Assessment of The Risk Factors Affecting Children with Autism Spectrum Disorder in Kurdistan Region at Sulaimania City: Parental Perceptions

تقييم عوامل الخطورة المؤثرة على الأطفال المصابين بالتوحد في اقليم كوردستان \ مدينة السليمانية/ ادراك الوالدين

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الخلاصة

خلفية البحث: نظرا لقلة الأبحاث الطبية التي تناولت مرض التوحد عند الأطفال فقد حاولنا دراسة بعض عوامل الخطورة التي قد تمتلك علاقة معنوية مع هذا المرض من خلال إستخدام إسلوب إحصائي لتحليل البيانات.

الهدف: دراسة و تحليل بعض عوامل الخطورة التي قد تمتلك علاقة معنوية لمرض التوحد عند الاطفال من خلال إستعمال التحليل العامل (طريقة المركبات الرئيسة) كإسلوب إحصائي مناسب لتحليل بيانات عينة الدراسة.

المنهجية: اجريت الدراسة مقطعية وصفية ل (120) أسرة لأطفال يعانون من مرض التوحد باستخدام الاحصاء اليدوي للاختلال التطوري (DSM-5) وتم جمع البيانات من خلال مقابلة أب أو أم الطفل المصاب وتوجيه الأسئلة بشكل مباشر لهم في مدرسة خاصة يرتادها الاطفال في مدينة السليمانية وللفترة الممتدة من (تشرين الاول 2015 وإلى حزيران 2016). وتم تحليل البيانات من خلال إستعمال طريقة (المركبات الرئيسة للتحليل العاملي) لبيان أكثر عوامل الخطورة معنوية التي تمتلك تاثير معنوي على مرض التوحد عند الاطفال.

النتائج: أظهرت خصائص البيانات الإجتماعية الديموغرافية للأم أن متوسط عمر الأم كان (28.95 سنة، انحراف معياري ± 6.320) وكان متوسط عمر الأب (34.10 سنة، انحراف معياري ± 6.475). أظهرت العوامل السابقة للولادة أن أكثر من نصف (59.2٪) منهم كانوا يعيشون في حالة عاطفية غير سعيدة جدا، والتي تقدر كمكون أساسي يؤثر على التوحد. وفيما يتعلق بالعوامل المحيطة بالولادة، أكثر من نصف الأطفال ولدوا من خلال العملية القيصرية وتم إختيارهم كعوامل أكثر فعالية تؤثر على التوحد جنبا إلى جنب مع الولاده باستخدام التحفيز نتيجة المخاض الطويل. وأظهرت عوامل الفترة المحيطة بالولادة أن أكثر من نصف (55٪) من حديثي الولادة تأخروا في البكاء بعد الولادة و تم الاخبار عنه منذ البداية، ولم يعاني سوى (34.2٪) من حديثي الولادة من ضيق التنفس حيث يحتاجون إلى الأوكسجين غالبية الأطفال حديثي الولادة (61.7) تأثرت باليرقان.

الإستنتاج: أستنتجت هذه الدراسة أربعة عوامل رئيسية مثل المعلومات الاجتماعية-الديموغرافية للام، قبل الولادة، فترة ما حول الولادة وحديثي الولادة، تتشارك في تحديد العوامل المشتركة التباين مع العناصر الأخرى.

التوصيات: توصي الدراسة بوجود حاجة إلى الكثير من العمل لتصنيف انواع معينة من التوحد. وبالإضافة إلى ذلك، هناك حاجة إلى مزيد من الدراسات التطبيقية من أجل تعزيز صحة الأطفال المصابين بالتوحد ونوعية حياة أسرهم.

ABSTRACT

Background: There is a lack of research in the assessment of autism risk factors affecting children in the Kurdistan Region.

The aim: The present study has been carried out to find the parental perceptions about socio-demographic, prenatal, perinatal and neonatal factors associated with autistic children.

Methodology: A descriptive cross sectional study was conducted in 120 autistic children's families, where their children diagnosed using the diagnostic and statistical manual of development disorder (DSM-5) (either mother or father) attending special school in Sulaimania city during October 2015 to June 2016. Factorial analysis (principal component analysis) was used in order to identify the effective factors affecting autism.

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Results: The characteristic of mother's socio-demographic data showed that the mother's mean age were (28.95 years, SD ± 6.320) and father's mean age was (34.10 years, SD ± 6.475). Prenatal factors showed (43.3%) were used medications while they were pregnant with their children. Mor than half (59.2%) of them were living in a very unhappy emotional status, which estimated as a second principle component affecting autism. Regarding the perinatal factors, more than half of the children were delivered through c/s and selected as the most effective factors affecting autism along with a prolong and induce labor. Perinatal factors showed more than half (55%) of the neonate were delayed in crying after delivery and reported in the first principle component and Only (34.2%) of the neonate were suffered from respiratory distress that they needed oxygen. The majority of the neonate (61.7) was affected by the jaundice.

Conclusion: Overall, this study demonstrated four key factors such as, mother Socio- demographic, prenatal, perinatal and neonatal, each part has some factors shared common variance with other items.

Recommendations: Much work will be needed to classify the specific types of autism. In addition, more applied studies are required in order to enhance the autistic children and their families quality of life

Key words: Autism in children, risk factor, prenatal, perinatal, postnatal, neonatal factor.

Introduction

Autism Spectrum Disorder (ASD) is a group of the disorders that occur in the Neurodevelopment, characterized by a variety of behavioral impairments such as social interaction, verbal and nonverbal communication, absence of imaginative play, a pattern of repetitive, and stereotyped behaviors [(1)] .The new government survey of parents, reported that 1 in 45 children, ages 3 through 17 years have been diagnosed with autism spectrum disorder (ASD) in the United States. According to the survey item of 2014, which conducted to determine the prevalence of all developmental disorders through the parent's perception, reported that since 1997-2010 Autism involved as one of the ten developmental disorder conditions checklist [(2)].

It has been known that autism is potentially originates in the early month of pregnancy [(3)] and typically occurs in early childhood and diagnosed depending on the children's manifestations at age 3 years old [(4)]. Atypical autism, Asperger disorder, Rett disorder, childhood disintegrative disorder, and pervasive developmental disorder are also included as the other types of the autism spectrum disorders [(5)]. The etiology of autism is still poorly understood. However, genetic and environmental factors lead to its development [(6)]. It has been investigated that there is an association between prenatal, perinatal and neonatal factors in terms of increasing the risk of having autism in children. Genetic and environmental factors are likely to play a causal role in affecting the presence of autism in children [(7)]. Regarding prenatal risk factors, 190 have children were participated with and without autism in the case control study to investigate prenatal and perinatal factors for autism in China, they found that maternal smoking and second-hand cigarette smoke exposure, alcohol consumption, exposure to X-rays, spend too much time working on computer, use of tocolysis therapy, attempt to terminate pregnancy, contact with toxins, also emotional state, disease history and medication history plays a major role to increase the risk of Autism in children as maternal characteristics and behaviors during pregnancy [(1)]. Further, maternal acute and chronic disease history during pregnancy, such as thyroid gland related conditions, epilepsy, mental illness, diabetes, heart disease, hypertension, viral influenza, urticaria, convulsions, serious anemia, and type-B hepatitis are also might affect the pregnant women to have an autistic child [(8)]. A recent study found that parental age plays a significant role in developing the children with Autism for instance the mother aged over 40 years are more likely to have children with autism than those aged 20 years old and also father aged 50 years are 60% more likely to have children with autism [(9)].

A population based case control study was carried out among 429 children aged between 24 and 60 months with ASD, autism and typical development in California, Davis Medical Investigation of Neurodevelopmental Disorder to determine the effect of mother intake of folic acid before and during pregnancy and the incidence of autism in children in the period from 2003 to 2009. They quantified the average intake of folic acid for each mother and found that folic acid intake was significantly lower for those mothers who have ASD children [(10)]. Another study also supported this finding suggested that taking folic acid during the earliest stages of pregnancy could lower a child's chance of developing autism by nearly 40 percent [(11).] Therefore, Peri- conception of folic acid intake is necessary for fetus neuron-development.

In the retrospective longitudinal study, conducted between 1995 and 2009 in California, found that the mother who developed gestational diabetes before 26 weeks of pregnancy were at a 63 percent increased risk of having children diagnosed with autism spectrum disorder [(12).]

With regards to the perinatal factors in association to the autism, study found that 67-69 Murray and Harvey out of 70 are vulnerable to develop the 3 regions in the brain. Hence, hypoxia to the fetus may consider as a major risk factor for neuropsychological and neuropsychiatric disturbances [(13).] Further, some other risk factors been considered as a perinatal risk factors such as infant gestational age at birth, fetal nuchal cord (umbilical cord wrapped around neck), cesarean delivery, breech birth, and newborn complications: birth weight (in grams), delayed crying and abnormal skin color due to hypoxia, apnoea, aspirated pneumonia, intracranial hemorrhage, scleredermaneonatorum, neonatal jaundice, febrile convulsion, congenital malformations, anoxic encephalopathy, congenital rubella, and gastrointestinal diseases [(14).]

Objectives:

The aim of this study is to identify some prenatal and perinatal and neonatal history obtained from the mothers who have Autism children. This study's aim will address the following objectives:

1. Determine the effect of socio-demographic factors for autism in children
2. Examine the effect of prenatal factors on autism in children
3. Find out the effect of perinatal factors on autism in children
4. Identify some neonatal factors affecting autism

SETTING

The study has been conducted in Special Education Schools for learning disability children, which also includes children with Autism Spectrum Disorder

Methodology

A descriptive cross sectional study was conducted at a special school for Autistic children at Sulaimania City. A structured interview has been applied to the mother of diagnosed autistic children using a validated self-administered questionnaires based on the epidemiological; risk factors of ASD in children after a comprehensive review of literature in order to reach the study's objectives. A questionnaire was developed and administered to a convenience sample of 120 Mothers or father who have an autistic child in Sulaimania city.

The questionnaire included three factors; prenatal factor, perinatal factor and newborn factors depending on the parent's perspective.

Procedure

Data was obtained from (120) enrolled either mothers or fathers who registered their children to this school from October 2015 to Jun 2016. The permission was taken from the school first, then we took a telephone number for each family in order to get their agreement orally to participate in our study. Interviews were conducted individually with each in respondents' homes, with telephone follow-up if needed. The data were about the prenatal, perinatal and neonatal factors affecting Autism using a structured informant questionnaire. The questionnaire was designed through probable risk factors of Autism obtained from an extensive review of literature to report the mother's perception. Some relevant factors have taken into consideration, which are parental age at birth, exposure to environmental toxins during pregnancy, using medications in pregnancy, intrauterine infections, risk of miscarriage, fetal complications during labor and delivery, birth weight, APGAR score, mental and motor development during infancy. The use of medication during pregnancy, a high risk of miscarriage, fetal complications during labor or delivery and a low APGAR score.

Analysis of Data

IBM, SPSS Statistics version. 21 was used to enter and analyze data. Descriptive analyses were achieved calculating frequency, mean, mode, median, standard deviation of the demographic data. To discover how risk factors (mother socio-demographic, prenatal, perinatal and neonatal) influencing a child with Autism, analysis of correlation matrix by using factorial analysis (principal components analysis) were achieved. To identify the appropriateness of the factorial analysis technique significant at (less than 0.05) to our data two statistical techniques KMO and Bartlett's Tests was used.

RESULTS:

A. Socio demographic factors affecting children with Autism Spectrum Disorder

1. Parental age

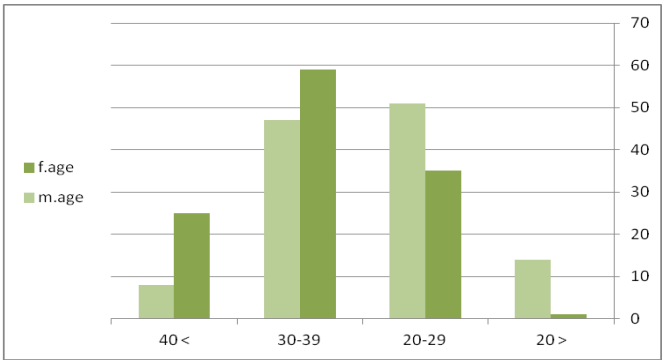

Figure 1 shows that the majority of the most her's aged were between (20-29) and father's age between (30-39).

Table (1): The variances and Total variance of socio-demographic factors

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance
1	1.711	42.777	42.777	1.711	42.777
2	1.478	36.954	79.731	1.478	36.954
3	.517	12.927	92.658		
4	.294	7.342	100.000		

Table 1.1 Rotated Component Matrix

Factors	Component	
	1	2
Mother age	.137	.870
Father age	-.069-	.896
Mother Educational level	.906	-.029-
Occupation	-.880-	-.094-

Table 1and 1.1 shows two socio- demographic factors affecting the presence of autism in children using the correlation matrix analysis, among risk factors by using (principal component analysis PCA). The analysis indicated that two in fourth items were eliminated are as follows:

The first principal component is the educational level of the mother, it represents the most effective factor, which explained the variance equal to (42.78%) from the total cumulative variance (79.73%) in loading value equal to (0.906) followed by occupation factor, as the other most effective risk factor in loading value equal to (-0.88).

The second most Common factor effect on Autism disease and it's occupied variance value equal to (36.954%) from the total cumulative variance (79.73%) and includes two risk factors: father' age risk factor in loading value equal to (0.870) and mother 'age risk factor in loading value equal to (0.896).

2. Prenatal factors affecting autism

Table (2):The variances and Total variance

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance
1	2.690	16.813	16.813	2.690	16.813
2	1.906	11.914	28.727	1.906	11.914
3	1.601	10.008	38.735	1.601	10.008
4	1.348	8.426	47.161	1.348	8.426
5	1.318	8.235	55.396	1.318	8.235
6	1.102	6.890	62.286	1.102	6.890
7	1.051	6.570	68.856	1.051	6.570
8	.867	5.419	74.275		
9	.792	4.950	79.225		
10	.743	4.646	83.871		
11	.660	4.126	87.997		
12	.543	3.393	91.390		
13	.459	2.870	94.260		
14	.374	2.337	96.597		
15	.302	1.888	98.484		
16	.243	1.516	100.000		

Table 2.1 Rotated Component Matri

Rotated Component Matrix[a]							
Factors	Component						
	1	2	3	4	5	6	7
X_ray exposure	-.097-	-.035-	-.101-	.089	-.109-	-.830-	.053
Computer used	.076	-.062-	-.018-	.709	-.069-	-.074-	-.071-
A medication used	.239	.389	.060	.181	-.429-	-.266-	.181
Accident	.024	-.122-	-.781-	.200	.023	.056	-.169-
Unhappy state	.223	-.539-	-.359-	-.097-	.173	.013	.419
Folic acid intake	-.301-	.066	.696	.038	.006	.183	-.130-
Marital status	-.125-	.617	.125	.242	.211	-.174-	.430
Number of pregnany	.739	.186	-.098-	.145	.211	.004	.149
Number of_Parity	.841	-.159-	-.198-	-.022-	-.078-	-.064-	-.213-
Number of Cesarean sections	.402	-.518-	.499	.214	.144	.064	-.045-
Number of abortions	.166	.118	.044	-.014-	.838	.001	-.030-
Fertility (stillbirth)	.195	.681	.056	-.165-	.097	.107	-.001-
Inter delivery Interval	.520	.110	.039	.625	-.217-	.183	-.050-
Mother Medical condition	.129	.034	.224	-.607-	-.418-	.215	-.003-
Gestational complication	-.490-	-.089-	-.019-	-.017-	-.238-	.628	.164
Chemical poisoning	-.080-	.060	.038	-.112-	-.116-	.027	.864

Table 2 and 2.1 underlines seven prenatal factors in the sixteenth item, which affects the presence of autism in children as it represents below:

1. The First most common factor is the number of pregnancy,which affect Autism disease in an occupied variance value equal to (16.813% and loading value 0.739) from the total cumulative variance (68.856%) and the number of.parity risk factor in loading value equal to (0.841).

2. Unhappy emotional status (parental stress) comes as a second most effective principal component with an occupied variance value equal to (11.914%) from the total cumulative variance (68.856%) and in loading value equal to (-0.539) and Marital status factor in loading value equal to (0.617), also delivery by cesarean in loading value equal to (0.518) and Fertility (still birth) risk factor in loading value equal to (0.681).
3. Third principal components: it's occupied variance value equal to (10.008%) from the total cumulative variance (68.856%) and it includes two risk factors: Accident risk factor in loading value equal to (-0.781) and Folic acid intake risk factor to loading value equal to (0.696).
4. Fourth principal component: it is occupied variance value equal to (8.426%) from the total cumulative variance (68.856%) and it includes three risk factors: Maternal computer used risk factor in loading value equal to (0.709), Inter delivery Interval risk factor to loading value equal to (0.625) and maternal medical risk factor in loading value equal to (-0.607).
5. Fifth principal component it is occupied variance value equal to (8.235%) from the total cumulative variance (68.856%) and it includes two risk factors: maternal mediation used factor in loading value equal to (-0.429) and Abortion Risk factor to loading value equal to (0.838).
6. Sixth principal component: it is occupied variance value equal to (6.890%) from the total cumulative variance (68.856%) and it includes two risk factors: maternal X-ray exposure factor in loading value equal to (-0.830) and the gestational complication risk factor in loading value equal to (0.628).
7. Seventh principal component: it is occupied variance value equal to (6.570%) from the total cumulative variance (68.856%) and it includes only one risk factor: exposure to chemical poisoning risk factor in loading value equal to (0.864).

3. Perinatal Risk factors

Table (3): The variances and Total variance

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance
1	1.271	21.191	21.191	1.271	21.191
2	1.207	20.115	41.306	1.207	20.115
3	1.003	16.712	58.018	1.003	16.712
4	.932	15.528	73.545		
5	.899	14.991	88.537		
6	.688	11.463	100.000		

Table 3.1 Rotated Component Matrix

Factors	Component		
	1	2	3
Fetal distress	-.682-	.055	.302
Premature rupture of membranes	.014	.090	-.894-
Types of labor	.516	.212	.304
Duration of labor	.179	-.744-	.173
Cord complication	.663	-.052-	.066
Trauma of delivery	.175	.780	.092

Table 3 and 3.1 highlights the three effective components in the sixth item were, which mostly affecting autism in children as follows:

First principal component: it is occupied variance value equal to (21.19%) from the total cumulative variance (58.018%), it includes three risk factors:

Fetal distress risk factor in loading value equal to (-0.682) and type of labor risk factor in loading value equal to (0.516) and cord complication risk factor in loading value equal to (0.663). Second principal component: it is occupied variance value equal to (20.115%) from the total cumulative variance (58.018%) and it's includes two risk factors: duration of labor risk factor in loading value equal to (- 0.744) and trauma of delivery risk factor in loading value equal to (0.780). Third principal component: it is occupied variance value equal to (16.71%2) from the total cumulative variance (58.018%) and it includes only one risk factor: Premature rupture of membranes risk factors in loading value equal to (- 0.894).

4. Neonatal Characteristic at birth

Table (4): The variances and Total variance

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance
1	2.411	26.794	26.794	2.411	26.794
2	1.561	17.348	44.142	1.561	17.348
3	1.205	13.390	57.532	1.205	13.390
4	1.005	11.168	68.700	1.005	11.168
5	.898	9.978	78.678		
6	.571	6.347	85.025		
7	.531	5.897	90.922		
8	.461	5.119	96.041		
9	.356	3.959	100.000		

Factors	Component			
	1	2	3	4
Gestational age	.002	.126	.051	.933
Delay in crying	.747	-.044-	-.141-	-.112-
Fetal Nuchal cord	.104	.343	.732	-.172-
Respiratory distress	.756	.170	.078	-.136-
Oxygen treatment	.650	-.019-	.521	.082
Low Apgar scores	.824	.021	-.029-	.242
Neonatal Jaundice	-.129-	-.187-	.677	.176
Clinical dysmaturity	.025	.863	.099	.030
Birth defect	.046	.792	-.065-	.102

Table 4 and 4.1 shows the most effective neonatal risk factors on presenting autism in children. After the correlation matrix analysis, among risk factors by using (PCA), three principal components were undertaken as follows:

First principal component: it is occupied variance value equal to (26.794%) from the total cumulative variance (68.7%) and it includes four risk factors: delay crying risk factor in loading value equal to (0.747) and respiratory distress Risk factor in loading value equal to (0.756) and oxygen treatment risk factor in loading value equal to (0.650) insides low Apgar risk factor in loading value equal to (0.824). Second principal component: it is occupied variance value equal to (17.348%) from the total cumulative variance (68.7%) and it includes two risk factors: clinical dysmaturity risk factor in loading value equal to (0.863) and birth

defect risk factor in loading value equal to (0.792). Third principal component: it is occupied variance value equal to (13.390%) from the total cumulative variance (68.7%) (see table and it includes two risk factors: Nuchal risk factor in loading value equal to (0.732) and Jaundice Risk factor in loading value equal to (0.677). 4. Fourth principal component: it is occupied variance value equal to (11.168) from the total cumulative variance (68.7) and it includes only one risk factor: Gestational age risk factor in loading value equal to (0.933).

Discussion

There has been an increase in the number of children living with Autism in the world [15]. However, the etiology of an autistic childbirth is still under debate [16] . A variety of socio-demographic data have been assessed in this study and found that the mean age of mothers were (28.95 years, SD 6.320) and fathers mean age (34.10 years, SD 6.475), therefore, younger mother in this study had a slightly higher risk than an older to have an autistic child. Similarly, the result of this study supports the findings of the cross sectional study who interviewed 270 mothers with autistic children and showed that the mean age of the mothers of autistic children was 31.78 years and supported this fact and stated that the maternal age has a significant effect on the risk of having an autistic children because of the mutation and chromosomal abnormalities[17].

An alteration of maternal hormones and biological abnormalities may present at age below 30 years, this might affect the utero environment and directly reflect on the fetal brain development [4. 18]. Regarding the educational level, this study found that slightly most of the mother were in lower level of education, therefore the educational level estimated as the first factor, which play a role in having an autistic child. In agreement with the survey was conducted by the US Centers for Disease Control and Prevention reported that children belonging to the lower educational family are more likely to have an autistic child [19].

The majority of the mothers (63.3%) in the current study are housewives, thus occupation also fit as a factor affecting autism, this could be due to the fact that there is no special place to look after them as dealing with these children are very difficult, they were also concerned about the breakdown of relationships in the family itself and also within the society because of their child's condition. Hence, in the content analysis of the semi-structure interview data with 8 autistic mothers, [20] supported this fact and stated that autism is one of the chronic and severe disease, which impacted negatively on family's emotional state and leads them to feel anxiety and stress as they are hopeless about the future of their children.

The etiology of Autism is still under the study, however, some epidemiological studies considered that obstetrical and neonatal factors may increase the risk of autism [21, 22,23,24] The present study assessed some factors and found that the computer user mother is considered as a fourth component affecting the presence of autism and calculated by 40.3% of the mother's perception. However, smoking has not significantly affected the risk of autism in our study. As Kalkbrenner and her colleagues analyzed a population-based study that compared smoking data with autism and revealed that 13% of mothers were smoked during pregnancy, so smoking is not significantly associated with the risk of autism [25] This study found that more than half of the mother had a poor maternal emotional state during pregnancy, this was significantly associated with autism as an important factor. Therefore, [1, 17] supported this finding and reported that prenatal stress or exposure to social and environmental stress, such as family problems is strongly associated with increased autism risk. Previous study in china also discovered that more than 44% of the autistic mothers have

experienced an unhappy emotional state or depression during pregnancy [26] .Adequate intake of folic acid is necessary for the pregnant mother, in the current study were taken a folic acid pill estimated as a third most important factor affecting autism. A recent study suggests that higher intake of folate and Vitamin B12 by the pregnant mother were potentially increased the risk of autism twise as those with normal range, and stated that a very high maternal supplement of folate and vitamin B12 either by drug or nutrition have a vital role in developing the risk of ASD [27]. In addition, [28] reports that mothers who taking folic acid three to five times as a recommended range in a week were less likely to have an overall autistic child. Therefore, taking the recommended preconception amount of vitamins three months before pregnancy may decrease the risk of autism [10].

To identify the association between the obstetric mode of delivery and an ASD, in a population based sibling study, found that children who delivered by c/s were more likely to have an ASD, the finding of our study also confirmed this information and found that type of labor is the first component and most important factor affecting the presence of autistic children and calculated as more than half of the children in this study were delivered by c/s. Another study also supported this finding and estimated that there was an eliminated association between autism spectrum disorder and a primary cesarean delivery [29]. Therefore, it is important to have more studies about the long term effects of the mode of delivery and the child's development. The poor intrauterine environment may increase risk of developing an autistic child [30], in terms of this hypothesis, this study considered maternal medical condition considered as a fourth component affecting autism. In a structured interviews with 517 ASD child's mother aged between 2-5 years old, supported this finding and investigates that there is an association between a maternal metabolic condition and a child's neurodevelopment [31] .

Regarding the perinatal factors and autism, this study found that fetal distress and types of labor were considered as the first component affecting ASD in children. This finding is supported by the cross sectional comparative study, which was conducted for the periods between July to September 2014 in order to determine prenatal, perinatal and postnatal risk factors in children with autism spectrum disorder (ASD), they found that among the interventions of some factors, acute fetal distress and prolong labor considered to be the most determinant factors among the others [32].

In terms of the neonatal characteristics at birth, this study found that the majority of children were completed gestational age with normal birth weight, as this was confirmed by the retrospective study conducted to identify the prevalence of the perinatal and neonatal factors affecting autism supported this finding and stated that low birth weight and low gestational age is lower in autistic children [33] . Delayed the first crying, which were treated with Oxygen therapy factors considered as a first and most common neonatal risk factors in addition to the respiratory distress and low Apgar score. This study also found that the majority of them had a physiological jaundice with third calculated neonatal risk factor in this study and minority with a birth defect. A systematic review was conducted to search about the studies providing association between ASD and perinatal and neonatal factors and found that one of the neonatal factors affecting autism development was hyperbillirubinemia [8].

Conclusion

Overall, this study demonstrated four key factors such as, Mother Socio- demographic, prenatal, perinatal and neonatal, each part has some factors shared common variance with other items. The finding of this study suggests that parental age are independently associated with Autism. The majority of the mothers were housewives despite their degree in education. In terms of the prenatal factor mother emotional state plays a vital role in having children with autism. Regarding perinatal and neonatal factors, this study found that prolong labor and delivery with c/s, also delayed in crying with respiratory distress, which some of them were needed oxygen has increased the risk of autism and most of the children were affected by hyperbiliribinumia as a neonatal factor.

Recommendation:

More future case control studies are needed to determine the association between these factors. In addition, more intervention studies are required in order to enhance the autistic children and their families quality of life.

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