



The Effect of Green Spaces on Mitigating the Symptoms of Hyperactivity Disorder and Lack of Attention in Children

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Abstract

Children of hyperactivity are like any other children, but they are unable to integrate with society and the environment, because hyperactivity is a developmental disorder that makes the child uncontrollable, difficult to understand, learn and socialize and is placed in the centres of disease control as a serious public health problem. Here, the role of architecture is in its active contribution to improving social interaction and addressing part of the problems of this group of children. This treatment has a significant impact on improving the quality of children's environment in general and children of hyperactivity in particular, thus facilitating interaction and learning with their peers by working to create a healthy environment that meets their needs inside and outside the building. Due to the lack of interest or thorough studies on children with hyper-active, distracted children and the impact of their surrounding environment, whether internal or external, especially within Iraq, despite their considerable and multiple creative potential (physical or mental). Therefore, the aim of the research was to determine the extent of the effect of green on the elite or hyperactivity symptoms of children suffering from hyperactivity syndrome, and to contribute to their positive, sensory and collective appearance.

Keywords: Green Spaces, Hyperactivity Disorder, Lack of Attention, Childrens

تأثير المساحات الخضراء في تخفيف اعراض اضطراب فرط الحركة ونقص الانتباه
لدى الاطفال
ورود أديب خميس

الخلاصة:

ان اطفال فرط الحركة هم اطفال مثل باقي الاطفال لكن يعانون من عدم القدرة على الاندماج مع المجتمع والبيئة، كون فرط الحركة يعد من الاضطرابات التنموية التي تجعل الطفل في حالة من التششت الغير مسيطر عليه كما يعاني من صعوبة الفهم والتعلم والتفاعل الاجتماعي ووضعت مراكز السيطرة على الامراض بانه مشكلة صحية عامة خطيرة وهنا جاء دور العارة في أهمية مساهمتها الفاعلة في تحسين التفاعل الاجتماعي ومعالجة جزء من مشاكل هذه الفئة من الاطفال، وهذه المعالجة لا يستهان بها اذ لها الاثر الكبير في تحسين نوعية بيئة الاطفال بشكل عام وأطفال فرط الحركة بشكل خاص وبالتالي يسهل تفاعل وتعلم الطفل مع اقرانه من خلال العمل على ايجاد بيئة صحية تلبي احتياجاتهم داخل وخارج المبنى. وبسبب عدم وجود اهتمام او دراسات وافية عن اطفال فرط الحركة وتششت الانتباه وتأثير البيئة المحيطة بهم سواء كانت بيئة داخلية او خارجية ، بالاحص داخل العراق، برغم ما يملكوه من امكانيات ابداعية كبيرة ومتعددة (بدنية أو عقلية). لذا جاء هدف البحث بالوقوف على مدى تأثير المساحات الخضراء في التقليل أو معالجة اعراض فرط الحركة للأطفال المصابين بمتلازمة فرط الحركة، والمساهمة في تطورهم الاجتماعي الحسي والسلوكي.

1. Introduction

Iraq ' s population in the cities is growing steadily, especially Baghdad, with 21.3 per cent of the total

population of Iraq in 2021 being 9 million, as declared by the Iraqi Ministry of Planning out of a total of 41 million in all of Iraq. Here, all health



professionals must be involved and planning to work together and discover the imbalances and try to repair them (1). The most important problem facing Baghdad as an overcrowded urban city is a shortage of green spaces.

In the last month of May of 2024, the green areas amounted to 1,282 km², which is equivalent to 25% of the area of Baghdad Governorate. As for the city of Baghdad, the green cover area is 77.5 km², which is equivalent to 37% of the city's area. This area is compared to the city's population of 10.2. One million people - knowing that this number is an estimate and not a final number - according to what was estimated by the Central Bureau of Statistics in Iraq, the share of one person is estimated at 7.75 square meters per person, while the share of vegetation per person per person should be (2-10) M² (2), but in reality, not everyone enjoys it.

But in reality, not every individual enjoys this high percentage of green spaces, as several other factors are taken into account, such as the uneven distribution of the population, the presence of protected or uninhabitable areas, or the presence of other uses of the land, and therefore this share is not available to every individual. It may be There are areas with a high population density, such as the city of Al-Sadir, east of Baghdad, and others with a low population density, such as Al-Baitha, south of Baghdad

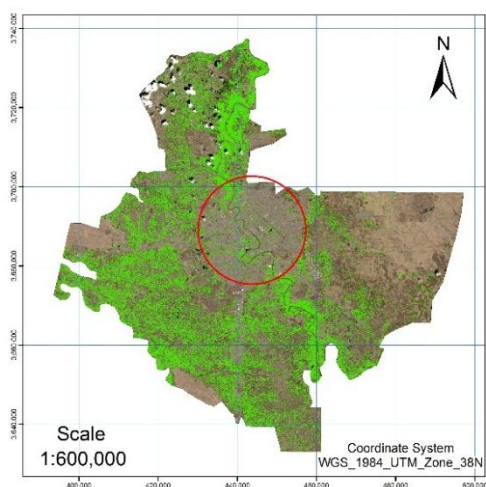


Figure (1): The green cover of Baghdad city and the governorate (3)

As shown in Image No. 1, which shows the percentage of vegetation cover in the city of Baghdad, and was done using the code () and the high-resolution sentinel 2 L2A satellite.

The United Nations has encouraged attention to the green environment, as it declared this clearly in its development goals announced in 2015, including Goal 11. (Building sustainable cities and towns, which includes improving air and water quality, increasing green spaces, and reducing negative environmental impacts).(4) Because architecture has many aspects and every aspect has some impact on children and may cause them problems or exacerbate their psychological or behavioural problems or, on the contrary, it is a cure for a disease that is difficult

to treat or alleviate, such as hyperactivity syndrome and distractions.

The fact that children in general and children of hyperactivity in particular need large areas of play and running, and this is where green spaces are meant precisely because they have a significant impact in mitigating symptoms of hyperactivity.

The most important effective treatment for the treatment of distractions is the child's greater integration with green spaces inside or outside schools. As a result, many studies have been conducted as the research explained in the previous studies section and alternative ways have been found to alleviate his symptoms, namely, the integration of children into large green spaces and their social and health benefits, as well as psychological benefits.

So, in this research, there will be a thorough review of past literature, the relationship between green spaces and children's dispersion, and what is the design of a calm and meaningful environment that motivates children to interact and learn.

In order to test the information from previous studies, the relationship or impact of green spaces on children in general and children of hyperactivity in particular will be explored through the questionnaire addressed to their parents by testing the extent to which the child 's attention has changed and the level of discipline he or she has before he or she plays in a green open space and by comparing his or her level of attention thereafter.

The lack of attention disorder is a syndrome that affects 5% of children.(5) Certainly, it has treatments, but as useful as they are, it has a long-term side effect (6) The research study considered that alternative ways of mitigating the symptoms of the syndrome, which then showed the ability of architecture and proper planning according to appropriate criteria, for example, not to include kitchen, living, bedrooms and green spaces, but rather that attention must be paid to the area, shape and characteristics of each of them, so that consideration is given to the fact that this house has a child with specific needs that it wishes to meet within the limits of the home and that it is able to build a strong relationship with the child and make it feel secure, comfortable and stable.18 Thus, the rate of hyperactivity is reduced.

2. Treating hyperactivity through vegetative cover

Parks are essential in their presence near the home, which must be recognized as having a high impact on the child's calming and satisfying the child's need for mobility and running. (7) They also have benefits at other social and health levels, as social relations are strengthened and the risk of psychological and mental problems in childhood and adolescence is reduced. (8)

The positive impact of green spaces must not be overlooked, since they have the potential to reduce noise levels and air pollution³. In addition, green spaces have a role to play in promoting physical activity⁴ and increasing social cohesion. (9) The fact that children are deprived of such a balanced environment between construction and natural green



spaces has negative consequences, including a weak capacity for community integration and learning. (10).

Physical activity, which is important in this research and its relationship to green spaces, suggests that there is connection between socially and healthy active society and the availability of green spaces. (11) Vegetation is an important aspect in the design of a healthy society (12) and the development of an image of a successful green and playable landscape in which the elements of beauty are open green space, with trees, shadows, lights and pavements on both sides of which are considered to be an important aspect in the design of a healthy society.



Figure (2): Green wall or vertical garden (13)

Parks and pavements are associated with increased mobility, such as walking or running, especially children, that their activity in green areas is higher, especially within residential areas, and that access to parks has a built-in relationship with the intensity of their use. (14).

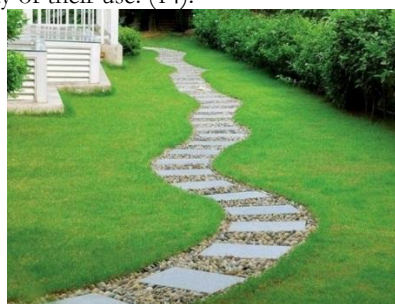


Figure (3): Hypocrisy Gardens with Safe Walkers (15)

It should be noted that children with psychological activity are less at risk of hyperactivity and that physical exercise is an effective measure to reduce behavioural problems, especially in schools. (16).

It is therefore very important to raise awareness and good control of the place in order to reduce the potential behavioural effects of the environment surrounding the child. The effects are not limited to the psychological but also to the physical aspect.

3. Previous studies

A large number of studies on the relationship of architecture to child hyperactivity, distracting attention, and each study has its own study input, on which it has based its findings.

Green spaces have a number of types, including public, private and indoor similarities, both within schools and at home.

3.1 Studies of green indoor spaces

3.1.1 At Home with Nature: Effects of Greenness on Children's Cognitive Functioning, Nancy M. Wells, 2000. (17)

Although this study is old 24 years ago, its findings are very valuable and the quotes are still available to date. The study has focused on the poor segment of the population who have converted their housing into urban areas with a green environment within the home. How positive green spaces have affected their desire to improve their cognitive and scientific reality and academic performance. Here we speak of those of school age. The study then points to an extremely important point: the difference between horizontal and vertical housing and the disadvantages of vertical housing, particularly high-altitude housing, and how some of them appear to be at large in terms of appearance and services.

3.1.2 "The effect of parent's attitudes to play in green space on childrens cognitive flexibility during Covid-19 home quarantine", Dodangeh, 2021 (18)

Compared with the rest of the studies examined in this research, this study seems to be very simple, but it is unique in an important detail: the impact of the external green environment on children in the quarantine period to which the world was exposed because of the spread of the virus Corona by studying 300 cases of children aged between 9 and 11 years and analysing the results of their questionnaire. The results were that children whose environment was positive and parents spent a long time playing with them have greater cognitive flexibility and the ability to control their psychological emotions unlike those who were exposed to the stone and were not in an external green environment.

3.2 Green space studies within schools

3.2.1 Effects of Regular Classes in Outdoor Education Targeting's: A Systematic Review on Students. Learning, Social and Health Dimensions, Becker, 2017 (19)

Since the green environment plays a significant role in improving the mental and physical health of students, many studies have researched the results of education in the outside environment rather than within closed walls, such as classrooms. This review has therefore collected the results of a number of studies by comparing the findings of a statistically positive and negative study. The result has been in favour of external education in the open air and the green environment, especially quality education, and not quantitatively any study material that needs to be understood and not memorised.

3.2.2 Impact of views to school landscapes on recovery from stress and mental disease, Sullivan, 2016 (20)

This study has been at the heart of the capacities and potential of the green environment and beautiful landscapes, such as its ability to heal students or free them from the psychological stress and fatigue resulting from the study, and how green spaces have the unexpected potential to improve student performance, restore attention, reduce tension and strengthen self-discipline and focus capacity.



3.3 Studies of green spaces near homes

3.3.1 The role of urban neighbourhood green space in children's emotional and behavioural resilience, Flori, 2014 (21)

It focused on the poor urban population and even compared slums with a large and green urban environment with a poor neighbourhood that lacks a green environment. The data were then modelled and 6384 children were between the ages of 3 and 7 years, as the first group had less emotional and psychological problems than their counterparts in less green neighbourhoods. Thus, an accessible green environment promotes the emotional well-being of early childhood children.

3.3.2. Access to urban green spaces and behavioural problems in children: Results from the GINIPlus and LISAPlus studies (22)

This study has the advantage of suggesting specific criteria and ratios of 500 m being the boundary that determines the proximity or distance of the green space of the home, and the age rate of children subject to this study is 5 years old. The results were impressive that children whose homes were within 500 m or less of the green space often had no hyperactivity or distraction and those who had it were simple or uncomplicated. Quite the opposite of those whose homes were more than 500 metres away, those suffering from hyperactivity had a more sensitive and complex ratio. It is not as important to have or not to have a general urban green space as it is to have access to it and to distribute these green spaces fairly and equally so that it is not more than 500 metres away from homes.

3.3.3 Residential green space in childhood is associated with lower risk of psychiatric disorders from addiction into addiction, K Engemann, 2019. (23)

What distinguishes this study from other urban studies is that it has linked the green residential spaces enjoyed by children to reduced mental health disorders in adolescence and adulthood. The practical basis of this study is the verification of previous studies that have reached this conclusion. The researchers were encouraged or motivated by the weakness of epidemiological studies that link adolescents' mental and behavioural health diseases to their vulnerability to green environments, especially those whose childhood was in urban environments. Finally, the study recommends that children's lives in natural environments should be more closely integrated in order to avoid psychological and behavioural problems in the more advanced stages of life.

There are several important studies that should have been mentioned to enrich the research with its findings.

3.4 Home indoor environmental quality and attention, S Alizadeh, 2023 (24)

The results of this research were accurate and pointed to the need not to neglect the quality of the interior architectural environment, which is divided into several important axes, namely, the quality of lighting, ventilation and thermal rest, which effectively contributes to the treatment or mitigation

of the symptoms of hyperactivity of children and adolescents by measuring the quality of the internal environment, identifying residential characteristics that negatively affect children of hyperactivity, and providing as much a supportive environment as possible.

3.5 Could exposure to every day green spaces help treat ADHD? Evidence from children,** play settings, A Faber Taylor, 2011 (25)

This study examines the enormous potential of open green spaces and their ability to deal with and reduce the symptoms of hyperactivity on a continuous and accelerated basis. There are significant differences and developments that highlight other children who play in integrated external and internal settings. These developments are less rapid than those who play in relatively large and large green spaces. These results apply to all income groups, as well as to boys and girls. It should be noted that data have been collected from 421 hyperactive children, and a daily schedule and daily play settings have been developed in relatively open green spaces. One of the causes of environmental deprivation and hyperactivity was air pollution caused by traffic congestion, narrow streets, lack of green spaces and high population noise caused by population overcrowding.

3.6 The effect of interior design on children with (ADHD), NSA Al Nuqiti, 2015 (26)

This research examines the impact of internal design on reducing or increasing the incidence of this syndrome on children. Internal misdesign may cause numerous behavioural problems for those who are in contact with the child to be deluded and distracted. The authors of this study have also developed a detailed study of the elements of internal design in the child's environment within the home and at school. Accordingly, they have developed design solutions and proposals. The study has then concluded with recommendations that raise the issue of the massive shortage of information or the strength of internal design in the child's ability to improve child behaviour.

4. Discussion of literature

When researching the main literature and comparing the results with each other, it turns out that all studies have come together and are very close to each other in that the role of green space in a child's life is not only a temporary enjoyment but has a very significant impact not only in childhood but also in adolescence and post-adolescent, and behavioural psychology is caused by environmental and social deprivation as well as genetic causes. For ease of comparison, the results of previous studies are summarized in tabular form:

Table (1): Results of previous studies

<i>Title of study</i>	<i>Year</i>	<i>Study results</i>
<i>At Home with Nature: Effects of "Greenness" on Children's Cognitive Functioning</i>	2000	<i>The existence of a green environment within the home has a positive effect on the child's desire to</i>



		<i>change his or her cognitive and scientific reality, particularly his or her educational performance.</i>
<i>"The effect of parents attitudes to play in green space on childrens cognitive flexibility during Covid-19 home quarantine"</i>	2021	<i>The children who spent time with their parents in an open green environment without quarantine for the Corona virus enjoyed great cognitive flexibility and control over behavioral emotions.</i>
<i>Effects of Regular Classes in Outdoor Education Settings: A Systematic Review on Students' Learning, Social and Health Dimensions</i>	2017	<i>The role of the external environment in improving the mental and physical health of students, most importantly as a result of the positiveness of external education, especially quality education</i>
<i>Impact of views to school landscapes on recovery from stress and mental fatigu</i>	2016	<i>For green views, the ability to improve student performance, restore attention and reduce tension.</i>
<i>The role of urban neighbourhood green space in children's emotional and behavioural resilience</i>	2014	<i>Families who enjoyed a green urban environment had few psychological and emotional problems compared to families whose children lacked the advantage.</i>
<i>Access to urban green spaces and behavioural problems in children: Results from the GINIplus and LISApplus studies</i>	2014	<i>Children who live in homes 500 miles or less have problems with little or no movement, compared to those whose homes are more than 500 miles away from green spaces.</i>
<i>Residential green space in childhood is associated with lower risk of psychiatric disorders from adolescence into adulthood</i>	2019	<i>Linking the child 's green housing spaces to the reduction of mental health disorders in adolescence and adulthood.</i>

5. Questionnaire

The discussion and review of previous literature had results that benefited the research through the conclusion of indicators that were included in questionnaire questions directed at parents of children. Thus, their validity is confirmed and their results are clearly tested by the parents, such as the importance of green spaces in their lives or not, and whether their absence has a negative impact. On the behavior of children. To obtain more accurate results, the questionnaire was evaluated for two categories of children, one normal and the other with hyperactivity and distraction.

A questionnaire was prepared for the parents of 28 normal children and 14 children with hyperactivity and distraction.

Children's ages from 1 to less than 11 years. As for normal children, there was no difficulty in interviewing their parents. As for hyperactive

children, they were reached through centers specialized in their behavioral treatment, including the Center for Special Children in Baghdad.

The questionnaire was conducted online and with the assistance of the center director

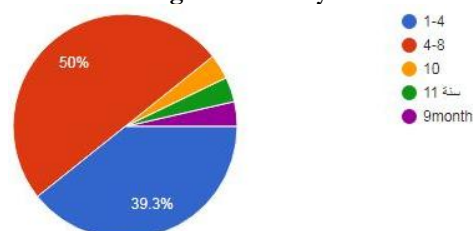
The questionnaire questions were placed in the first part to identify the gender and age of the child, then his type of residence, and does the house contain a garden? Then the questions expanded to the residential area in which he lives. Is one of its advantages the availability of public gardens, and if they exist, will the child benefit from them in alleviating the symptoms of hyperactivity in him? If it is a hyperactive child, or does it modify the child's normal behavior or make him feel happy?

Thus, arriving at the most important features that the current concept among the general public considers to be a luxury, it is also considered an important thing and must be available in every home or near it, especially homes in which there are children and hyperactive children, specifically, which are green spaces.

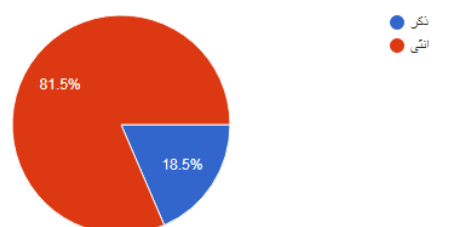
5.1 Normal resolution form

The identification questions are simple and can be understood by any parent, any cultural class or social level. The answers are useful and non-twistable:

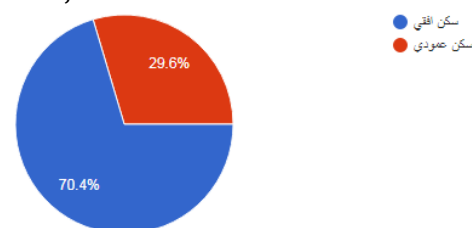
5.1.1 What's the age of the baby?



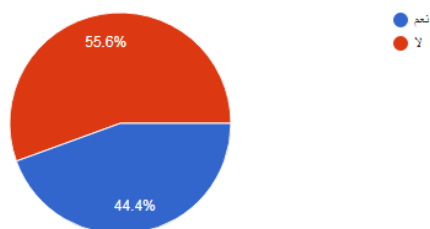
5.1.2 What's the sex of the baby? Blue is male, red is female



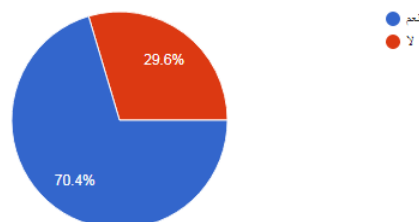
5.1.3 What kind of housing? Blue's horizontal residence, Red's a vertical residence.



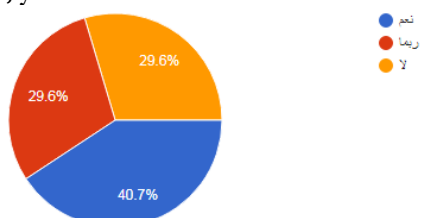
5.1.4 Is there a green space for children or families close to your home? Blue is yes, red is no



5.1.5 Is there an open green space you can reach where the baby spends time? Blue is yes, red is no



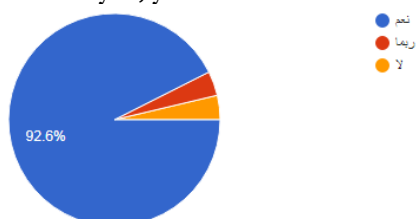
5.1.6 Are there regular outside activities? (playing, sports, picnics) Blue is yes, red is maybe, yellow is no



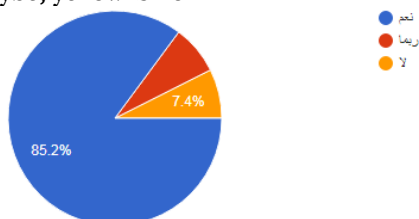
5.1.7 If the answer is yes, what is the pattern of this activity? Blue is daily, red is almost daily, and yellow is unscheduled.



5.1.8 Is there a positive change in the behavior of a child after spending time in green spaces? Blue is yes, red is maybe, yellow is no

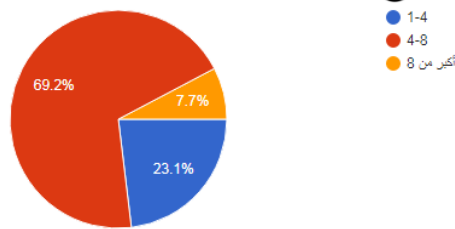


5.1.9 Are you like a father or a mother or a teacher, satisfied with the influence of green spaces on your child's behavior? Blue is yes, red is maybe, yellow is no

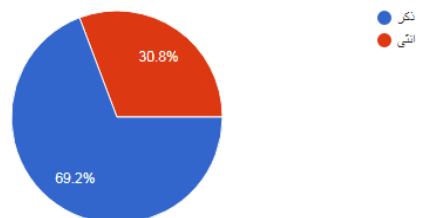


5.2 Special resolution form

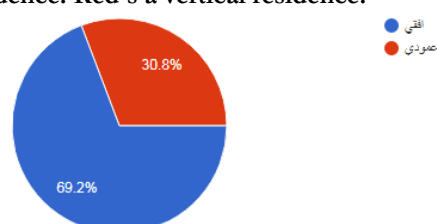
5.2.1 What's the age of the baby?



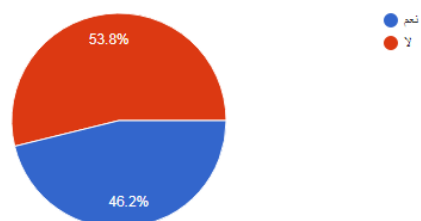
5.2.2. What's the sex of the baby? Blue is male, red is female



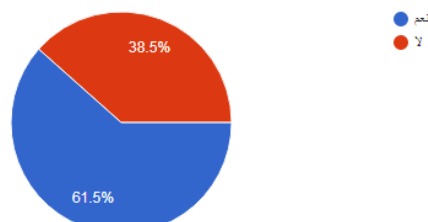
5.2.3 What kind of housing? Blue's horizontal residence. Red's a vertical residence.



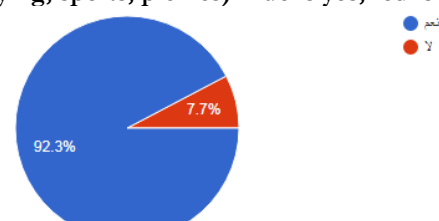
5.2.4 Is there a green space for children or families close to your home? Blue is yes, red is no



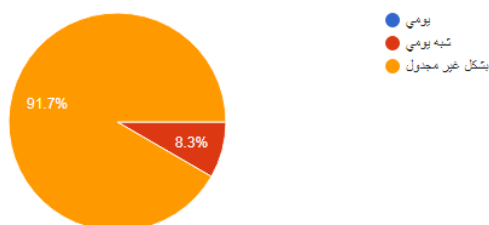
5.2.5 Is there an open green space you can reach where the baby spends time? Blue is yes, red is no



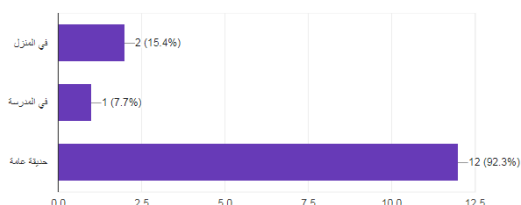
5.2.6 Are there regular outside activities? (playing, sports, picnics) Blue is yes, red is no



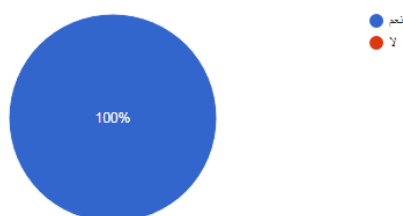
5.2.7 If the answer is yes, what is the pattern of this activity? Blue is daily, red is almost daily, and yellow is unscheduled.



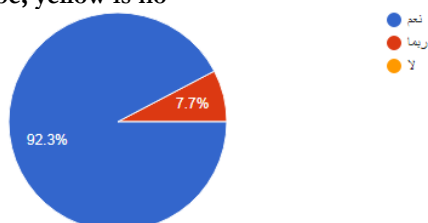
5.2.8 What kind of green space is available in a child's life?



5.2.9 Is there a positive change in the behavior of a child after spending time in green spaces? Blue is yes, red is no



5.2.10 Are you like a father or a mother or a teacher, satisfied with the influence of green spaces on your child's behavior? Blue is yes, red is maybe, yellow is no



6. The results Discussion

There was no clear or distinct difference between the answers of parents of normal children and parents of hyperactive children except in the sex of the child. It has been noted that males are more susceptible to hyperactivity and this may be due to biological reasons. What is important to the research from this information is the necessity of paying attention to children's schools and providing Green and spacious spaces for them to play and contain their motor energies. It was also noted that the interest of parents of hyperactive children in the necessity of providing time in the child's life to spend in the garden to release his energy and control his behavior. This was explained in the question: Do you take your child to the garden on a daily, semi-daily, or unscheduled basis? The interest was clear in the answers of parents of hyperactive children in taking them on an unscheduled basis. Daily and unscheduled. As for ordinary parents, it was all unscheduled

It has also been noted that there is a clear lack of interest in the importance of green spaces in schools first and homes second, and this is a major problem, as it is necessary to find an outlet for the child in school to help him regulate his behavior and control his emotions and thus focus on his lessons. At home, it is important to help him in full communication and raise him behaviorally. Balanced through his obedience, understanding, and communication with his parents and family

This is confirmed by the parents' answers, which unanimously indicate that there is a change for the better in the child's behavior after spending time in the garden

At the end of the questionnaire, a question was asked about whether there are any comments that you would like to add and enrich the research on this topic

The question was directed to parents of normal children and parents of hyperactive children. As for parents of normal children, it was answered by 12 people who were close, one of whom claimed that there should be a public park or a green area in residential neighbourhoods. If the houses are horizontal, they are small, they do not have private gardens, or do not have vertical housing. Of course, they do not have a private park and they are not in public gardens. Among them were those who demanded that care should be taken to find natural gardens within the limits of schools, whether civil or governmental. One was that he was obliged to leave his child in front of screens and smart devices, since there were no nearby green spaces, no transportation, no public transportation, and no open green space.

And The answers of hyperactive children were answered by an extremely important mother of a child, who raised an important aspect of why the green spaces of children in general and children in particular were important: Green spaces are very important for children of hyperactivity, behavioural disorder, psychological and emotional stress, especially if there is a direct contact between children and the soil, such as walking barefoot or playing with soil, to contain soil on a microbe that is very useful for nerves, such as mycobacterium vacae. The useful microbes found in the soil increase the levels of cytokin that increase the production of serotonin, known as haze hormone. Makes it rise. While low serotonin levels are directly related to depression, anxiety, OCD and bipolar disorder.

6. Conclusion

Children of hyper-mobility change or improve their behaviour after spending time in a green open space at a higher rate. Parents are satisfied with 100% of the effect of green space on their children. However, they do not have room to play and entertain in their schools or in their homes except in a small proportion, as shown in the responses presented. The impact of public green spaces in residential neighbourhoods appears to have the greatest effect in behaviour and mitigation of hyper-motion, not only because they are parks but also a gathering of people, children and families of different



classes. Children and others are given an exchange of parties to talk or play with children who do not already know them. Thus, the research recommends the importance of there being clear care and attention to this aspect, starting from home to school, by designers, and that the presence of green space is not a recreational aspect that exists for one class of society alone, but rather it is essential and almost an integral part, and its importance is like the importance of the kitchen in the home and its importance. Class at school. As for urban design, public spaces are few in Baghdad, and if they exist, there is no interest in them in some areas or others. Here, the research recommends the importance of supplementing this study with research or statistical studies on the effect of green spaces on the child's behavior or attention at home and school.

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