

## **Spatial, relative and qualitative distribution of children with autism spectrum in Hillah city for the period (2015-2020) and its causes**

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### **ABSTRACT**

Autism as it is known as autism or classic autism disorder. Some writers use the word “autism” when referring to a group of autism spectrum disorders or various pervasive developmental disorders, which is a neurodevelopmental disorder characterized by poor social interaction, verbal and non-verbal communication, and restricted and repetitive behavioral patterns. Diagnostic criteria require that symptoms become evident before a child reaches three years of age. Autism affects the processing of data in the brain by changing how neurons and their points of engagement are related and regular; this is not well understood (1). In view of the lack of population studies that investigated this topic, and the lack of study at the level of Babylon Governorate, the researchers decided to analyze this phenomenon spatially and temporally, so the subject of the research is the, relative and qualitative distribution of children with autism spectrum for the period (2015-2020) for the city of Hillah and its causes, and to know the change in the number of children with autism spectrum and to facilitate analysis and comparison at the level of years of study for the city of Hillah, and using a set of statistical methods for the researchers to believe that the city of Hillah witnessed clear spatial changes in the period between these years, the research included three topics, the first included the introduction and the theoretical and conceptual framework of the research and the second topic included the spatial, relative and qualitative distribution of children with autism spectrum in the city of Hillah for the period (2015-2020), while the third topic included the causes of illnesses of children with autism in the city of Hillah, and finally the research concluded with the conclusions reached with some proposals presented.

### **KEYWORDS**

*Please supply six to eight keywords, which apply to your paper, after the abstract, separated by comma, and capitalize only the first word after comma separator. Last keyword should end with punctuation “.”. This will assist in the preparation of an index for the Proceedings.*

### **INTRODUCTION**

Introduction following keywords should include problem background, literature review of recent papers published in journals which clearly shows what is the not yet solved aspect of the problem, followed by the hypothesis which would settle the issue. The proposed methods to prove or disapprove hypothesis should be briefly discussed, followed by resume of results achieved.

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**The first topic: The theoretical framework of the research**

**Research problem:**

1 - Is there a disparity in the percentage and size of geographical distribution of children with autism spectrum in the city of Hilla over the years from ( 2015-2020 )

2- What are the reasons that lead to children being infected with the autism spectrum in the city of Hilla?

**Second: - The research hypothesis**

1: - The proportions and size of the spatial distribution of children with the autism spectrum vary temporally in the city of Hilla.

2: - There are many factors of autism in the city of Hilla for the extended period (2015-2020) .

**Third: - Spatial and temporal limits**

The city of Hilla is located at an intersection site with a longitude of ( 26 44° )east and latitude of ( 29 32° ) north , and a geographical location of the neighboring provinces, as the city of Hilla represents the administrative center of Babylon Governorate, map (1) , which shows the administrative divisions of the governorate , which represents the urban population of the center of Hilla , which is divided into three administrative units (Hilla Center – Al Kifl District – Abi Gharg sub-district).

It also represents the administrative center of the central Euphrates governorates, which consists of the governorates of ( Karbala – Najaf – Qadisiyah – Babylon ) , as it has reciprocal functional relations that contributed to the growth and development of the city.

The city of Hilla has an area of ( 5681) hectares and a percentage of (34%) of the area of the center of Hilla, which covers an area of (16709) hectares , and the city includes (98) residential neighborhoods with a map (2) , where the municipality of Hilla has established a sectoral arrangement for the city into four sectors (the paradise sector) and carries (1) , the Fayha 'sector carries the number (2) and the peace sector carries the number (4) and the Euphrates and Flowers sector carries the number (6) .The time limits of the study are represented by the duration of the years(2015-2020) .

**Fourth: The goal of the research**

The research aims to reveal the proportions of the spatial and relative distribution of children with the autism spectrum during the years (2015-2020) as well as their variation in our times during these years . Researching and analyzing the impact of the causes on children with autism spectrum in the city of Hilla.

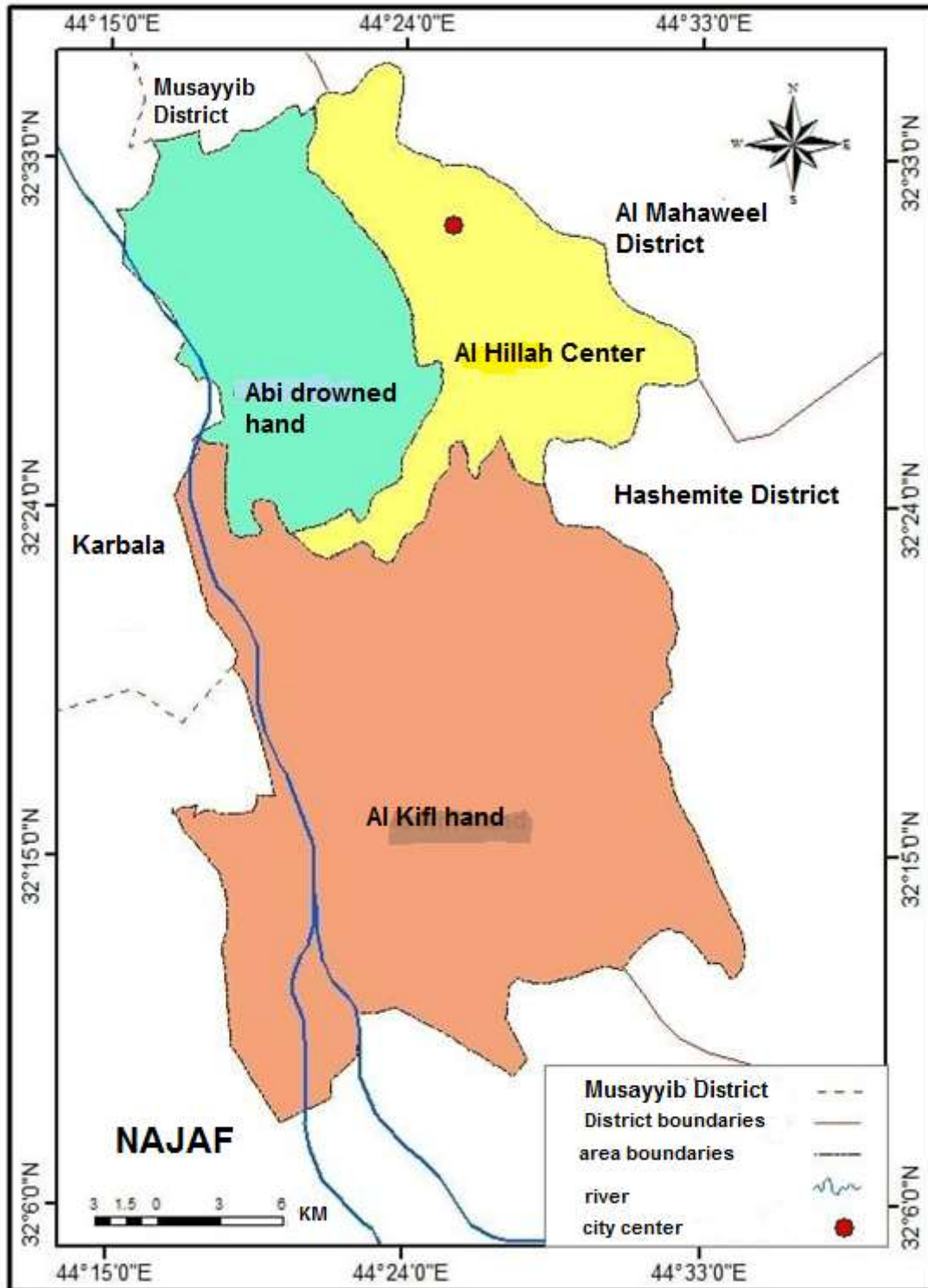
**Fifth: Research Methodology**

Researchers relied on the descriptive approach in order to identify the studied phenomenon, and the quantitative analytical approach based on distribution, analysis and linkage, enhanced by the applied study of the reality of children with the autism spectrum. In this, they relied mainly on the data of autism centers in the city of Hilla, in addition to the prevailing geographical approaches, such as the regional approach, which clearly contributed to the development of this desired scientific treatment in a way that facilitates and enables understanding, perception and logical coherence in scientific-spatial analyses with a view to a scientific and geographical methodology.

**Fifth: Research Methodology**

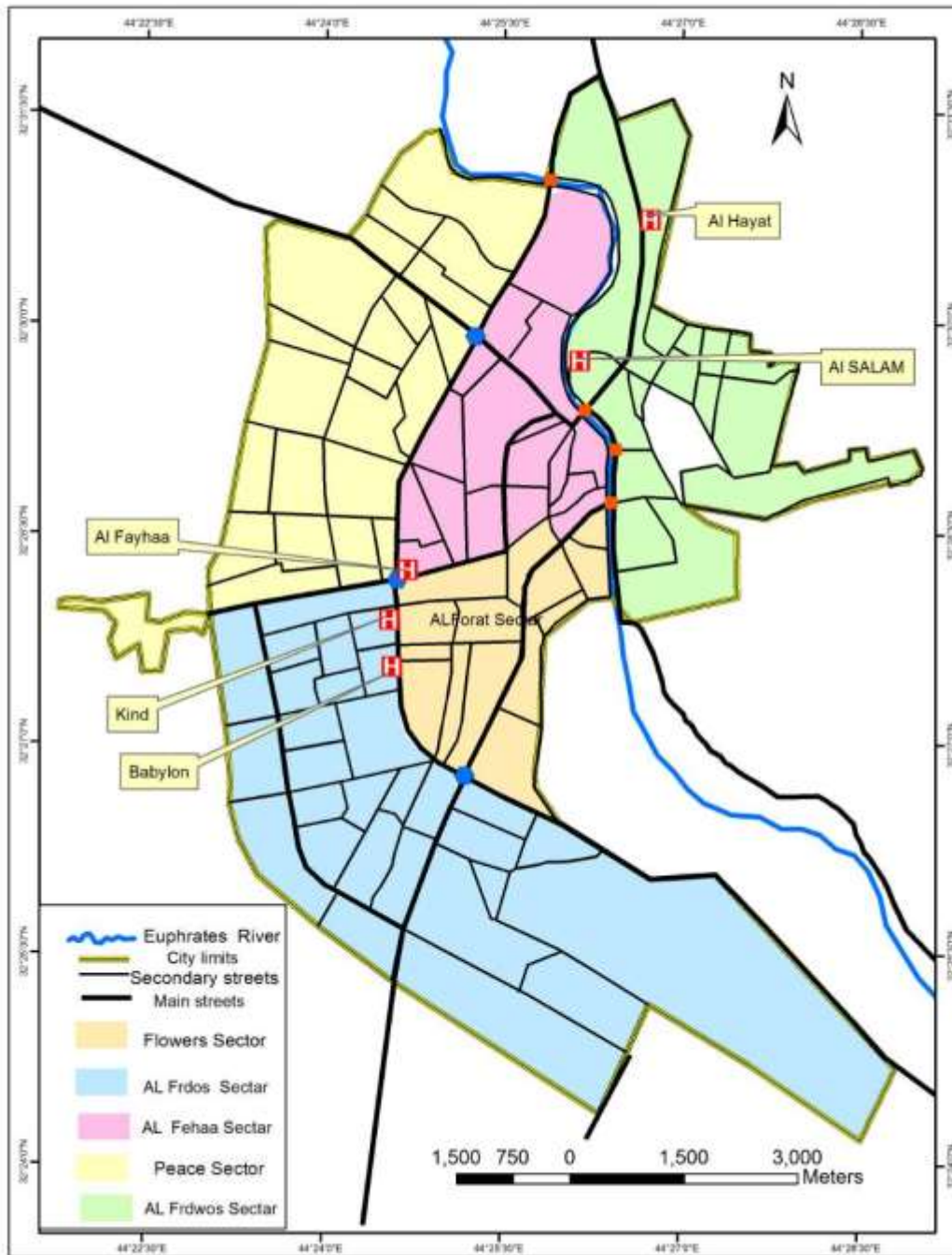
Researchers relied on the descriptive approach in order to identify the studied phenomenon, and the quantitative analytical approach based on distribution, analysis and linkage, reinforced by the applied study of the reality of children with the autism spectrum. In this, they relied mainly on the data of autism centers in the Hillah District Center, in addition to the prevailing geographical approaches, such as the regional approach, which clearly contributed to the development of this desired scientific treatment in a way that facilitates and enables understanding, perception and logical coherence in scientific-spatial analysis with a view to a scientific and geographic methodology.

Map (1) Administrative Units of Hilla District for the year 2020



Source : Based on maps, General Authority for Survey , Map Production Department, Neighbourhood Map of Hilla City, 2020 based on a satellite image of the city 2014

Map of (2) sectors of the city of Hilla for the year 2020



Source : Based on maps, General Authority for Survey , Map Production Department, Neighbourhood Map of Hilla City, 2020 based on a satellite image of the city 2014

## The second topic: - The conceptual framework of the research

### 1. The concept of autism

The term autism consists of two Greek words, the first (Aut ) means self or self and the second (Ism) means orientation or state , the term (Autism) means self-orientation or self-state, as the self is the center of concern of the individual .

Scientists have used many terms to refer to individuals who suffer from disabilities, deficiencies, defects, or anomalies of common and recognized sensory, cognitive, social, and emotional traits. Scientists have used the

term disability for a specific disease, and they have also used the word psychological or physical disability for a disorder or disorder. (2)

Autism is one of the complex developmental disorders that affect children and hinder their social, verbal and non-verbal communication. It also hinders their imaginative activity and mutual social interactions. This disorder appears during the first three years of the child's life and its symptoms are quite clear in the thirty months of the child's life, which begins to develop abnormal behaviors, repetitive patterns, and introversion to oneself. In order to understand the backgrounds of this disorder, let's quickly review the history of this disorder because knowledge of the evolutionary history of autism disorder gives us a more comprehensive understanding of the beginning of the disorder, its discovery, the stages that it has gone through, the characteristics of each stage, as well as what research and studies have found in its attempts to become familiar with all aspects of this disorder.<sup>3</sup>

Some scientists have described autism in children as a schizophrenic condition. Others have used the term childish autism in the field of clinical diagnosis because it avoids many theoretical explanations. There are many behavioral models that can occur in the field of childish schizophrenia. Autistic behavior models begin from childhood or during the first years of life. The child's behavior then develops after the age of three years. However many terms that indicate the existence of autism in the behavior of children, they represent a form of emotional disorder other than normal behavior and a type of disability for the emotional development of children, which often appears in the early years of life, which is represented by the number of abnormal deficiencies and behaviors in social and emotional development, with which the need for special education (4). The abilities and needs of people with autism vary and can evolve over time. Some people with autism may be able to enjoy an independent life, but others have severe disabilities and need lifelong care and support. Autism often affects education and employment opportunities. In addition, their families may have an increased burden of care and support. Community behaviors and the support of local and national bodies are important factors that result in the quality of life of people with autism. The features of autism can be detected in early childhood, but it is usually diagnosed at a later stage.

People with autism often experience comorbidities including epilepsy, depression, anxiety, attention deficit disorder with hyperactivity as well as intractable behaviors such as sleep difficulties and self-harm. The level of mental functioning among people with autism varies widely, ranging from severe impairment to higher cognitive skills.

Autism is clearly shown in the first three years of life. Autism is defined as a disability that hinders the development of social skills, verbal and non-verbal communication, imaginary and creative play. It is the result of a neurological disorder that affects the way information is collected and processed by the brain, causing problems in social skills, such as the inability to associate and create relationships with individuals, the inability to play and use leisure time, and the inability to conceive constructively and conceivably.

## **2. Prevalence of autism disability globally**

The prevalence of autism is estimated at approximately 4 - 5 classic autism cases per 10,000 births and 14 – 20 ( Asperger ) autism cases are more efficient and more common in boys than girls, i.e. by a ratio of 1:4 . Autism has a normal life cycle and some behaviors associated with infected people may change or disappear over time. Autism exists throughout the world and in all ethnic and social strata of families . Based on the global ratio, there are at least 30,000 cases of unification and in most cases more than 42,500 cases in the Kingdom of Saudi Arabia, which is an unofficial statistic to estimate the volume of support services required to be provided to the monotheists and their families).<sup>6</sup>) Autism prevalence in the United States is about one in 59 children, according to a 2018 CDC report.<sup>(7)</sup>

### **3- Types of Autism Disorder :**

There are five disorders as mentioned in the manual Diagnostic and Statistical Manual of Mental Disorders ( DSM-IV), which are as follows :

#### **First : Classical Autism (8)**

It is a spectral disorder type that affects children from the first months of the child's life to the age of (6 ) years. If he/she undergoes treatment, it can improve , and some specialists tend to call it autism that meets all the symptoms , and those with classic autism disorder show a clear weakness in basic aspects. It is : Poor interaction and social relations with others, poor communication skills, language, specific interests and repetitive movements.

#### **Second : Asperger's Disorder:**

Individuals with Asperger's disorder suffer from difficulties in social relations and deficiencies in social skills, but it is more interested in and surrounded by the surrounding social environment, and seeks to interact with others. It also shows an interest in making friendships , until the inability to understand the rules of social relations and the inability to apply them and the inability to interpret the emotional signals issued by others , and leads many to describe them as people with strange behaviors that are difficult to deal with.

#### **Third : Rett's Disorder:**

It is a neurodevelopmental disorder that appears only in females. It is one of the rare disorders that affects one child in every 15,000 births. This disorder appears after a period of normal growth. This type of disorder is called Rett disorder, according to the discovery of the doctor (Audreas Rett) in 1966, when he conducted a study on a group of female children who had undergone a normal growth phase in the first months of their lives , and then

showed them a deterioration in most aspects of growth. The characteristics of Rett's disorder are accurately described as one of the most severe disorders of that group in terms of its impact on the individual and loss of the ability to retain his experiences, and the skills he learned such as walking and speech (9)

Fourth: Childhood Disintegrative Disorder:

This disorder in children is one of the rarest cases, it happens for every (1-100000) birth, and it affects males more than females, as the child with regressive childhood disorder grows naturally and for a long period of time, in terms of the growth of cognitive abilities, the growth of his motor and social skills, and his ability to fulfill his own need until he reaches the age of reality between (3-5) years, and sometimes until he reaches (10) years, after which the child begins to deteriorate significantly and his condition may deteriorate within months or even a few weeks, during this stage the child loses skills he has previously acquired such as speech and social skills, and may even lose control of urination and defecation, and the child also gets dumb and loses the desire to play, and he has some repetitive movements regularly.

**Fifth : Unspecified overall growth disorder :**

Pervasive Developmental Disorder Not Otherwise Specified

Unspecified developmental disorder is also known as atypical autism, and it is usually the most diagnosed disorder among comprehensive developmental disorders. This disorder is diagnosed when there are some features of autism, but not enough to diagnose it with autism. Despite the difficulties faced by people with unspecified comprehensive developmental disorder in terms of social and linguistic interaction, non-verbal communication and play, they are less severe symptoms of autism, and they still have the ability to interact socially to a degree that prevents their diagnosis of autism(10).

#### **4- Causes of Autism**

The cause is still unknown until now, as researchers identify different interpretations of multiple autism cases, and although no one specific cause of autism has been found, current research links it to biological or neurological differences in the brain. It appears through the analysis of magnetic radiation images (mri) There is a difference in the brain structure of the autistic child that emerges more prominently in the part responsible for involuntary movements of the body, and it seems in some families that there is a pattern of autism or related disorders, which suggests the existence of a genetic cause of autism cases, knowing that none of the genes has been linked to autism, and it has recently been proven that many old theories related to the causes of autism have failed, as it is not a mental illness, and autistic children are not children who have chosen to deviate from the rules of desirable behavior, and autism does not occur as a result of poor parenting their children, and it has not been proven yet that any of the psychological factors that the child undergoes during his development on his stages of autism. (11)

We are here not to break old hypotheses about the causes of autism, but to emphasize new causes leading to autism as much as to give an overview of the causes that have been confirmed, including :

##### **1. Genetic factors**

Autism has caused a genetic disorder, and more research indicates the presence of a genetic factor that has a direct impact on the incidence of this disorder, as the incidence of identical twins (from one egg) increases from fraternal twins (from two different eggs).

##### **2. Immune factors**

Some evidence suggests that some inappropriate maternal and foetal immune factors may contribute to autism disorder, and the lymphocytes of some children with autism are affected as embryos by maternal antibodies, a fact that raises the possibility that foetal tissue may be damaged during pregnancy.

##### **3. Neurological factors**

Some autistic children show a distinctive defect or difference in the EEG, and that there are deviations in the shape and rhythm of the EEG in about (50% - 80%) of the sample used by autistic children.

##### **4. Biochemical agents**

There is a relationship between autism and neurochemical factors, in particular to disorders of dysfunction, deficiency or increase in the secretions of neurotransmitters that transmit neural signals from the five senses to the brain or orders from the brain to different organs of the body or muscles of the body and skin (12).

##### **5. Other factors**

The mother's infection with infectious diseases, as exposure to infectious diseases, especially the pregnant mother, or the child's exposure to them at the beginning of his life, or during his first year, is likely to be one of the causes of autism (13).

**The third topic: - The spatial and relative distribution of children with autism spectrum in the city of Hilla for the period (2015-2020) and its causes.**

**First: - The geographical and spatial distribution of children with autism spectrum by type in the autism centers of the city of Hilla for the period (2015-2020)**

Modern applied geographical studies in the field of service geography focus on paying attention to the geographical distribution of public services that an individual needs in his daily life in order to provide the best services to him with ease. The city of Hilla includes (4) autism centers, as shown in Table (1) Autism centers are considered to be of importance as a pillar for the population and their role is to provide preventive, therapeutic and educational services to children with autism spectrum.

Through the data of the table, it is clear that there is a clear increase in the percentage of males with autism in the centers and institutes for the period (2015-2020) and in varying proportions, respectively, while the percentage of females with autism spectrum decreases. This reason can be attributed to the combination of the high level of pregnancy and the risk of childbearing in their health conditions, and the emergence of variation in the percentage of males at the level of the years of schooling (2015-2020) for the autism centers, and it is clear from the analysis of the data of the table, the extent of variation between the centers and autistic institutes with regard to autism children (males and females). Their highest numbers were in the (Babylon Specialist Institute) for the period (2015-2020), respectively, and their lowest proportions were recorded in the Institute of (Rwanda - Ruqa). The reason for this increase in the rates of children with autism spectrum for both sexes is a clear increase in the level of medical, therapeutic and educational services provided to them, and the field study showed that most autistic children are from the districts and sub-districts of Babylon and outside the province.

Table (1) The spatial geographical distribution of children with autism spectrum by type in autism centers to spend the period (2015-2020)

Years	Husayn ibn Ali			Babylon Specialist Center			Institute of Rwanda			Rokaya Institute		
	Number of infected children			Number of infected children			Number of infected children			Number of infected children		
	Male R	Females	Total	Male R	Females	Total	Male R	Females	Total	Male R	Females	Total
2015	32	15	47	19	11	30	0	0	0	0	0	0
2016	40	20	60	37	18	55	0	0	0	0	0	0
2017	36	20	56	36	25	61	0	0	0	0	0	0
2018	38	25	63	53	35	88	0	0	0	0	0	0
2019	39	21	62	61	33	94	0	0	0	12	8	20
2020	33	18	51	65	40	105	35	28	63	25	18	43

Source: Based on

- Centers and institutes for children with autism spectrum, unpublished data, Babylon-Hillah, for the period (2015-2020)
- Field study

Second: - The spatial and relative distribution and number of births of children with autism spectrum by type for the period (2015-2020)

Global estimates suggest that 1 in 160 children develop autism spectrum disorders. These estimates represent the number of cases on average, and their prevalence rates vary greatly according to studies, some recent studies seem to report much higher prevalence rates).16) When tracking cases of autistic children registered in the study area. For the years (2015-2020), and based on what was stated in the data of autism centers and institutes recorded, it is clear through the analysis of the data of Table(2) and Figure (2) that they recorded fluctuating and varying rates at the level of the years of schooling so that they are limited between the lowest rate of (4.5) per thousand for the year (2015) and the highest rate of (16) per thousand for the year (2019), and the numbers and percentages of autistic children vary between males and females and are often higher in males than in females, and these rates are higher when compared to global estimates. By analyzing the data of Table (3) that the number and percentages of children with autism spectrum in centers and autism institutes in the city of Hillah are varied and fluctuating for the period of (2015-2020), it recorded the highest number in (2020), reaching (262) and (174) children in (2019) and (121) children in (2018), and (117) children in (2017), reaching (105) children in (2016), and (77) children in (2015). There are several reasons, including the large number of autism centers and institutes and the diversity of their treatment programs, as well as increased accuracy in diagnosing the autism spectrum and tracking children at early stages of life and increasing demand for them. In addition to the deterioration of health services and medical care and their underdevelopment in terms of not expanding the establishment of infrastructure that contributed to delaying the provision of medical, social and health services to mothers and their care during pregnancy, as well as the concentration of population, which led to an increase in fertility in them in addition to the high rate of marriage, especially the increase in early marriage, and the low level of education of parents.

In order to determine the size of autistic children by gender, the data of autism centers and institutes in the city of Hillah were relied on for the period of (2015-2020), as the number and percentages of male children were much higher than that of females, as Table (2) and the graphic figure (2) show the emergence of variation in the percentages of children with the male autism spectrum at the level of the years of schooling, as the highest number and percentages of male children were (112) and (158) and (21, 29.8) for the years (2019) and (2020) respectively, and the lowest number and percentages of male children were (51) and (9.6) for the year (2015). As for the number and percentage of female children, their number was the highest at (105) and (62) and by (13, 8.5) for the years (2020) and (2019) respectively, and their lowest rate was (26) and by (7.8) for the year (2015). The

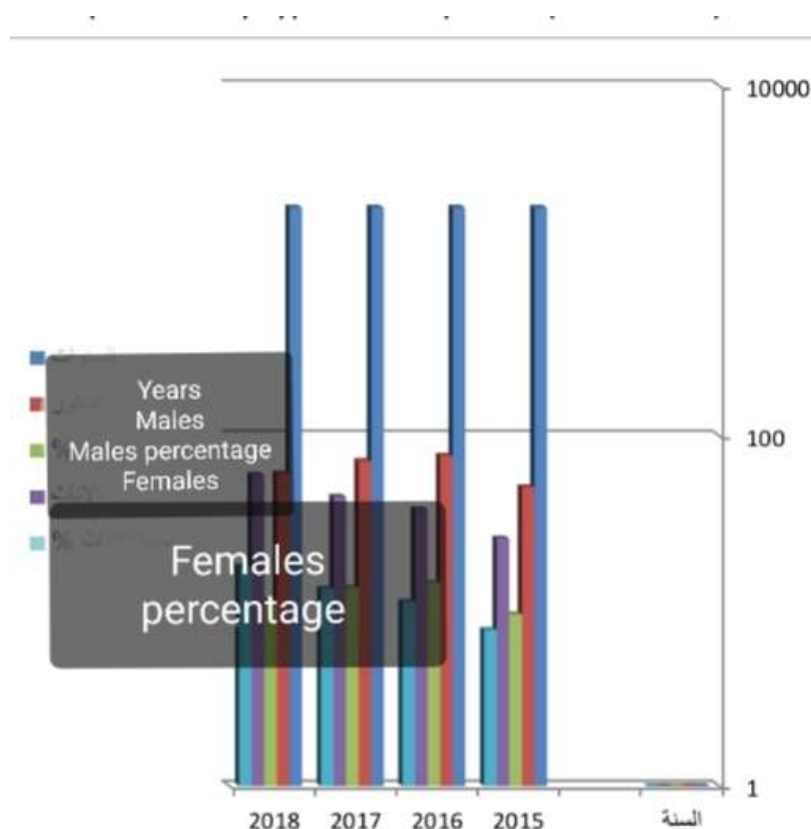
difference is clear in the number and percentages of male children to female children of autism in all years of schooling. The reason for this difference in the number and percentages of children of autism between the sexes is due to a number of influences, including those related to the nature of male formation, as a greater proportion of male children suffer from a defect in the foetal environment, as well as biological factors, where the male foetus is accompanied by a tail chromosome that generates foetal weakness and makes it more susceptible to birth defects and disabilities.

Table(2) The spatial and relative distribution of children with autism spectrum by type for the period (2015-2020)for the city of Hilla

Year:	Number of children with autism spectrum				Total autism spectrum	Number of births	Rate of children with autism spectrum / number of births per thousand
	Males	Percentage of males %	Females	Percentage of females%			
2015	51	9.6	26	7.8	77	16759	4.6
2016	77	14.5	38	11.3	105	16273	6.5
2017	72	13.6	45	13.4	117	19312	6
2018	61	11.5	60	18	121	19935	6
2019	112	21	62	18.5	174	20443	8.5
2020	158	29.8	104	31	262	16414	16
Total	531	100	335	100	866	109136	8

Source: Based on

- Centers and institutes for children with autism spectrum, unpublished data, Babylon-Hillah, for the period (2015-2020 )
  - Field study
- Figure (1) The spatial and relative distribution of children with autism spectrum by type for the period (2015-2020)for the city of Hilla





- Source :Dependence on table data (2)

**Second: - The spatial and relative distribution of children with autism in 2020**

Unfortunately, the prevalence of autism spectrum disorder is difficult to measure for a number of reasons, including population awareness and choice of studies and diagnostic capabilities, as well as multicultural appropriateness and susceptibility to screening, measurement standards and data on epidemic diseases. As well as the positive relationship between the disease and the high social and economic situation. There are several global initiatives that aim to raise awareness of the autism spectrum and improve patient care. In response, several international associations interested in child neuroscience collaborated in a global workshop involving 14 African countries in 2014. One of the most important results of this meeting was the establishment of a virtual network of disorders called the "Global Research in Autism and Neurodevelopment" network (GRAND), which was funded by the Shirley Foundation in the United Kingdom with the aim of supporting pilot projects in the field of autism research such as the Global Mapping for the Treatment of Autism and Neurodevelopmental Disorders project.

The study of the spatial and relative distribution of the population of any region according to its administrative units is one of the most widespread and used methods, as it shows the percentage of the total population that affects the administrative unit. These percentages may clarify the importance of the place and its development of that importance in a certain period and its difference in time and space, and the role of geography is determined by analyzing that importance and explaining its causes, development and change depending on the data of different censuses<sup>(15)</sup>. Table 3) and Figure (2) indicate that the spatial and relative distribution of autistic children in the center of Al Hillah District varies over the period (2015-2020), and it is clear from the analysis of the data of Table(3) for the year (2020) that the spatial distribution of children with the autism spectrum in centers and autism institutes clearly varies. The Babylon Specialist Center continued to occupy it in the first place, with the number of children with the autism spectrum reaching about (105)children and a percentage of (40%). The Institute of Rwanda ranked second, with the number of children with autism reaching about (63) children and a percentage of (24%). The third place was represented by the Imam Hussein Institute and the Ruqqa Institute, with about (51) (43) children and a percentage of (19.5.16.5%) respectively. The Babylonian Specialist Center captured the highest number of spatial and qualitative indicators for children with autism for 2020 and its continuity, as it includes two most famous cadres in the presence of Babylonians, which work can be supported by a large number of volunteers in the Center's progression programs. The reason is also that the specialized center has all the therapeutic and educational means, which made it a focus for attracting autistic children coming to it from inside and outside the governorate. Table (3) shows that the qualitative categories witnessed an increase in the number of males in autism centers and institutes. For the year (2020) and the extent of variation between autism centers with regard to male children, the highest number was attributed to them in the Babylon Specialist Center, it reached (65) children, and the lowest rate was recorded in the Institute of Raqqa, which reached (25) children. The reason for this decrease is for those with autism spectrum in the number of males in the Rokaya Institute, which dates back to its establishment in (2020 ). No numbers were recorded in previous years, and also the Institute is at the beginning of development and receiving children of autism who come to it .As for the number of females, the highest number of females was recorded in the Babylon Specialist Center, reaching (40) females, while the number of females in the Imam Hussein Center and the Ruqqa Institute reached the lowest numbers, reaching (18,18) females, respectively. The reason for this increase in the number of autistic children for these autism centers and institutes for both sexes is due to a number of influences, including health and related to the nature of health care provided to autistic children and the correspondingly large increase in growth, which lacks health institutions, and a clear lack of medical services, as well as the environment and its negative effects on human life.

Table (3) Geographical distribution of autism centers and the number and percentages of children with autism spectrum in the city of Hilla for the year (2020)

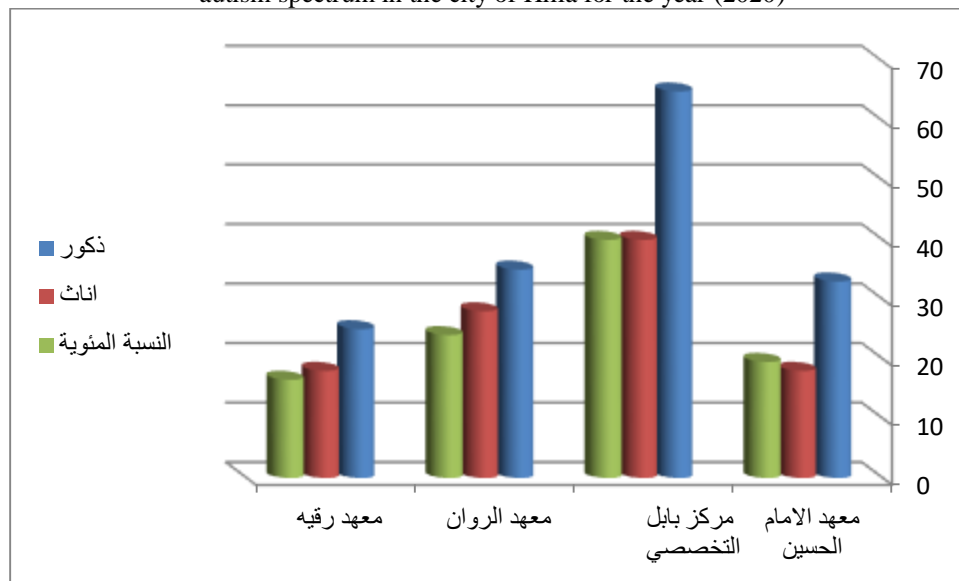
No.	Name of the center or institute	POSITION	Number of children with autism		Number of children with autism	Percentage of children with autism %
			Male	Female		
1	Husayn ibn Ali	Al-Askan District	33	18	51	19.5
2	Babylon Specialist Center	Warrior Quarter	65	40	105	40
	Institute of Rwanda	Association Neighborhood	35	28	63	24
4	Rokaya Institute	Al-Imam District	25	18	43	16.5

Total	158	104	262	100
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Source: Based on

- Centers and institutes for children with autism spectrum, unpublished data, Babylon-Hillah, for the year(2020)
- Field study for 2020

Figure ( 2) The geographical distribution of autism centers and the number and percentages of children with autism spectrum in the city of Hilla for the year (2020)



- Source :Dependence on table data (3)

#### Fourth: - Causes of autism spectrum appearance in children of the city of Hilla for the period (2015-2020)

The study of the causes leading to children's autism spectrum is one of the important topics that have attracted the attention of researchers for their primary role in knowing the impact of each case accurately on children with autism, giving indicators that serve the health reality, and making good health plans based on this reality, and showing the extent of the impact of different causes on children of different ages. The analysis of the causes of autism according to infected children in the city of the suit is of great importance because it diagnoses the nature and type of the influential cause. Available scientific evidence suggests that there are factors likely to increase a child's risk of developing ASD, including environmental and genetic factors. Available epidemiological data show conclusively that there is no causal relationship between measles, mumps, rubella and autism spectrum disorders. Previous studies suggesting this relationship were found to be full of methodological flaws ,and there is also no evidence suggesting that any other vaccine for children may increase the risk of ASDs. The conclusion resulting from an examination of evidence of the potential relationship between thiomersal preservatives and aluminium-containing adjuvants in inactivated vaccines and the risk of autism spectrum infection clearly indicates that vaccines do not increase the risk of autism spectrum disorders. In 2017, a study published in the American Journal of Public Health found that children with autism are 40 times more likely to die from a preventable injury in the general child population. Asphyxiation and drowning are among the leading causes of fatal injuries among people with autism. A 2019 study of more than 650,000 children showed that the measles, mumps and rubella vaccine does not increase the risk of autism, nor does it lead to autism in children at risk. Some signs of ASD appear on children in early childhood, such as lack of eye contact, lack of response to naming, or carelessness of caregivers. Other children may grow up naturally during the first few months or years of life, but they suddenly become introverted or aggressive or lose the language skills they have already acquired. It is difficult to identify autism spectrum disorders in a child before the age of 12 months, but they can generally be diagnosed at the age of two, and a characteristic feature of the emergence of the disease is its delay or temporary decline in the development of its linguistic and social skills. (19) Autism spectrum disorder is associated with genetic factors that may contribute - about (30%) of the infection rate, and environmental risks contribute to the prenatal stage; such as the advanced age of the father or mother, metabolisms and chronic diseases in the mother, air pollution and exposure to pesticides, and low birth and prematurity weight all contribute to autism spectrum disorder as part of the larger overall risk of nervous system injury.

In order to stand up and identify the relative importance of these reasons for autism in the city of Hilla and within its time frame, the main types of reasons for autism mentioned in the autism centers were relied upon. As for the genetic aspect, opinions differed, some of them due to the marriage of relatives and some of them due to pregnancy diseases (tetanus, German measles, dental rays, and the use of insecure medical drugs, as well as the lack of vitamins and low oxygen in the blood ). Since the current research was an attempt to detect the causes of autism, and after the researchers were exposed to the literature on the research variables, in addition to the field

visits to the autism centers in the city of Hilla, it became clear that there is an inclusive agreement between the specialized scientists to not reach the main direct causes that cause the challenge.

### Conclusions

- 1- The autism spectrum is a disorder whose symptoms are known and unknown, and this is what makes us helpless in front of it because of our inability to prevent it.
2. The research showed that the total number of children with autism spectrum in the study area reached (866) children distributed over the years (2015-2020) and was characterized by variability and fluctuation. The period between ( 2018-2020 ) witnessed an increase in the number and percentage of children with autism spectrum.
- 3 - The number and percentages of autistic children were characterized by variation and fluctuation at the level of autism centers and institutes for the year(2020), as the number increased in the Babylonian Specialist Center, reaching(105) children, and the lowest number of his number was recorded in the Institute of Raqqa, reaching (43 )children ,but by type, the proportions of male autistic children compared to female autistic children were more high for them in the Babylonian Specialist Center.
- 4- It was found that the number of autistic children according to gender. The research revealed the superiority of male autistic children compared to female children, as it reached its highest height for the year (2019-2020).
- 5- The causes of diagnostic conditions of children with autism spectrum vary at the level of autism centers and institutes spatially and temporally for the years( 2015-2020) .
- 6- The ratios and numbers of children with autism in the city of Hilla vary spatially and temporally at the level of autism centers and institutes. The Babylon Specialist Center ranked first in the ratios and numbers of autism children for the years 2015-2020.

### Suggestion

1. Detection, early diagnosis and access to services for children as soon as possible;
- 2- Children with autism need complex health care and a set of integrated services that include health promotion, care and rehabilitation. It is important for the health sector to cooperate with other sectors, particularly education, labour and social welfare.
- 3- Conducting studies that include the entire governorates of Iraq or the central Euphrates governorates, whether at the regional or local level, and providing social and psychological support and care to families affected by autism spectrum disorders.
- 4-Establishing free government centers specialized in the autism spectrum, distributed in proportion to the size of the population in each administrative unit in the governorate.
- 5- The establishment of centers in medical colleges specialized in the autism spectrum similar to those in international universities.
- 6.Presentation of state-of-the-art scientific research and policy assessment and analysis on journals of interest for autism and neurodevelopmental disorders
- 7 Provide those suffering from autism and other neurodevelopmental disorders with the opportunity to obtain a general education with the aim of integrating them into society.
8. Formation of a cooperative co-leadership under the supervision of the Ministry of Public Health, Education and Social Services with the authorization of the Government to develop and update national plans and programmes for unification .

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