



Defining Healthy City and Its Influence on Urban Well-being

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"Healthy citizens are the greatest asset any country can possess." Winston Churchill's profound statement emphasizes the paramount importance of investing in robust healthcare infrastructure, disease prevention, and comprehensive public health initiatives. Amidst the global outbreak of the COVID-19 pandemic, the importance of designing healthy cities has gained significant attention. In addition to addressing healthcare provisions and optimizing social and urban environments, a comprehensive understanding of the population inhabiting the city is imperative.

It is contended that the health status of city residents serves as a paramount determinant of urban well-being. By recognizing the intricate interplay between population health and urban environments, policymakers and urban planners can effectively address the challenges posed by pandemics and cultivate thriving urban ecosystems that promote public health. This impact extends to all age groups, including infants, youth, and the elderly, making a holistic approach to urban design and public health imperative.

The aging demographic shift has emerged as one of the major challenges of the 21st century. This global phenomenon is evident when examining the trend data on the percentage of the population over 60 years of age. While the world as a whole falls in the middle range, more developed regions exhibit a significantly higher proportion of individuals over 60. However, it is important to note that the slope of low- and middle-income regions and countries is gradually increasing. Therefore, aging is no longer solely an issue confined to northern regions but has become a global concern.

In addition to the aging population, non-infectious diseases and injuries impose a significant burden on public health. Cancer and cardiovascular disease continue to account for the highest death rates, highlighting the ongoing challenges in managing these conditions. Furthermore, while remarkable strides have been achieved in reducing mortality from acute infectious diseases like Human Immunodeficiency Virus (HIV), tuberculosis (TB), and malaria, road traffic accidents have surfaced as a growing concern. These accidents are interconnected with broader determinants of health, necessitating comprehensive strategies to address their impact.

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Definition of Health and Quality of Life Measurement

The World Health Organization (WHO) defines health as a state of complete physical, mental, and social well-being, encompassing more than the mere absence of disease or infirmity. Consequently, factors contributing to the state of health include both natural and man-made environments, constituting a complex ecosystem with interconnected elements that impact individuals in various ways. The measurement of quality of life is primarily conducted through surveys, and the WHO has developed its own survey instruments that are utilized worldwide. These instruments are administered to both patients and individuals who are in good health, as well as healthcare professionals. Available in over 20 countries and languages, these surveys serve as valuable tools for assessing various aspects of quality of life, including subjective well-being, life satisfaction, and objective determinants across different nations.

In addition to surveys, various ranking systems play a significant role in enhancing our understanding of the quality of life on a global scale. One such system is the US News ranking, which considers multiple factors such as healthcare, education, infrastructure, and economic stability to assess the overall quality of life in different countries. These rankings provide insights into the objective determinants influencing quality of life.

The Economist Intelligence Unit employs a unique concept termed the "where-do-they-born index" to evaluate the quality of life. This index transforms the notion of quality of life into "the way to be born," focusing on opportunities for a healthy, safe, and prosperous life. By examining subjective factors, life satisfaction, and objective determinants across various countries, this index offers a comprehensive assessment of the quality of life.

Another noteworthy measure of the quality of life is the Muscles Quality of Life Index. This index evaluates various dimensions of well-being, including physical health, psychological well-being, social connections, and environmental factors. It provides a holistic perspective on quality of life, considering both subjective experiences and objective determinants. Singapore's top ranking in the Muscles Quality of Life Index for Asia highlights its exceptional performance in terms of providing a high quality of life to its residents. This recognition underscores the city-state's success in areas such as healthcare accessibility, social infrastructure, and environmental sustainability.

Design Considerations for Healthy Cities

Designing healthy cities necessitates moving beyond two-dimensional spatial planning. Instead, a three-dimensional approach is required, considering the volume of space in which individuals exist. The COVID-19 pandemic has underscored the importance of volumetric considerations, such as adequate ventilation, to create healthy environments and mitigate the spread of infectious diseases.

Climate change is a complex and multifaceted topic that encompasses various aspects, one of which is the heat island effect observed in cities. This phenomenon refers to the concentration of heat within urban areas, which exacerbates the challenges posed by climate change. One particular concern associated with increased heat is its impact on vulnerable populations, such as older individuals and those who lack access to air conditioning or sufficient cooling in their residences. These populations are at a higher risk of heat-related health issues.

Extremely high temperatures can significantly impact the productivity of the workforce. Working in such conditions can lead to decreased efficiency and well-being, highlighting the importance of addressing heat-related challenges in occupational settings.

Furthermore, ensuring environmental sustainability, maintaining cool temperatures, and preserving air quality contribute to the creation of a healthy urban ecosystem.

Another critical issue arising from climate change is the rising sea levels, particularly for coastal cities like New York, Mumbai, Tokyo, and others located near bodies of water. Sea level rise poses substantial risks and challenges to these cities, necessitating proactive measures to mitigate and adapt to the changing coastal environment.

Promoting Interaction and Efficiency

Traditional city plans often emphasize the segregation of recreational, industrial, and residential areas for efficiency. However, optimal city design calls for creating variability and connectivity in both form and function. Transportation choices have a visible and tangible effect on the well-being of individuals and communities. Decisions regarding the allocation of transportation resources can have profound health implications.

Investing in mass transit systems and promoting active modes of transport, such as bike lanes, pedestrian-friendly sidewalks, and walkability initiatives, can positively influence health outcomes. These measures contribute to reducing sedentary behaviors, combating issues like obesity, and promoting mental health by creating opportunities for outdoor activities and encouraging engagement with the urban environment.

Conversely, decisions that prioritize car-centric transportation systems can have detrimental effects on health. Cars contribute to air pollution, which can worsen respiratory conditions and have broader implications for public health. Furthermore, road traffic accidents pose a significant risk to the safety and well-being of city residents.

Innovation for sustainability

This edition focuses on promoting innovation across various aspects related to urban health, transportation safety, and renewable energy. Additionally, several papers delve into innovative strategies for post-pandemic recovery and improving efficiency through cleaner and more environmentally friendly processes.

The first paper, authored by B. Prasetya, Yopi, and B.D. Tampubolon, explores the implementation of a standard management system based on ISO 3100. The paper focuses on using this approach as a means to mitigate risks and capitalize on opportunities in the "new normal" brought about by the COVID-19 pandemic. The authors assert that the adoption of this system has yielded positive impacts for small and micro-entrepreneurs in different countries.

The second paper is written by N.D.B Long, I. Mackechnie, P.T. Ooi, N.N. Huy, T.T.B. Hao, and L.T.H. Duong. The paper examines the repercussions of the COVID-19 pandemic on Vietnam's automotive industry. The authors emphasize the significance of adopting the Block-chain leadership Model and implementing the 4RE Solution (Respond – Reset – Recover – Reshape) as crucial strategies to effectively navigate the crisis and strategically reshape the automotive industry in Vietnam.

The third paper is written by Satriana, A. Maulida, R. Qardhawi, Y.M. Lubis, R. Moulana, W.A.W. Mustapha, and N. Arpi. The paper investigates the advancement of extraction techniques for producing avocado oil with a high concentration of bioactive compounds. The authors assert that there is a clear correlation between extraction time, pre-treatment method, material size, extraction temperature, and oil yield.

The fourth paper is written by S.W.L. Fong, H. Ismail, and T.P. Kian. The paper explores the expected economic implications and the escalating cost of living due to the coronavirus pandemic, which has led to a significant rise in value-conscious consumers. The authors

propose that integrating the Diffusion of Innovation (DOI), adoption model will enhance the predictive capability of adoption decisions and draw scholars' attention to the importance of trust and affection-based characteristics in innovation.

The fifth paper is written by B. Pamukti, A. Wijayanto, and S.-K. Liaw. The paper introduces a visible light communication (VLC) system, a form of optical wireless communication, to establish a communication link. The authors contend that they enhance the effectiveness of the proposed Successive Interference Cancellation (SIC) technique, thereby improving the performance of non-orthogonal multiple access visible light communication (NOMA-VLC).

The sixth paper is written by R. Amalia, M. Ushada, and A.P. Pamungkas. The paper focuses on improving the well-being of labor in the small food industry by developing a rest period using an artificial neural network (ANN) model. The authors assert that they successfully determine the optimal work period and rest intervals by considering factors such as the average environmental temperature and the nature of the working process.

The seventh paper is written by L. Lady and A. Umyati. The paper investigates the use of mobile phones during driving and how it interferes with the concentration of the driver. According to the authors, the implementation of e-maps does not contribute to a rise in traffic violations among law-abiding drivers. Conversely, they observed a notable increase in traffic violations when e-maps were employed by drivers displaying aberrant behavior.

The eighth paper is written by M.L.S. Zainy, G.B. Pratama, R.R. Kurnianto, and H. Iridiastadi. The paper examines the fatigue and sleepiness experienced by commercial drivers engaged in extended periods of driving. The authors argue that their study demonstrates a close correlation between eye-blink parameters and measures of fatigue. They suggest that this correlation can contribute to the reduction of fatalities in transportation-related incidents.

The ninth paper is written by D.M. Utama, A. Yurifah, and A.K. Garside. The paper investigates an algorithm aimed at minimizing both transportation and fuel costs within an industrial supply chain. The authors assert that their mathematical model called the Fuel Consumption Capacitated Vehicle Routing Problem (FCCVRP), optimizes the total transportation cost through iterative measurements that take into account factors such as load and fuel consumption.

The tenth paper is written by E. Budiyati, Rochmadi, A. Budiman, and Budhijanto. This paper aims to produce polyols from Epoxidized Tung oil (ETO) and to evaluate the influence of temperature and catalyst concentration on the hydroxylation process. The authors argue that temperature and catalyst concentration have a directly proportional correlation to hydroxyl value (OHV) and are inversely proportional to the concentration of epoxy. The highest OHV obtained from the temperature variation was 207.39 mg KOH/g at 80°C. A catalyst concentration of 3% can be recommended as the optimum condition in this reaction.

The eleventh paper is written by S. Siallagan and A. Ishak. This paper introduces a tool designed to measure the capability of technology in crude palm oil-based industries. Authors contend that they have successfully quantified the additional value provided by the product, as well as the resource management strategies they have implemented.

The twelfth paper is written by N.Z. Zahari, P.M. Tuah, N.H.C. Zulkifli and F.N. Cleophas. The paper evaluates the role of microorganisms in accelerating the composting of oil palm empty fruit bunches (OPEFB). The authors contend that *B. subtilis* ReK1Hs-Cr1 exhibits the highest potential as an inoculant, particularly when combined with chicken manure for large-scale degradation of OPEFB using windrow technology.

The thirteenth paper is written by M.A. Budiyanto, S.A. Zidane, G.L. Putra, A. Riadi, R. Andika, and G. Theotokatos. The paper analyzes the performance of a liquefied natural gas/LNG-fueled propulsion system for a small-scale LNG carrier ship with a combination gas-electric steam turbine system (COGES). The authors have developed a system that is deemed suitable for consideration as a small-scale LNG carrier propulsion system, leveraging the advantages offered by the COGES propulsion system.

The fourteenth paper is written by F.A. Valerievich, B.M. Igorevna, S.V. Ivanovich, S.A. Evgenievich, D.E. Sergeevna and A.I. Gareevna. This paper explores several options for harnessing waste heat generated at oil refineries, with a specific focus on opportunities within the rectification column. The authors put forward multiple economically viable scenarios for utilizing waste heat.

The fifteenth paper is written by D. Suescún-Díaz, G. Ule-Duque, J.A. Chala-Casanova. The paper highlights the importance of accurately calculating reactivity parameters in nuclear reactors to enhance the safety of operating a nuclear power plant. Authors claim that the proposed method can serve as a viable alternative for implementation in a digital reactivity meter, particularly in scenarios where there is noise present in the neutron population density.

The sixteenth paper is written by A.F.M.A. Fatah, A.A. Mohamad, M. Ali. S. A., A. Muchtar, N.A. Arifin, W.N.A.W. Yusoff, N.A.A. Hamid. The paper explores the influence of zinc oxide on the physical characteristics and electrochemical behavior of the LaSrCoFe (LSCF) cathode in intermediate temperature fuel cell applications. The authors assert that their findings exhibit exceptional chemical compatibility, bonding characteristics, and electrochemical performance, making them suitable for operating within the intermediate temperature range of 600 °C to 800 °C.

The seventeenth paper is written by Y.M. Altharan, S Shamsudin, S. Al-Alimi and M.A. Jubair. The paper presents a solid-state recycling method aimed at enhancing the quality of zirconia-reinforced AA7075/AA7050 aluminum chip-based matrix composite through a hot press forging process (HPF). The authors state that the preheating temperature has a greater impact on the mechanical properties of the composite compared to the ZrO₂ volume fraction, while both factors have a minimal effect on grain size.

The eighteenth paper is written by Hernani, T. Hidayat, and E. Sukasih. This paper explores a method to enrich white pepper while minimizing contamination. The authors argue that the most favorable outcomes for white pepper can be achieved by combining an optimal duration of soaking with the appropriate timing of the boiling treatment.

The nineteenth paper is written by J. Makinda, K.A. Kassim, and M.A. Hezmi. The paper focuses on characterizing the geotechnical properties of copper mine waste as an initial step toward remedial action. The authors contend that implementing a bio-cementation treatment would offer environmental benefits, considering factors such as soil classification, permeability, shear strength parameters, heavy metal contaminants, and microstructure fabric.

Lastly, the final paper is written by H. Devianto, I. Nurdin, P. Widiatmoko, D. Silvia, and C. Prakarsa. The paper investigates the efficacy of a tobacco extract, in combination with an H₂S-containing NaCl solution, as a green corrosion inhibitor for carbon steel in an industrial setting. The authors assert that this study demonstrates an inhibition efficiency of approximately 70% when using concentrations of 1000 and 2000 ppm of tobacco extract in the NaCl-H₂S solution.

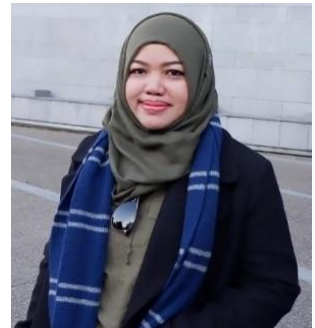
In conclusion, the innovations that arise from laboratories or small-scale settings play a pivotal role in driving transformative changes in our lifestyle and work environment. At IJtech, we warmly welcome and eagerly await your submissions, anticipating with great

enthusiasm the opportunity to share your valuable research findings with our esteemed readers. Join us in shaping a better future through cutting-edge research and impactful contributions.

With warmest regards from Jakarta,



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