



# Urban Spaces Efficiency Qualification in Vertical Residential Buildings: Al -Amal Residential Complex as Case Study

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## Abstract

Planning standards in most countries especially in Iraq have become old and inadequate and do not fulfill the growing needs of people in the meanwhile. Also, it does not provide solutions for the society problems since it does not come from deep and modern study of the society needs and problems. In Iraq, there is a clear neglect of the urban spaces in residential buildings. As the challenges of 21<sup>st</sup> century, climate change, pollution and health crises requires infrastructure which is capable of keeping up with people needs and capable of providing healthy life, wellbeing and economic recovery. The study explores the efficiency of urban spaces in one of the Iraqi new residential complexes which is Alamal residential complex to determine the factors that affect urban spaces in vertical residential buildings in Iraq. The evaluation of the spaces was done by using direct observation method and questionnaire method. Results revealed that the spaces in such residential complex were active and efficient but it needs more spaces to be available since vertical residential buildings have high density of people. Also, there was a good care of urban spaces that fulfill the needs of children to play and also spaces which are friendly to old people. Most participants in the questionnaire have declared that the public urban space (space 3) was the most used, most favored space since it has many activities and facilities which support social activities between people living in the residential complex.

**Keywords:** Urban Spaces, Residential Buildings, Evaluation, Questionnaire, Active Spaces.

## الفضاءات الحضرية في المجمعات السكنية العمودية: دراسة حالة مجمع الامال السكني

بدر سعدي عطيه ، عادل زامل السعدي

### الخلاصة:

المعايير التصميمية في معظم البلدان وخاصة في العراق أصبحت قديمة وغير كافية ولا تلبي الاحتياجات المتنامية للناس في الوقت الحاضر. كذلك أنها لا تقدم حلولاً لمشاكل المجتمع حيث أنها لا تأتي من دراسة معمقة وحديثة لأحتياجات الناس ومشاكلهم. في العراق هناك إهمال واضح للفضاءات الحضرية في المجمعات السكنية. وأن تحديات القرن ٢١ وقضية تغير المناخ والتلوث والكوارث الصحية تستلزم وجود بنية تحتية قادرة على تقديم حياة صحية وعيش هائز وانتعاش اقتصادي. الدراسة تستكشف فعالية الفضاءات الحضرية في احد المجمعات السكنية الحديثة في العراق وهو مجمع الامال السكني. تقييم الفضاءات تم من خلال طريقة الملاحظة المباشرة وطريقة الاستبيان الميداني. النتائج اظهرت ان الفضاءات في المجمع السكني كانت فعالة ولكنها تحتاج الى وجود مساحات أكبر حيث ان المجمعات السكنية العمودية فيها كثافة سكانية عالية لكل وحدة او مبنى. كذلك تم ملاحظة وجود اهتمام في الفضاءات الحضرية الخاصة بالاطفال التي تلبي احتياجات اللعب ووجود اهتمام بالفضاءات الصديقة لكبار السن. معظم المشاركين في الاستبيان وضحو ان الفضاء الحضري العام (الفضاء ٣) كان الأكثر استخداماً والأكثر تفضيلاً بين الفضاءات الموجودة في المجمع حيث انه يضم معظم الفعاليات والمرافق التي تدعم الفعاليات الاجتماعية بين سكان المجمع.



## 1. Introduction

Urban spaces are considered the mirror which reflects the reaction between man and environment in a certain time and place resulting in urban configurations in which the man practices his daily activities [1]. The quality of public space- its design, equipment and the level of openness and accessibility- have a direct effect on the quality of life in that community [2, 3]. Chen, et al., 2020 tried to understand the relationship between environment and mood of old people and its importance for healthy ageing. The results proved that environmental factors like efficiency, clean spaces, well paved passages and green cover have tremendous effect on old people mood and participate in their health and wellbeing [4]. Abbasi, et al., 2016 evaluated the quality of open spaces in poor areas in Scotland. Questionnaire and other evaluation methods were used to study Clovstone gardens. The results showed that both physical and spatial features of the studied open space did not fulfill the needs and expectations of the users. Also, inspite of the awareness of the importance of theses spaces, but open spaces in poor area were not in the required shape [5]. Another example of neglecting urban spaces is the case presented by Trisno and Lianto (2019) who tried to find a solution for the use of urban spaces in residential buildings in certain complexes in Indonesia. The idea was presenting the principle of hyprid and integrated design of spaces to create more sustainable and flexible urban spaces by combining natural and human elements to achieve optimum profit from the available sources and reducing harm on nature [6].

For a successful urban space, there are physical determinants (like safety, comfort, accessibility and practical design) and social determinants (like social activities, variety and user satisfaction) [7].

In addition to its environmental benefits, green urban spaces provide social and economic services. The challenges of 21<sup>st</sup> century including pollution, global population increase and health crises demand more concentration on infrastructure capable of providing healthy living, wellbeing and economic nourish [8].

The increased demand for housing lead to increasing the density of people living in a certain area (the compact cities) associated with neglecting necessary urban spaces [9]. This paper aims to investigate the effects of providing the residential buildings with the needed urban spaces especially spaces for kids and old people in order to assure healthy living and increase social interactions and communications between people in living in the same area by creating essential urban spaces.

**Table (1):** Summary of the studies associated with urban spaces.

The study	Description
Chen, et al., 2018 [4]	The study focused on understanding the relationship between urban spaces and mood of old people and its importance
Abbasi, et al., 2016	Evaluation of urban spaces in

[5]	poor areas in Scotland from end user perspective
Trisno and Lianto, 2019 [6]	Finding solution for using green urban spaces for people living in residential buildings
Sharaf, et al., 2023 [7]	Evaluation of the effectiveness and success of pedestrian friendly urban spaces in the city
Danilina, et al., 2021 [8]	The concept of this paper proposing a method for evaluating already existing urban spaces and aims to develop a network of integrated spaces and hence improving the effect of sustainable green urban spaces in the city
Moztarzadeh and Sajjadi, 2019 [9]	Explained the effective constituents of public and semi-public urban spaces in creating and increasing the social connections in residential buildings
Sandaruwani and Hewawasam, 2021 [10]	Evaluated the level of generality of public urban spaces owned and managed by local authorities
Szczepanska and Pietrzyk, 2020 [11]	Evaluated the public urban spaces by remote sensing depending on satellite pictures and street view technology
Pandelaki and Firmandhani, 2022 [12]	Studied kids' activities, spaces and opportunities to make the desired results from the used spaces of kids and how it support their healthy growing
Dash and Chakraborty, (2023). [13]	Analyzed the availability of green urban spaces across socio-economic groups
Chuang, et al., (2023) [14]	They have categorized the natural urban spaces in Singapore depending on social data
Kostrzewska, 2017 [15]	Defined the architectural features and urban features in big cities which participate in rising physical activity
Morsi, 2021 [16]	Studied the role of building new urban space infrastructure and helping to redefining the open urban space and creating sustainable urban sites in Cairo city
Dietrich & Erto (2017) [17]	The aim of the paper was to define the qualitative determinants which create successful urban space in which people can spend their time in. Also what are the determinants of active space and passive space.

Zahid & Misirlisoy (2021) [18]	Studied the historical streets in Pakistan which had special features which support social activities
Sousa, et al., (2023) [19].	Calculated the effect of geometric elements and land use elements on the consciousness of people about urban spaces aesthetics
Kentelky,et al., (2024) [20]	The aim of the paper was to rise the awareness of the local playgrounds especially in the urban spaces and the opportunities to enhancement chances to support social cohesion and rehabilitates the abandoned urban spaces

The urban spaces refer to the physical environment of the cities including the built and natural elements. It includes many areas like streets, parks, passages, gardens and other spaces. Urban spaces flourish where people live and interact with their environment and it participates in the cultural, social and economic activity of the city [21].

Urban areas differ from rural areas where urban areas have more built elements and fewer open spaces, for example, the built elements lead to increasing built up heat and lead to a phenomena called urban heat island (UHI) in the cities. These UHI areas have more heat than the surrounding areas due to human activities [22]. This built up heat tend to increase the local temperature of a certain area and increase heat stress [23]. Also this increase in temperature will rise the health danger on people living in the cities especially for older people [24]. The simulation process of global climate of the urban spaces showed that the average local temperature of the urban areas in cities is 4C° higher than the rural areas [25]. Many studies revealed that green urban areas would participate in decreasing local temperature up to 5.9C° in the cities [26] and this result proves the importance of green urban areas.

There has been a growing interest in Environmental art works, especially Urban Installations, which represent the contemporary image of environmental art and an important and influential component of urban space, which can play an active role in the activation of neglected and undesired urban spaces [27].

The aim of the study was to determine the factors that affect urban spaces in vertical residential buildings in Iraq. The study results would participate to shed light on the importance of urban spaces in promoting healthy living and wellbeing of residents.

## 2. Methodology

A questionnaire has been made to evaluate the urban spaces in (Al-amal residential complex) a residential complex in Basra, Iraq. Urban spaces have been evaluated by two methods, questionnaire (50 person where chosen as a sample from the residents of the residential complex) and direct observation and scanning of the site. These two methods will be

beneficial for giving a clear view on the efficiency of urban spaces in the selected residential complex.

The residential complex is located in Basra, Iraq. Three distinct spaces can be noticed in this residential complex as depicted in Fig.1.



Figure (1): Urban spaces in Alamal residential complex.

The spaces were distributed and classified into three parts (Space1: the private urban spaces, Fig.2), (Space 2: the semi-public spaces, Fig. 3) and (Space 3: the public and central space in the complex, Fig.4).



Figure (2): Space1 in Alamal residential complex.



Figure (3): Space 2 in Alamal residential complex.



Figure (4): Space 3 in Alamal residential complex.

## 3. Results and Discussion

As mentioned above, the residential complex consists of three different urban spaces distributed





throughout the complex in a good manner. The urban spaces were well organized and the transitions from one space to the other (private, semi-public and public spaces) are clear. Also accessibility was done in a manner that allows different categories of people to use the urban spaces efficiently. Good passages and there was a sense of clear boundaries between spaces.

Distribution of lighting allows for good visibility, also there were many seats in almost all spaces in the complex which gives the users the opportunity to sit and relax especially old people.

Security was high in this residence as many of the residents cleared. There is a security at the gates of the residential complex and also security cameras along almost all urban spaces. This sense of security allows people to use urban spaces in all times and encourage them to leave their apartments and go out to socialize and hence increase wellbeing.

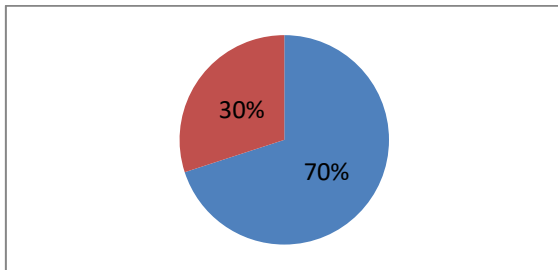
Space 3 contains a fountain (Fig. 5), GYM, swimming pool, reading club and many beverage and food stalls.



**Figure (5):** The central fountain in Alamal residential complex.

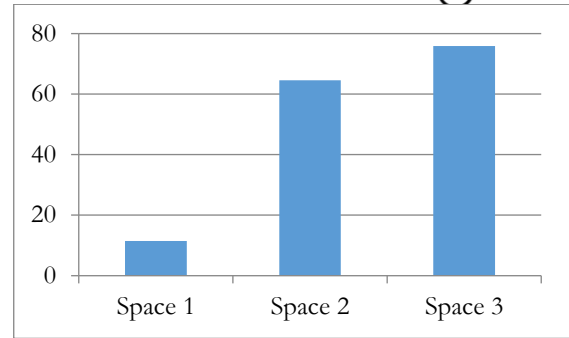
All the above results were made by scanning and direct observation method. While in the questionnaire, some aspects have been in focus such as kids playing areas, degree of satisfaction, old people areas and average use.

Fig. 6 shows the percentage of residents who have children in their family and it turns that more than 70% of the residents have kids. This aspect reveals the importance of making urban spaces dedicated for kids.



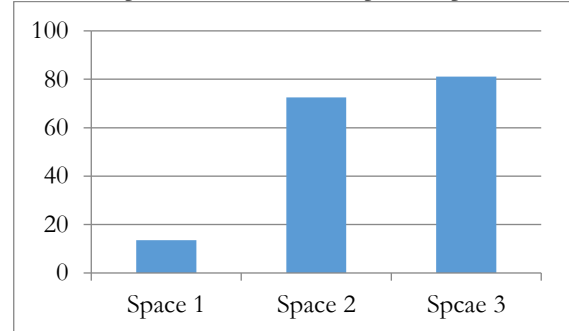
**Figure (6):** Percentage of families having children in Alamal residential complex.

Fig. 7 shows the percentage of evaluation of kid's areas in the residential complex as stated by the questionnaire. The results show that space 3 is more suitable as a playground for kids due to the availability of different activities and equipment needed.



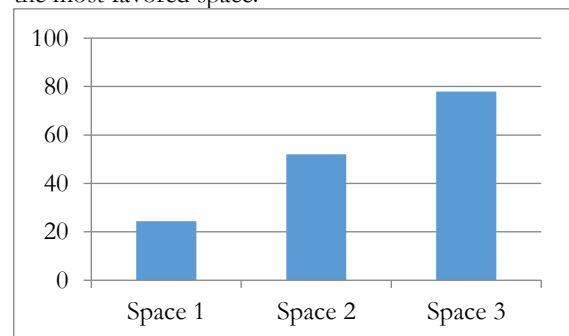
**Figure (7):** Evaluation of different spaces suitability for kids in Alamal residential complex.

Fig. 8 reveals the degree of satisfaction of people who participated in the questionnaire of the urban space in general. Space 3 was the most validated space 81.16% of the participants agreed that this space is the highest ranked space with all facilities in it. Space 2 had 72.48% degree of satisfaction where it had some features that make it way better than space 1. Space 1 had the lowest ranking due to its low area and it had little to offer to the users and this is natural since this space is considered as a private space.



**Figure (8):** Degree of satisfaction on spaces in Alamal residential complex.

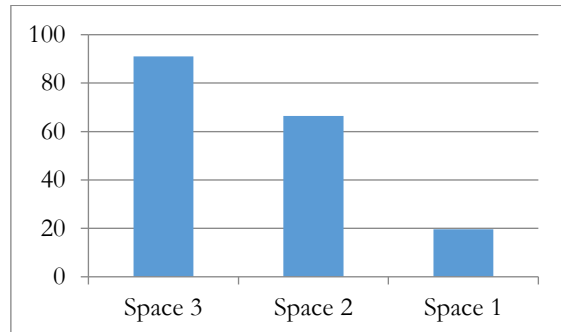
The participants in the questionnaire were asked about the areas and spaces dedicated to old persons. They declared that most spaces have the furniture and aspects which help old people to relax or have a small walk. This aspect is very important since old people have to have good mental and physical health. Fig. 9 illustrates the areas specialized to old people and the evaluation of these areas by the participants according to the type of space. Space 3 as usual was the most favored space.



**Figure (9):** Areas dedicated to old people in Alamal residential complex.

Fig. 10 shows the average use of urban spaces in the residential complex. From the opinion of participants in the questionnaire and also by the

direct observation method, space 3 proved to be the most used urban space. It has the required furniture and it has a massive area which could help to make many activities in it. Also there was library (reading club), GYM and swimming pool. In addition to the mentioned features, many social and cultural festival are held regularly in this space which help people to communicate and socialize.



**Figure (10):** Evaluation of different spaces suitability for kids in Alamal residential complex.

#### 4. Conclusions

People in the residential complex prefer to use the public urban space more than the other spaces in the complex and this can be considered as a privilege where public urban spaces have more social activities than the other spaces. Also, it is important to refer to the necessary equipped spaces for kids which were taken into account in Alamal residential complex.

There is a smooth transitions from one space to the other (example; from public urban space to semi-public and from semi-public to private urban space) and this is considered a good sign that the privacy was taken into account.

Factors that affect mentality of old people were available such as clean streets and passages, and clean urban spaces, also, availability of seats in different spaces.

Inclusiveness of the urban spaces was high, where the residential complex have three kinds of spaces (meso, micro and macro) which were noted as (space 1, space 2 and space 3) in the paper. The inclusiveness starts from the nearest space to the residential unit up to the farthest space outside the residential units.

#### 5. Recommendations

Since there is a lack in the evaluation of urban spaces in Iraq in both quantitative and qualitative methods, it is recommended to study urban spaces in residential buildings in different methods to get a real data on the efficiency of urban spaces and make suggestions to decision makers.

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#### 7. References

[1] س. م. القيسي، و. م. م. كاظم، "أثر البيئة الثقافية والطبيعية كمحفزات في تشكيل وصياغة النسيج الحضري مثال تحليلي للفترة السومرية

, " J. Kufa Stud. Center, vol. 1, من حضارة وادي الرافدين, no. 53, 2019. DOI: 10.36322/jksc.v1i53.5041

- [2] A. L. Bedimo-Rung, A. J. Mowen, and D. A. Cohen, "The significance of parks to physical activity and public health: a conceptual model," *Am. J. Prev. Med.*, vol. 28, pp. 159-168, 2005. DOI: 10.1016/j.amepre.2004.10.024
- [3] A. T. Kaczynski and K. A. Henderson, "Environmental correlates of physical activity: a review of evidence about parks and recreation," *Leisure Sci.*, vol. 29, pp. 315-354, 2007. DOI: 10.1080/01490400701394865
- [4] T. K. Chen, C. Qiu, M. Schmitt, X. X. Zhu, C. E. Sabel, and A. V. Prishchepov, "Mapping horizontal and vertical urban densification in Denmark with Landsat time-series from 1985 to 2018: a semantic segmentation solution," *Remote Sens. Environ.*, vol. 240, p. 112096, 2020. DOI: 10.1016/j.rse.2020.112096.
- [5] A. Abbasi, C. Alalouch, and G. Bramley, "Open space quality in deprived urban areas: user perspective and use pattern," *Procedia Soc. Behav. Sci.*, vol. 216, pp. 194-205, 2016. DOI: 10.1016/j.sbspro.2015.12.028
- [6] R. Trisno and F. Lianto, "Realization of hybrid concept and symbiosis in green open space (RTH) at housing complex RW Pluit, Jakarta Utara, Indonesia," in *J. Phys. Conf. Ser.*, vol. 1179, no. 1, p. 012165, Jul. 2019. DOI: 10.1088/1742-6596/1179/1/012165
- [7] F. M. Sharaf, H. S. Çinar, and G. A. Irmeili, "Quality evaluation of public pedestrian spaces: the case of Abdali development in Amman City, Jordan," *Civil Eng. Archit.*, vol. 11, no. 5, pp. 2321-2335, 2023. DOI: 10.13189/cea.2023.110506
- [8] N. Danilina, K. Tsurenkova, and V. Berkovich, "Evaluating urban green public spaces: the case study of Krasnodar region cities, Russia," *Sustainability*, vol. 13, no. 24, p. 14059, 2021. DOI: 10.3390/su132414059
- [9] H. Moztaizadeh and K. Sajjadi, "Explaining the effective features of open and semi-open spaces in availability and increase of social interactions in residential complexes," *Int. J. Archit. Urban Dev.*, vol. 9, no. 4, pp. 67-76, 2019.
- [10] T. B. Sandaruwani and C. Hewawasam, "An evaluation on publicness of urban public spaces by using core dimensions: specific reference to Galle Fort, Forest Park, Mahamodara Marine Walk and Ocean Pathway," *J. Serv. Sci. Manag.*, vol. 14, no. 6, pp. 663-679, 2021. DOI: 10.4236/jssm.2021.146042
- [11] A. Szczepańska and K. Pietrzyk, "An evaluation of public spaces with the use of direct and remote methods," *Land*, vol. 9, no. 11, p. 419, 2020. DOI: 10.3390/land9110419
- [12] E. E. Pandelaki and S. W. Firmandhani, "Inclusive space for children in vertical housing," *J. Archit. Urbanism*, vol. 46, no. 2, pp. 100-106, 2022. DOI: 10.3846/jau.2022.15250
- [13] M. Dash and M. Chakraborty, "Distribution of green spaces across socio-economic groups: a study of Bhubaneswar, India," *J. Archit. Urbanism*, vol. 47, no. 1, pp. 57-67, 2023. DOI: 10.3846/jau.2023.17026
- [14] I. T. Chuang, Q. Chen, and A. Poorthuis, "Categorizing urban space based on visitor density and diversity: a view through social media data," *Environ. Plan. B Urban Anal. City Sci.*, vol. 50, no. 6, pp. 1471-1485, 2023. DOI: 10.1177/23998083221139848
- [15] M. Kostrzewska, "Activating public space: how to promote physical activity in urban environment," in *IOP Conf. Ser. Mater. Sci. Eng.*, vol. 245, no. 5, p. 052074, Oct. 2017. DOI: 10.1088/1757-899X/245/5/052074
- [16] A. A. E. Morsi, "Profitable urban public spaces: significant role in building safer and more sustainable societies - Cairo as a promising case," *J. Archit. Arts*



- Humanist. Sci., Jan. 2021. [Online]. Available: <https://www.researchgate.net/publication/348688147>
- [17] U. D. O. Dietrich and G. K. Erto, "Liveable public urban spaces: criteria for assessment and design," *WIT Trans. Ecol. Environ.*, vol. 223, pp. 273-284, 2017. DOI: 10.2495/SC170241
- [18] A. Zahid and D. Misirlisoy, "Measuring place attachment, identity, and memory in urban spaces: case of the walled city of Lahore, Pakistan," *J. Archit. Urbanism*, vol. 45, no. 2, pp. 171-182, 2021. DOI: 10.3846/jau.2021.15183
- [19] N. Sousa, J. Monteiro, E. Natividade-Jesus, and J. Coutinho-Rodrigues, "The impact of geometric and land use elements on the perceived pleasantness of urban layouts," *Environ. Plan. B Urban Anal. City Sci.*, vol. 50, no. 3, pp. 740-756, 2023. DOI: 10.1177/23998083221129879
- [20] E. Kentelky, H. Dumitru, I. Lihăț, and Z. Szekely-Varga, "Playgrounds as residual areas-case study of a playground regeneration proposal in Târgu-Mureș, Romania," *Urban Sci.*, vol. 8, no. 4, p. 203, 2024. DOI: 10.3390/urbansci8040203
- [21] M. İnceoğlu and A. Aytuğ, "The concept of urban space quality," Unpublished manuscript, 2009.
- [22] V. S. Cheela, M. John, W. Biswas, and P. Sarker, "Combating urban heat island effect-a review of reflective pavements and tree shading strategies," *Buildings*, vol. 11, no. 3, p. 93, 2021. DOI: 10.3390/buildings11030093
- [23] S. L. Harlan, A. J. Brazel, L. Prashad, W. L. Stefanov, and L. Larsen, "Neighborhood microclimates and vulnerability to heat stress," *Soc. Sci. Med.*, vol. 63, no. 11, pp. 2847-2863, 2006. DOI: 10.1016/j.socscimed.2006.07.030
- [24] S. Grimmond, "Urbanization and global environmental change: local effects of urban warming," *Geogr. J.*, vol. 173, pp. 83-88, 2007. DOI: 10.1111/j.1475-4959.2007.232\_3.x
- [25] K. W. Oleson, G. B. Bonan, J. Feddema, and T. Jackson, "An examination of urban heat island characteristics in a global climate model," *Int. J. Climatol.*, vol. 31, pp. 1848-1865, 2011. DOI: 10.1002/joc.2201
- [26] H. Upmanis, I. Eliasson, and S. Lindqvist, "The influence of green areas on nocturnal temperatures in a high latitude city (Göteborg, Sweden)," *Int. J. Climatol.*, vol. 18, pp. 681-700, 1998. DOI: 10.1002/(SICI)1097-0088(199805)18:6<681::AID-JOC289>3.0.CO;2-L
- [27] ج. عيود، أ. إ. محمود، و م. ح. الجوادي، "المنشآت التركيبية الحضرية وتفعيل الفضاء الحضري," *J. Eng. Sustain. Dev.*, vol. 24, no. 3, 2020.