model. Earth Syst. Environ.* **2021**, *7*, 623–629. [[CrossRef](#)]
86. Hamidi, S.; Sabouri, S.; Ewing, R. Does Density Aggravate the COVID-19 Pandemic? *J. Am. Plan. Assoc.* **2020**, *86*, 495–509. [[CrossRef](#)]
87. Sassano, M.; McKee, M.; Ricciardi, W.; Boccia, S. Transmission of SARS_CoV-2 and Other Infections at Large Sports Gatherings: A Surprising Gap in Our Knowledge. *Front. Med.* **2020**, *7*, 277. [[CrossRef](#)]
88. Ahammer, A.; Halla, M.; Lackner, M. Mass Gathering Contributed to Early COVID-19 Spread: Evidence from US Sports. 2020. Available online: <https://www.semanticscholar.org/paper/Mass-Gatherings-Contributed-to-Early-COVID-19-from-Ahammer-Halla/5ebcaa31033126d0393c183717053372bf87081e> (accessed on 10 June 2021).
89. Memish, A.Z.; Steffen, R.; White, P.; Dar, O.; Azhar, E.I.; Sharma, A.; Zumla, A. Mass gatherings medicine: Public health issues arising from mass gathering religious and sporting events. *Lancet* **2019**, *393*, 2073–2084. [[CrossRef](#)]

90. Bieler, D. A biological bomb: Soccer match in Italy linked to epicenter of deadly outbreak. *The Washington Post*. 2020. Available online: <https://www.washingtonpost.com/sports/2020/03/25/biological-bomb-soccer-match-italy-linked-epicenter-deadly-outbreak/> (accessed on 12 April 2021).
91. Metropolis GZM Portal. Available online: <https://metropoliagzm.pl/en/> (accessed on 7 April 2021).
92. McShane, I. Research and Insights into Housing Demand Based on Consumer Research Undertaken by Behaviour & Attitudes. IBEC. 2021. Available online: <https://www.ibec.ie/connect-and-learn/media/2021/05/25/new-research-underlines-scale-of-housing-challenges> (accessed on 11 June 2021).
93. Song, Y. Suburban sprawl and “Smart Growth”. In *The Oxford Handbook of Urban Planning*; Weber, R., Crane, R., Eds.; Oxford University Press: New York, NY, USA, 2012.
94. Ornell, F.; Schuch, J.B.; Sordi, A.O.; Kessler, F.H.P. “Pandemic fear” and COVID-19: Mental health burden and strategies. *Braz. J. Psychiatry* **2020**, *42*, 232–235. [[CrossRef](#)]
95. De Toro, P.; Nocca, F.; Buglione, F. Real Estate Market Responses to the COVID-19 Crisis: Which Prospects for the Metropolitan Area of Naples (Italy)? *Urban Sci.* **2021**, *5*, 23. [[CrossRef](#)]
96. Kim, H.H.S.; Jung, J.H. Social isolation and psychological distress during the COVID-19 pandemic: A cross-national analysis. *Gerontologist* **2021**, *61*, 103–113. [[CrossRef](#)] [[PubMed](#)]
97. Quintero, N. Design and Contagion: Well-being and the physical environment during the COVID-19 pandemic. *J. Urban Des. Ment. Health* **2020**, *6*, 2. Available online: <https://www.urbandesignmentalhealth.com/journal-6-wellbeing-and-covid19.html> (accessed on 12 April 2021).
98. Śleszyński, P.; Kowalewski, A.; Markowski, T.; Legutko-Kobus, P.; Nowak, M. The Contemporary Economic Costs of Spatial Chaos: Evidence from Poland. *Land* **2020**, *9*, 214. [[CrossRef](#)]
99. Ventriglio, A.; Torales, J.; Castaldelli-Maia, J.M.; De Berardis, D.; Bhugra, D. Urbanization and emerging mental health issues. *CNS Spectr.* **2021**, *26*, 43–50. [[CrossRef](#)]
100. Bhugra, D.; Ventriglio, A.; Castaldelli-Maia, J.; McCay, L. (Eds.) *Urban Mental Health*; Oxford University Press: New York, NY, USA, 2019; ISBN 0192527053, 9780192527059.
101. Fox, J.W. Social class, mental illness, and social mobility: The social selection-drift hypothesis for serious mental illness. *J. Health Soc. Behav.* **1990**, 344–353. [[CrossRef](#)]
102. Yu, Y.; Williams, D.R. Socioeconomic status and mental health. In *Handbook of the Sociology of Mental Health*; Phelan, J., Aneshensel, C., Eds.; Springer: Boston, MA, USA, 1999.
103. Lund, C.; Cois, A. Simultaneous social causation and social drift: Longitudinal analysis of depression and poverty in South Africa. *J. Affect. Disord.* **2018**, *229*, 396–402. [[CrossRef](#)] [[PubMed](#)]
104. Gallo, L.C.; Matthews, K.A. Understanding the association between socioeconomic status and physical health: Do negative emotions play a role? *Psychol. Bull.* **2003**, *129*, 10. [[CrossRef](#)] [[PubMed](#)]
105. Zandieh, R.; Nieuwenhuijsen, M.; Zandieh, M. Adaptability of Public Spaces and Mental Health Inequalities during the COVID-19 Pandemic. *J. Urban Des. Ment. Health* **2020**, *6*, 5. Available online: <https://www.urbandesignmentalhealth.com/journal-6-covid19-public-spaces.html> (accessed on 12 April 2021).
106. Kim, E.S.; Chen, Y.; Kawachi, I.; VanderWeele, T.J. Perceived neighborhood social cohesion and subsequent health and well-being in older adults: An outcome-wide longitudinal approach. *Health Place* **2020**, *66*. [[CrossRef](#)]
107. Bil, J.S.; Pawłowski, L. Influence of architecture on mental health—selected issues. *Przestrz. Forma* **2016**, *28*, 41–52. [[CrossRef](#)]
108. Łabuz-Roszak, B.; Bil, J.S.; Gorczyca, P. Interactions between neurology and architecture—creating the built environment and its impact on the brain. *Arch. Med. Sci. AMS* **2020**, *16*, 1474. [[CrossRef](#)]