

## Risk factors for Autistic Spectrum Disorders at Assiut City

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### Abstract

Autism is a neurological disorder characterized by qualitative impairments in social interaction, qualitative impairments in communication, and restricted repetitive, stereotyped patterns of behavior, interests, and activities. Autistic Spectrum Disorders are relatively common without known etiology can be found in 80-90% of cases. The aim of this study is to recognize the risk factors for Autistic Spectrum Disorders at Assiut City. The study was descriptive research design; it was conducted in all autism centers at Assiut city which includes 7 centers and included 47 parents who agree to participate in this study selected by convenient sample. The study included a structured interview sheet; this sheet divided into two parts Socio demographic characteristics, and parent's knowledge about risk factors of Autism. The main findings of the study are: male represent a higher prevalence (72.3%) rate of autism than females (27.7%), and autistic children were more prevalent among families living in urban areas (80.9%) than rural (19.1%). The present study clears that (63.8%) of the fathers and 61.7% of the mothers had university level, the majority (85.1%) of autistic parents' children hadn't consanguinity degree while only (14.9%) from them had consanguinity from first degree (cousin), the vast majorities (97.9%) of studied children haven't family history of autism; the present study found that all mothers of studied children hadn't any history of rubella, diabetes, thyroid and infectious diseases while only (4.3%) were exposed to eclampsia. The study recommended that, increase of public awareness about the risk factors of autism and its prevention by community leaders, mass media, and others especially at rural area. The curriculum of medicine and nursing faculties should include the Autistic Spectrum Disorder (risk factors, diagnosis and different treatment methods). Further studies should be conducted and gained a lot of attention for Autistic children and their parents.

**Key words:** Autism - Autism Spectrum Disorders – Risk factors

### 1. Introduction

Autism is one of five disorders that falls under the umbrella of Pervasive Developmental Disorders (PDD), (PDD) a category of neurological disorders characterized by severe and pervasive impairment in several areas of development). It is defined by the Autism Society of America (ASA) as: "Autism is a complex developmental disability that typically appears during the first three years of life and is the result of a neurological disorder that affects the normal functioning of the brain, impacting development in the areas of social interaction and communication skills. Both children and adults with autism typically show difficulties in verbal and non-verbal communication, social interactions, and leisure or play activities (Johnson & Myers, 2007 and Sadock & Sadock, 2010).

Autism belongs to a collection of developmental disorders known as the Autism Spectrum Disorders (ASDs). A spectrum disorder is a group of disorders with similar features; while one person may have mild symptoms, another might have more severe ones. There are also differences in the nature of the symptoms themselves and when they are likely to first appear (American Psychiatric Association (APA), 2000 and Levy et al, 2009).

In Egypt there is no enough researches focused on this disorder and no documented researches advertiser and definite lucid about epidemiology of autism but extrapolated Prevalence is 152,234 from 76, 117, and 4212 (CDC, 2007, US Census Bureau, 2008 and Bowden & Greenberg, 2010).

Much public attention has focused on the increased number of children diagnosed with autism in recent year; the search for possible causes of autism has led to heated controversy. The different potential causes of autism have strong proponents, some of the suggested causes are:- genetic, Biological, perinatal, neuroanatomical, immunological, biochemical, environmental, psychosocial and family factors (Kliegman et al, 2007, Bowden & Greenberg, 2010 and National Autism Association, 2010).

Clinical features of the disorder should be present before the age of 3 years, approximately 20% of parents report relatively normal development until 1 or 2 years followed by a steady or sudden decline. Parents usually first

become concerned when they realize that their child's expressive language is delayed. Indeed, this has been the historical hallmark of the disorder and will likely continue to be so as these deficits are easily recognized. Although earlier social skill deficit are now better known in professional circles, they are not as easily recognized by parents (Hales & Yudofsky, 2004). The clinical manifestations of autism are divided into three categories Inability to relate to other (social impairment), Inability to communicate with others (communication impairment), Obviously limited activities and interest (restricted repetitive and stereotyped patterns of behavior) ( Klossner and Hatfield, 2010). The clinical manifestations of autism are divided into three categories Inability to relate to other (social impairment), Inability to communicate with others (communication impairment), Obviously limited activities and interest (restricted repetitive and stereotyped patterns of behavior) ( Klossner and Hatfield, 2010).

The possible indicators or early signs of ASDs are; does not babble, point, or make meaningful gestures by 1 year of age, does not speak one word by 16 months, does not combine two words by 2 years, does not respond to name, and Loses language or social skills. Others indicators include:- avoid eye contact and want to be alone, doesn't seem to know how to play with toys, excessively lines up toys or other objects, is attached to one particular toy or object, doesn't smile, at times seems to be hearing impaired, may prefer to be by him/herself, repeat or echo words or phrases said to them, or repeat words or phrases in place of normal language (echolalia), have trouble expressing their needs using typical words or motions, no fear of danger, over or under sensitivity to pain, repeat actions over and over again, have trouble adapting to changes in routine , and have unusual reactions to the way things smell, taste, look, feel, or sound ( Autism Society, 2008 , CDC, 2010 and Bowden & Greenberg, 2010)

There are no medications or treatments available to cure autism. Each child's treatment is individualized; behavioral and communication therapies are very important. Children with ASDs respond very well to highly structure educational environments. Stimulants may be used to control hyperactivity, and antipsychotic medications are sometimes helpful in children with repetitive and aggressive behaviors. Many families are drawn to the use of complementary and alternative medical therapies in attempts to treat their autistic children; these therapies have not been scientifically proven to improve autism. The goal of the therapeutic management is for the child to reach optimal functioning within the limitations of the disorder (Videbeck, 2008 and Burns et al, 2009). The role of community health nurse who comes from contact with families through work in well- child or immunization clinics, it is important to establish relationships that are responsive to the methods of the person and family for dealing with the autistic children and nurses should be well informed about the numerous community resources for these children (Allender et al, 2010).

## **2. Aim of the study:**

The study conducted to recognize the risk factors for Autistic Spectrum Disorders at Assiut City.

## **3. Subjects and Methods**

### *3.1. Research Design*

Descriptive research design was used in this study to identify the risk factors for autism at Assiut city.

### *3.2. Setting:*

This study was carried out in all autism centers at Assiut city which includes 7 centers namely; Mental Abilities Clinic, Al-saad Center, Social Rehabilitation Association, Women's Association, Kian Association, The Future center, and Awladna Center.

### *3.3. Sample:*

The subject includes all parents (mothers or fathers) of Autistic children from both sex (male and female) aged from 3-17 years within one year from starting of data collection selected by convenient sample. The total numbers of autistic children parents' were 47 out off 62 who agreed to participate in the study from the previous mention setting.

### *3.4. Tool of data collection:*

*It included:-*

A structured interview sheet was constructed after reviewing the relevant literature to elicit information. It included two parts:

Part one: Socio demographic characteristics, such as name of center and child, child's age, gender, residence, birth order, parent's education and occupation.

Part two: knowledge about risk factors about autism; this part included:-

- Family history such as consanguinity for parents, history of autism and chronic diseases.....etc.
- Obstetric history of mother for the autistic child such as age of pregnancy, follow up during pregnancy, toxemia, rubella, diabetes in pregnancy, drugs used without doctor order, x rays exposure during pregnancy, preterm labour and type of labour.
- Previous medical history of the child such as admission to incubator, being born with congenital anomalies, exposure to infectious diseases as encephalitis, meningitis, history of convulsion, frequency, age at occurrence and recurrent, obligatory immunization (if there is specific vaccine cause this disorder, name, interval between vaccine and appearance of signs and symptoms), ingestion problem relate to specific type of food and additive food.
- **Social history** as leave the child alone for long time , period of time spend with child, watching T.V ( time, type of program), presence of father and mother together at home, conflict between parent's in front the child, parents accompanying the child during going out or no, parents' sense of worry when people known have disabled child or no.

### 3.5. Ethical Consideration:

The purpose of this study was explained for all participants and directors of the centers individually. The parents have ethical rights to agree or refuse to participate in the study; oral consent was taken from all parents who participated in the study to ensure active participation and informed that the information obtained will be confidential and used only for the purpose of the study.

### 3.6. Data collection:

An official approval letters were obtained from the Dean of Faculty of Nursing, Assiut University to directors of autism centers in Assiut City. These letters includes a permission to carry out the study and explains the purpose and nature of the study. Interviews were conducted individually with parents of the children after getting their oral consent to participate and after explaining to them the purpose of the study. They were reassured about the confidentiality of the obtained information. A pilot study was conducted before starting data collection on (6) parents who was included in the sample for nonexistence of any modification in the sheet. The aim of pilot study is to test the clarity of the tool and to estimate the time required to fill the sheet.

### 3.7. Field Work:

Each interview took about 20-30 minutes. Throughout this interview relative information was recorded in the designed sheet depending upon the response of the participant. The data collected in the period from first April 2011 until the end of April 2012; within this period the total numbers of autistic children parents were 47 according the attendance of the parent in autism center.

### 3.8. Data Analysis

The data obtained were reviewed, prepared for computer entry, coded, analyzed and tabulated. Descriptive statistics (i.e., frequencies, percentage, mean, standard deviation, etc) was done using computer program SPSS version 11. Chi-square and T-test, test used to compare differences in the distribution of frequencies among different groups.

## 4. Results:

Table (1); revealed the distribution of the studied children regarding to Socio-demographic characteristics. It was found that more than half of the studied children (51.1%) were 6 -17 years and nearly half (48.9%) were less than 6 years but more than two thirds (72.3%) of the studied children were male. Regarding to residence more than three quarters (80.9%) of the children were from urban localities and slightly more than half of family (51.1%) had 3 or more children. Concerning the birth order; the table illustrated that (46.8%) of the children were considered the first born in the family. More than one quarter (29.8%) of the studied children diagnosed at first and third year of life. According to parents' education; the table cleared that (63.8%) of fathers and (61.7%) of mothers had university levels of education. On the other hand about three quarters (74.5%) of fathers were employees, and only (4.3%) were dead but more than half (55.3%) of mothers were employees.

Table (1): Distribution of the studied children regarding to Socio-demographic characteristics

Socio-demographic Characteristics	No. =(47)	%
Age:		
< 6 years	24	48.9
6-17 years	23	51.1
Mean ± SD (Range)	6.08 ± 2.60 (3 – 15)	
Sex:		
Male	34	72.3
Female	13	27.7
Residence:		
Rural	9	19.1
Urban	38	80.9
No. of children in the family:		
1 – 2	23	48.9
3 or more	24	51.1
Mean ± SD (Range)	2.72 ± 1.10 (1 – 6)	
Birth order:		
First	22	46.8
Second	11	23.4
Third	8	17.0
Fourth or more	6	12.8
Age of child at diagnosis:		
First year	14	29.8
Second year	10	21.3
Third year	14	29.8
Above of this	9	19.1
Father's education:		
Basic education	2	4.3
Secondary education	1	2.1
Technical institutions	14	29.8
University	30	63.8
Mother's education:		
Basic education	1	2.1
Secondary education	8	17.0
Technical institutions	9	19.1
University	29	61.7
Father's occupation:		
Employee	35	74.5
Skilled worker	10	21.3
Dead	2	4.3
Mother's occupation:		
Employee	26	55.3
Housewife	21	44.7

Figure (1); illustrated the distribution of the studied children related to consanguinity degree between parents. It was found that the majority of parents (85.1%) hadn't consanguinity degree while (14.9%) from them had consanguinity from first degree

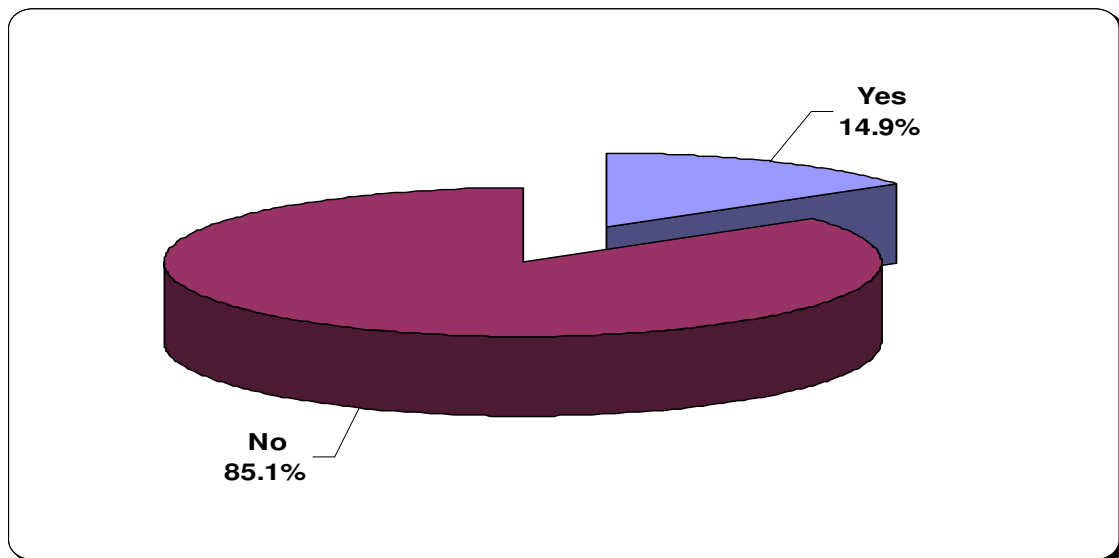


Figure (1):- Distribution of the studied children related to consanguinity degree between parents

Figure (2); illustrated the distribution of the studied children related to family history of Autism and degree of relatives. It was found that the vast majority of the studied children (97.9%) hadn't family history of Autism and only (2.1%) had family history of Autism from first degree of consanguinity.

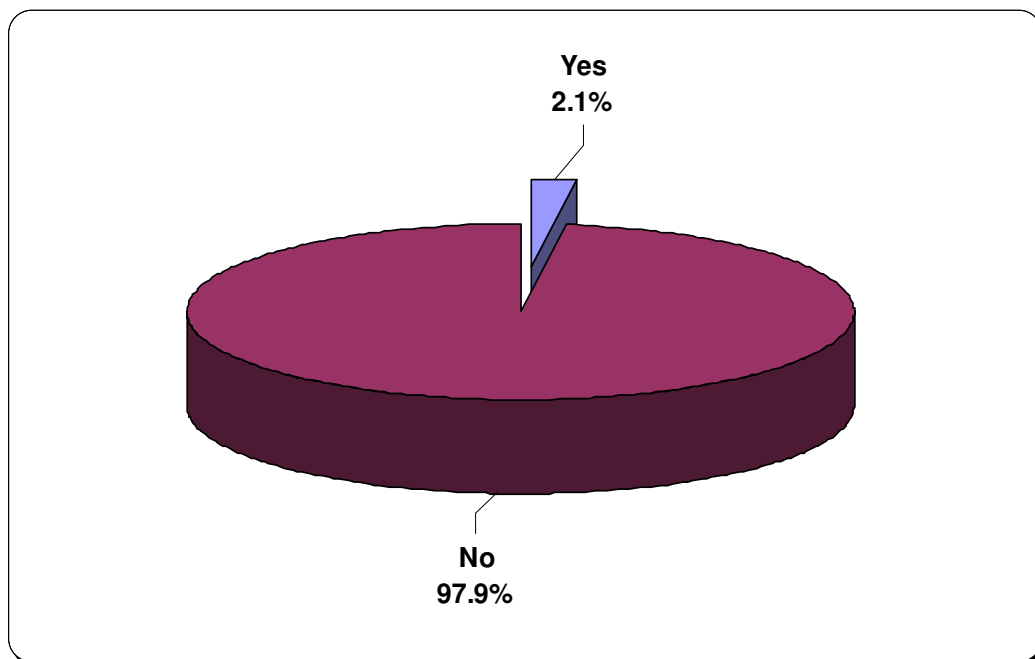


Figure (2): Distribution of the studied children related to family history of Autism

Table (2); cleared the distribution of studied children mothers' regarding to risk factors. It was found that the vast majority of mother's children (95.7%) hadn't history of eclampsia. According to drug used during pregnancy without physician consultation; (14.9%) of mothers were took analgesic drug without physician consultation. Slightly more than half (51.1%) were exposed to radiology but only (4.2%) exposed to x-ray and more than half (54.2%) of mothers were exposed from 1-3 times during pregnancy. Also this table showed that; more than two thirds (68.1%) of mother's age during the index child were less than 30 years.

Table (2): Distribution of the studied children mothers' regarding to risk factors

Items	No. =(47)	%
<b>History of eclampsia:</b>		
Yes	2	4.3
No	45	95.7
<b>Drugs used during pregnancy without physician consultation:</b>		
Yes	7	14.9
No	40	85.1
<b>Types of drugs taking during pregnancy</b>		
Analgesic	7	100.0
Others	0	0.0
<b>History of exposure to Radiology:</b>		
Yes	24	51.1
No	23	48.9
<b>Type of Radiology ≠:</b>		
X-ray	1	4.2
Ultrasound	21	87.5
Both	2	8.3
<b>Number of exposure to Radiology ≠:</b>		
1 – 3 time	13	54.2
4 or more	11	45.8
Mean ± SD (Range)	3.83 ± 1.66 (2 – 8)	
<b>Age of pregnancy:</b>		
< 30 years	32	68.1
30 - 35 years	12	25.5

≠ Number of studied children mothers' equal 24

Table (3); showed the distribution of the studied children related to risk factors. It was found that the majority of the studied children (91.6%) hadn't another disability with autism while (4.2%) had Dawn's syndrome and (4.2%) Mental Retardation (MR). The majority of the studied children (83.0%) not admitted to incubator; this table illustrates that; more than half of the studied children (51.1%) had history of watching T.V under the age of 3 years and more than two fifth (45.8%) of them were watched T.V from 3-6 hours daily. Half of these children (50.0%) watched songs and cartoon program and only (4.2%) watch cartoon program. As regarding to the relationship between the parents; the table cleared that, more than two thirds (70.2%) had good relation.

## 5. Discussion:

Autism is a syndrome encompassing several impairment features in three main areas: social interaction, communication and restricted interests, and repetitive and stereotypic activities. Autism is not a disease but a syndrome with multiple causes, both genetic and non-genetic (APA, 2000 & Matson et al., 2007 and CDC, 2009). Autism Spectrum Disorders (ASDs) is a lifelong disability. It therefore requires continuous treatment and education in residential settings. Caregivers of children with autism spectrum disorder (ASDs) have experience of mental illnesses and stress at a greater rate than the general population. Thus supporting the family and ensuring its emotional and physical health is an extremely important aspect of overall management of ASDs (Rozga et al., 2011).

The current study revealed that, slightly more than half (51.1%) of studied children were  $\geq 6$  years; this finding might be due to the autism is not a new disorder, but present from several years. This result similar to Hsu et al., (2011) who found the autism more prevalent among younger group and Barnevik et al., (2008) who said the awareness of ASDs has resulted in increasing numbers of children being diagnosed at young ages.

The findings of the present study showed that, more than two thirds of the children were males (72.3%). In Upper Egypt the families who have disabled child may have a shameful feeling and additionally the parents are

more important for caring of males than females so that the percentage of male was appeared than females. The finding of Abdelaziz, (2011) was in agreement with the present study who conducted a study in Egypt, reported that male children had a higher prevalence rate of autism than females. Also the finding of the current study was in agreement with Bolte & Poustka, (2003) and Stuart & McGew, (2009) who reported that males are several times more likely to be affected by autism than female.

According to the Centers for Disease Control and Prevention CDC, (2009), estimated the number of male to female children with Autism spectrum disorders (ASDs) range between 3 to 1 or 4 to 1 and these gender differences are fairly consistent across ethnicities. On the other hand; the study of The Effects of Sex Differences and Cohabitation Status on Parental Stress in Parents of Children Diagnosed with Autism by Schneider, (2010) found that; the majority of the participants were females (84.6%), and (7.1%) were males.

Table (3): Distribution of the studied children regarding to risk factors

Items	No. =(47)	%
The child had other disability or congenital anomalies with autism:		
Yes	4	8.4
No	43	91.6
Types of disability±:		
Dawn's syndrome	2	4.2
Mental Retardation (MR)	2	4.2
Admission to incubator:		
Yes	8	17.0
No	39	83.0
Duration of admission#::		
< 5 days	1	12.5
1 – 2 weeks	6	75.0
> 2 weeks	1	12.5
Leave the child watching T.V under the age of 3 years:		
Yes	24	51.1
No	23	48.9
Period of watching T.V daily■:		
< 3 hours	9	37.5
3 – 6 hours	11	45.8
> 6 hours	4	16.7
Type of program■:		
Songs	11	45.8
Cartoon	1	4.2
Songs and Cartoon	12	50.0
Good relationship between parents:		
Yes	33	70.2
No	14	29.8

± Number of studied children equal 4  
 #Number of studied children equal 8  
 ■ Number of studied children equal 24

As regards to the residence, more than three quarters (80.9%) of autistic children were more prevalence among families living in urban areas and only (19.1%) from rural areas, in rural area the people don't care for autistic children because there no enough services for these children. This study was in the same line with *Hsu et al., (2011)* who reported that, the more population in metropolitan areas had a higher prevalence of autistic cases than the rural areas in Taiwan.

According to birth order; the current study cleared that more than two fifth (46.8%) of studied children are considered the first born in the family. This result was disagreed with Gardener et al., (2009) who found that, the



autistic disorder was associated with later born child ( $\geq$  third). Also Lin et al., (2008) reported that the highest percentage of children with autism was found among extended families in Taiwan.

More than one quarter (29.8%) of autistic children in this study were diagnosed between the first and third year of life in this study; this might be the most of parents were highly educated, more knowledgeable and highly skillful for caring children. This finding was similar to the study conducted by El-Baz et al., (2011) in Ain Shams at Egypt; who conducted study of Risk factors for autism which indicated to (46.0%) of autistic patients presented at age between one and half years.

The results of the current study showed that, more than three fifth (63.8%) of fathers and mothers (61.7%) had university levels of education; this might be the educated parents had awareness and good observation for any signs or change of child. These findings are consistent with study conducted by lin et al., 2008 and Schneider, (2010) who reported that, more than half of fathers and mothers were highly educated. The present study also agreed with the results of (Troy et al., 2008) who found that (35.0%) of autistic parents' children had completed four year of college, another (40.0%) held master degrees and (13.0%) held a doctoral degree and Sasanfar et al., (2010) in Iranian revealed that, parents with higher education had an increased risk of having autistic children.

Although this study showed that, about three quarters (74.5%) of fathers were employed, and more than half (55.3%) of mothers were employed. This result disagreed with the study demonstrated by Grant and Ramcharan (2001) highlighted that mothers having a disabled child prevent them from seeking employment. Also Rai et al., (2012) who indicated that, the children of families with lower income and their parents' with manual occupations were at higher risk of ASDs.

The present study illustrated that the majority of parents (85.1%) hadn't consanguinity degree while (14.9%) from them had consanguinity from first degree (cousin). This might be the most of parents were highly educated from urban area were aware for dangerous of consanguinity marriage. The finding of El-Baz et al., (2011) was consistent with the present study which reported (13.0%) from the sample had positive consanguinity degree.

Also this finding was in the same line with the study of prevalence of autism in children born to Somali parents living in Sweden by (Barnevik et al., 2008) who reported that Consanguinity was reported in the records for three individuals from 17 cases represented (17.6%), parents being first cousins for one child and second cousins for another; a more remote relationship was declared for the third. Moreover this study disagreed with the study of Autism in Saudi Arabia: Presentation on Clinical Correlates and Comorbidity conducted by Al-Salehi et al., (2012) who reported that, 14 of 49 from studied sample represent (28.5%) were consanguineous marriages.

According to family history; the results of the present study indicated that; the vast majority (97.9%) of studied children hadn't family history of autism and only (2.1%) had from first degree. Boyle et al., (2005) which mentioned that; the family history rate of autism is within the range (2-8%). This finding was consistent with study demonstrated by Abd Elhameed et al., (2011) who reported that, only (2.5%) had family history; while differed from study conducted by El-Baza et al., (2011) who found that statistically significant difference with family history and autism. Mostafa and Shehab, (2010), who found 32 autistic children (40.0%), had a first- or a second-degree relative with an autoimmune disease. Thus, the study reported the frequency of autoimmune diseases in families of children with autism was significantly higher than that of normal children.

According to obstetrical history; the present study found that all mothers of studied children hadn't any history of rubella, diabetes, thyroid and infectious diseases while only (4.3%) were exposed to eclampsia. This result agrees with the study conducted by El-Baz et al., (2011) in Egypt who revealed that no significant difference was found between cases and controls as regards prenatal factors (Hypertension). While disagreed with (DM, and infection). On the other hand the findings disagreed with the study of pregnancy and birth complication in autism and liability to the broad autism phenotype by Zwaigenbaum et al., (2002) who reported that, no statistically significantly difference associated with pregnancy and birth complication.

The present study cleared that, more than two thirds (68.1%) of mother's age during the index pregnancy were less than 30 years and only (6.4%) were up to 35 yrs. This finding disagreed with study applied by *El-Baza et al., (2011) in Ain shams who found that, (23.0%) of children mothers' were up to 35 years during pregnancy. Also disagrees with the study of paternal age increases the risk for autism in an Iranian population sample applied by Sasafanar et al., (2010) who indicated that, there was a significant association between higher paternal age,*

Concerning of autistic child had another disability or congenital anomalies in the present study, the majority of them (91.6%) hadn't another disability while (4.2%) had Dawn's syndrome and (4.2%) MR. This finding was



disagreement with the study by Dawson et al., (2008) who reported that, (75%) to (80.0%) of autistic children have a certain degree of MR.

As regarding to history of the child to watching T.V under the age of 3 years and the period of watching; the current study cleared that; more than half of the studied children (51.0%) had history of watching T.V under the age of 3 years. This finding may be due to the most of children mothers' were employees so that they were busy with housework after coming back from the job. Waldman and Adilov, (2006) in Indiana conducted a study of "Does television causes autism?" the study investigated the possibility of cause autism with watching TV and showed that early childhood television viewing is a trigger for autism; so that the children shouldn't watch T.V before the age of three.

As regarding the period of watching T.V; the present study indicated more than two fifth (45.8%) of the children who watched T.V setting in front of it from 3-6 hours daily. Munasib & Bhattacharya, (2010) who mentioned that study of early and middle childhood television watching and child cognitive outcome and they found strong evidence of negative correlations between hours of television watched and cognitive status. On the other hand The American Association of Pediatrics and many other experts recommend no television viewing under the age of 2 years. For 2-3 year old recommended limiting television viewing to half an hour per day and 1 hour per day is enough for 3-5 year old Smith, (2011).

According to the relationship between the parents of autistic children this study indicated that, more than two third of them (70.2%) had good relation and more than one quarter (29.8%) had bad relation. Moreover the social conditions surrounding the child are better predictors of the child's outcome than their early biological status measured by birth and pregnancy conditions. These conditions include favorable parental attitudes, low levels of family conflict, small family size, and a lower amount of stressful life experiences Rivers and Stoneman, (2003).

## 6. Conclusion

Based on the results of the present study it can be concluded that more than one quarter of mothers' age were up to 30 years during pregnancy followed by consanguinity degree between the parents were 14.9% but the history of exposed to eclampsia and family history were few effect. Regarding to risk factors for studied children, the current study cleared that; slightly more than half of them were watched T.V under the age of 3 years for long time while about one fifth were admitted to incubator. And also the study illustrated that 8.4% of autistic children had MR and Dawn's syndrome.

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