



The Role of Urban Physical Environment in the General Health Quality of citizens (Case study of Kerman)

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Research Article

Extended Abstract

Objective: Urban spaces have a great impact on the public health of citizens. However, in many cities, not paying attention to the human aspects in the design and architecture of urban space causes damage to the mental and social health of citizens. In terms of public health, a wide range of environmental variables are associated with recreational physical activity. Today, the role of the physical environment in public health has received much attention and many studies have examined the relationship between urban environments and the health or well-being of citizens. Several studies have examined the relationship between urban trees and body immunity, most of which emphasize the effective role of urban green space on physical health, peace of mind, greater productivity and quality of life. Although the shape of the city, density, and access to green spaces are recognized as elements of the physical environment that may affect the health of citizens, some studies have yielded conflicting results about the extent of this impact.

Challenges in the field of general health of contemporary citizens is a category that has become problematic in the cities of developing countries, including Iran. Among the researches in Kerman city, it has been shown that the increasing tendency of people to modern lifestyle has reduced their general health. To date, almost all research on the relationship between the physical environment of the city and the health of citizens has relied solely on assessing citizens' perceptions of the urban environment. In the present paper, the relationship between the general health quality(GHQ) of citizens' and the measured objective aspects of the physical environment of the city has been investigated by considering population variables.

Methods: The present research is applied in terms of purpose and is field method in terms of nature and method. For this purpose, after reviewing the literature on variables and indicators of the physical environment of the city and the GHQ index, general health data of Kermani citizens were collected from the results of a questionnaire survey in 2019. The sampling process was performed in two stages. In the first stage, using Cochran's random method and considering the population of 738724 people in the general population census of 2016 in Kerman, a sample of 384 respondents was selected. In the second stage, hierarchical cluster sampling method was used to select the place of the questionnaires. In this regard, to prevent the concentration of questionnaires in specific areas, the method of random georeference questionnaire with GIS fishing net operator in the five regions of Kerman Municipality was used.

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Also, the database of the general population-housing census of Kerman in 2016 was formed to extract the indicators of the physical environment of the city, the central lines of the road network and green space in the GIS. Then, after calculating the variables of residential density(RD), ground commercial density(GCD), street connection density(SCD) and green space density and land use mixing ratio(LUMR) and walkability index, the values of partial correlation of Kerman urban form variables with the values of GHQ index were estimated and analyzed.

Results: Estimation of partial correlation between GHQ values with age had a significant positive relationship and a significant negative relationship with education. This means that as the age increases, the quality of public health decreases, but with increasing level of education, the general health status of people has improved. Also, the values of GHQ index had a significant relationship with the values of GCD, SCD and LUMR. The walkability index, which was obtained from the combination of urban form factors, had a significant relationship with the GHQ index. Among these, the variable of urban GSD with the GHQ index of Kerman showed a completely significant correlation. The mainly negative correlation values of the indicators of the urban physical environment with the values of GHQ show that with increasing the values of the LUMR, walkability and GSD, the quality of public health has improved.

Conclusion: The present study indicates the hypothesis that the design of the urban physical environment is significantly related to the GHQ' of Kermani citizens. The results emphasize that increasing of local GCD, LUMR, SCD are among the interventions that can improve the GHQ by improving the walkability index along with the development of urban GSD.

Keywords: General Health Quality, Landuse Mixing Ratio, Walkability Index, Kerman.

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References:

- Abroon, A., Gharai, F., Tabatabaeian, M (2019). *Analysis of Dimensions of Neighborhood Environmental Qualities Affecting Mental Health of Citizens, Case Study: Bahar & Enghelab-e Eslami Neighborhoods, Sabzevar*. Armanshahr Architecture & Urban Development, 11(25), pp. 251-263. (in Persian)
- Aghamolaei, S., Nikkhah, H., Maghsodi, S (2019). *Investigating the Relationship between Lifestyle and Public Health in Kerman Citizens*. Journal of The Ministry of Health and Medical Education, 3 (3), pp. 65-72. (in Persian)
- Azimi, E., Sattarzadeh, D., Bolillan, L., Abdollahzadeh Tarf, A., Faramarzi Asli, M (2021). *Evaluation of the effect of physical-environmental factors of public spaces on the mental health of citizens (Case study: Ardabil city)*. researches in Geographical Sciences. 20 (59), pp. 307-319. (in Persian)
- Bagheri, M., Azemati, H (2010). *Improving citizen's health and well-being through urban landscape design*. Human & Environment, 8(4), pp. 83-88. (in Persian)
- Bahreini, SH., Khosravi, H (2010). *Physical health of citizens in new cities, the role of urban design in the amount of physical activity, case study: Hashtgerd new city*. The first conference on sustainable urban development, Tehran. (in Persian)
- Cervero, R., & Duncan, M (2003). *Walking, bicycling, and urban landscapes: evidence from the San Francisco Bay Area*. American journal of public health, 93(9), pp. 1478-1483. (in English)

- Dannenberg, A. L., Jackson, R. J., Frumkin, H., Schieber, R. A., Pratt, M., Kochtitzky, C., Tilson, H. H (2003). *The impact of community design and land-use choices on public health: a scientific research agenda*. American journal of public health, 93(9), pp. 1500-1508. (in English)
- Ebrahim- Zadeh, E., Ebadi Jokandan, E (2008). *The Spatial Analysis of Allocation of Greenbelt Utilization of the Third Givil Zone of Zahedan*. Geography And Development Iranian Journal, 6(11), pp. 39-58. doi: [10.22111/gdij.2008.1615](https://doi.org/10.22111/gdij.2008.1615). (in Persian)
- Ewing, R., & Cervero, R (2001). *Travel and the built environment: a synthesis*. Transportation research record, 1780(1), pp. 87-114. (in English)
- Ewing, R., Meakins, G., Hamidi, S., Nelson, A. C (2014). *Relationship between urban sprawl and physical activity, obesity, and morbidity—Update and refinement*. Health & place, 26, pp. 118-126. (in English)
- Ewing, R., Schmid, T., Killingsworth, R., Zlot, A., Raudenbush, S (2003). *Relationship between urban sprawl and physical activity, obesity, and morbidity*. American journal of health promotion, 18(1), pp. 47-57. (in English)
- Foley, L., Prins, R., Crawford, F., Humphreys, D., Mitchell, R., Sahlqvist, S., ... & M74 Study Team. (2017). *Effects of living near an urban motorway on the wellbeing of local residents in deprived areas: Natural experimental study*. Plos one, 12(4), e0174882. (in English)
- Forsyth, A., Oakes, J. M., Schmitz, K. H., Hearst, M (2007). *Does residential density increase walking and other physical activity?*. Urban Studies, 44(4), pp. 679-697. (in English)
- Frank, L. D., Andresen, M. A., Schmid, T. L (2004). *Obesity relationships with community design, physical activity, and time spent in cars*. American journal of preventive medicine, 27(2), pp. 87-96. (in English)
- Frank, L. D., Schmid, T. L., Sallis, J. F., Chapman, J., Saelens, B. E (2005). *Linking objectively measured physical activity with objectively measured urban form: findings from SMARTRAQ*. American journal of preventive medicine, 28(2), pp. 117-125. (in English)
- Frank, L., Engelke, P., Schmid, T (2003). *Health and community design: The impact of the built environment on physical activity*. Island Press. (in English)
- French, S. A., Story, M., Jeffery, R. W (2001). *Environmental influences on eating and physical activity*. Annual review of public health, 22(1), pp. 309-335. (in English)
- Frumkin, H., Frank, L., Frank, L. D., Jackson, R. J (2004). *Urban sprawl and public health: Designing, planning, and building for healthy communities*. Island Press. (in English)
- Ghazanfarpour, H., Karimi, S., Saeidi, F (2020). *The Comparative analysis of quality of life in urban old and new texture (Case study: Kerman city)*. Journal of Urban Social Geograghy, 7(1), pp. 1-19. doi: [10.22103/JUSG.2020.2002](https://doi.org/10.22103/JUSG.2020.2002). (in Persian)
- Goldberg, D. P., Hillier, V. F (1979). *A scaled version of the General Health Questionnaire*. Psychological medicine, 9(1), pp. 139-145. (in English)
- Gong, Y., Palmer, S., Gallacher, J., Marsden, T., Fone, D (2016). *A systematic review of the relationship between objective measurements of the urban environment and psychological distress*. Environment international, 96, pp. 48-57. (in English)
- Hakimian, P (2016). *Investigating the Relationship between Physical Features of Urban Spaces and Obesity*. Armanshahr Architecture & Urban Development, 8(15), pp. 215-224. (in Persian)
- Handy, S. L., Boarnet, M. G., Ewing, R., Killingsworth, R. E (2002). *How the built environment affects physical activity: views from urban planning*. American journal of preventive medicine, 23(2), pp. 64-73. (in English)
- Hillsdon, M., Panter, J., Foster, C., Jones, A (2006). *The relationship between access and quality of urban green space with population physical activity*. Public health, 120(12), pp. 1127-1132. (in English)
- Honold, J., Beyer, R., Lakes, T., van der Meer, E (2012). *Multiple environmental burdens and neighborhood-related health of city residents*. Journal of Environmental Psychology, 32(4), pp. 305-317. (in English)
- Humpel, N., Owen, N., Leslie, E (2002). *Environmental factors associated with adults' participation in physical activity: a review*. American journal of preventive medicine, 22(3), pp. 188-199. (in English)

- Krefis, A. C., Augustin, M., Schlünzen, K. H., Oßenbrügge, J., Augustin, J (2018). *How does the urban environment affect health and well-being? A systematic review*. Urban Science, 2(1), p. 21. (in English)
- Li, H., Liu, H., Yang, Z., Bi, S., Cao, Y., Zhang, G (2021). *The effects of green and urban walking in different time frames on physio-psychological responses of middle-aged and older people in Chengdu, China*. International journal of environmental research and public health, 18(1), p. 90. (in English)
- Li, Q., Kobayashi, M., Inagaki, H., Hirata, Y., Li, Y. J., Hirata, K., Kagawa, T (2010). *A day trip to a forest park increases human natural killer activity and the expression of anti-cancer proteins in male subjects*. Journal of biological regulators and homeostatic agents, 24(2), pp. 157-165. (in English)
- Li, Q., Kobayashi, M., Wakayama, Y., Inagaki, H., Katsumata, M., Hirata, Y., Miyazaki, Y (2009). *Effect of phytoncide from trees on human natural killer cell function*. International journal of immunopathology and pharmacology, 22(4), pp. 951-959. (in English)
- Li, Q., Morimoto, K., Kobayashi, M., Inagaki, H., Katsumata, M., Hirata, Y., Miyazaki, Y (2008). *A forest bathing trip increases human natural killer activity and expression of anti-cancer proteins in female subjects*. J Biol Regul Homeost Agents, 22(1), pp. 45-55. (in English)
- McCormack, G. R., Giles-Corti, B., Bulsara, M (2008). *The relationship between destination proximity, destination mix and physical activity behaviors*. Preventive medicine, 46(1), pp. 33-40. (in English)
- McCracken, D. S., Allen, D. A., & Gow, A. J (2016). *Associations between urban greenspace and health-related quality of life in children*. Preventive medicine reports, 3, pp. 211-221. (in English)
- Neuvonen, M., Sievänen, T., Tönnnes, S., Koskela, T (2007). *Access to green areas and the frequency of visits—A case study in Helsinki*. Urban Forestry & Urban Greening, 6(4), pp. 235-247. (in English)
- Norbala, AA., Bagheri, SA., Mohammad, K (2009). *The Validation of General Health Questionnaire-28 as a Psychiatric Screening Tool*. Hakim. 11 (4), pp. 47-53. (in Persian)
- Parto S, Izadi M S, Karimimoshaver M, Zaboli R (2019). *Urban Open Spaces Supporting Physical Activity and Promoting Citizen's Health: A Systematic Review*. Iran J Health Educ Health Promot. 7 (2), pp. 126-142. (in Persian)
- Pejvak, F., Delfanhasanzade, Kh (2015). *Investigating the role of urban environment and landscape design on citizens' health*. National Conference on Native Iranian Architecture and Urban Planning, Yazd. (in Persian)
- Saberifar, R (2018). *Investigating the Relationship between Different Functions of Urban Parks with Mental Health of the Elderly*. Health_Based Research. 4 (3), pp. 289-300. (in Persian)
- Saelens, B. E., Sallis, J. F., Frank, L. D (2003). *Environmental correlates of walking and cycling: findings from the transportation, urban design, and planning literatures*. Annals of behavioral medicine, 25(2), pp. 80-91. (in English)
- Saelens, B. E., Sallis, J. F., Black, J. B., Chen, D (2003). *Neighborhood-based differences in physical activity: an environment scale evaluation*. American journal of public health, 93(9), pp. 1552-1558. (in English)
- Salehifard, M., Alizade, SD (2008). *An analysis of the social and psychological dimensions of green spaces in cities (with an urban management approach)*. Urban Management Quarterly, 21, pp. 33-19. (in Persian)
- Ward Thompson, C., Aspinall, P., Roe, J., Robertson, L., Miller, D (2016). *Mitigating stress and supporting health in deprived urban communities: the importance of green space and the social environment*. International journal of environmental research and public health, 13(4), p. 440. (in English)
- Wendel-Vos, W. M. S. J. F., Droomers, M., Kremers, S., Brug, J., Van Lenthe, F (2007). *Potential environmental determinants of physical activity in adults: a systematic review*. Obesity reviews, 8(5), pp. 425-440. (in English)
- White, M. P., Alcock, I., Wheeler, B. W., & Depledge, M. H (2013). *Would you be happier living in a greener urban area? A fixed-effects analysis of panel data*. Psychological science, 24(6), pp. 920-928. (in English)

- Wolf, K. L., Lam, S. T., McKeen, J. K., Richardson, G. R., van den Bosch, M., Bardekjian, A. C. (2020). *Urban trees and human health: A scoping review*. International journal of environmental research and public health, 17(12), p. 4371. *(in English)*
- Wood, C. J., Pretty, J., Griffin, M (2016). *A case-control study of the health and well-being benefits of allotment gardening*. Journal of Public Health, 38(3), p. 336-344. *(in English)*