IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 9, Issue 5 Ser. II (Sep. – Oct. 2020), PP 30-41
www.iosrjournals.org

Mothers Knowledge about Educational and Nutritional Needs for their Children's with Attention Deficit Hyperactivity Disorder.

Wafaa M Abd- Elkader, Heba Essam Abu alwafa, Maha Hosney El-shater,Seham Hamdy Darwish.
Pediatric nursing department, Faculty of nursing, Alexandria University
Psychiatric Department, Faculty of Medicine, Alexandria University

Abstract: *Childers with Attention Deficit Hyperactivity disorder have a lot of needs such as especially educational and nutritional needs. Mothers of children with ADHD require continuous adjustment and more skills compared to parenting a child without ADHD .Their mothers face a lot of tasks because children's with ADHD have a lot of needs which affect their life. The mothers should be understood of their children's needs and should understand how to fulfill and cope with these needs .this study aimed to Assess mother's knowledge about needs of their children with Attention Deficit Hyperactive disorder.* ***Setting:*** *Pediatric Neurological Disorder Outpatient Clinic of Alexandria University Children's Hospital at Smouha, Child and Adolescent Psychiatric Outpatient Clinic at El-Hadara University Hospital.* ***Subjects:*** *A convenience sampling of 139 mothers had children with Attention Deficit Hyperactivity Disorder, their ages of children ranged from 6-12 years.* ***Tools:*** *Two tools used in this studyTool One: Socio- Demographic and children Data,* ***Tool Two:*** *Mother's knowledge about Needs of their Children's with ADHD: Structured Interview Schedule.*

Key word: *Attention Deficit, hyperactivity, nutritional need, educational need at school.*

Date of Submission: 08-09-2020 Date of Acceptance: 23-09-2020

I. Interlocution

Attention-Deficit Hyperactivity Disorder (ADHD) is a common chronic neurodevelopmental disorder. It characterized by symptoms of hyperactivity, impulsivity, and inattention that affect on the behavioral, emotional, cognitive, academic, and social functions for children and adolescent. It is more common in boys 4 times than girls (nelson2019, Madkor2016).

According to the Center of Disease control and prevention (CDC 2016), it was estimated that 9.4% of children aged from 2 to 17 years diagnosed with ADHD.Moreover, The American Psychiatric Association (APA 2013) States in the Diagnostic and Statistical Manual of Mental Disorders that 5% of children have ADHD. In Egypt (2016),it was registered that the prevalence of ADHD among primary school children is ranged between 16.2%and 21.8%. (EL-Gendy, et al 2016)

There are several modalities are used for the management of ADHD which include; American academy guide line (2011) outlines the therapeutic managements. Treatment of ADHD depends on the children age and severity of symptoms. Evidence supports behavior therapy as the first line treatment, but other approaches includes family educations and counseling, medications, environmental manipulations, and psychotherapy of the children. (Wong 2013,CDC 2019)

Children with ADHD have a significant need; these needs include educational needs andnutritional needs. Educational needs are the most common needs for children with ADHD. (James T 2014) Academic difficulties are common problems in children with ADHD. Educational needs are the most common needs for those children. Attention Deficit Hyperactivity Disorder can interfere with their school work, their relationships with other people, and how they view themselves.Problems with school work can be a key contributor to functional impairments.Unmet these needs can affect functional outcomes, poor academic achievement, low grades and lack of friend ship. (Sandra f. 2015).

Academic function can be negatively impacted by a variety of disabilities including ADHD. A higher academic and cognitive skill can be impaired by core symptoms of ADHD .Numerous studies have appeared that ADHD are related to future reading, math and school execution difficulties.Attention deficit hyperactivity disorder often leads to multiple life problems for the children and their mother. Mothers can help their children with ADHD to improve their academic function at home. Successful homework completion requires both organization and time management skills.(flemingM, etal 2017) Singh A 2015

Nutrition is an essential component for all children especially for children who have ADHD.Diet is considered as one of alternative therapy for children with ADHD. There are some foods that may be linked

with ADHD symptoms and increased these symptoms include Candy loaded with sugar and artificial colors, cake mix and frosting contain the high amounts of sugar Excessive sugar and caffeine intake both cause symptoms of hyperactivity and easy distractibility. According to Academy of nutrition and dietetics low levels of omega-3 fatty acids, Omega-3 and fatty acids affect the transmissions of some neurotransmitters (brain chemicals). While a balance of omega-3 fatty acids and omega-6 fatty acid,iron, zinc and magnesium is best for children with ADHD.(jorgenson C)2018, Millichap2012

Nurses play an important role in school, hospital and medical office. Nurses have a crucial role in mothers and children education about ADHD. Nurses can provide a unique perspective and can facilitate effective intervention for children with ADHD. The main target of pediatric nurse is to enhance mothers to be aware regarding the needs of their children with ADHD.(Ibrahim H 2015)

Nurses are in an ideal position to enable early identification, treatment and management of ADHD. They are the only health professionals who have regular contact with children in the school setting through continuous observation of children behavior .The school nurse can provide a unique perspective and can facilitate effective intervention for children with ADHD. (Boland, S. 2012)

Aim of the study:
Assess mother's knowledge about needs of their children with Attention Deficit Hyperactive disorder.
Research question:
What is the mother's knowledge about the needs of their children with Attention Deficit Hyperactive?

II. Materials And Method

Research design:
A descriptive research design was utilized for this study.
Setting:
This study carried out in 2 settings namely:
Pediatric Neurological Disorder Outpatient Clinic of Alexandria University Children's Hospital at Smouha, Child and Adolescent Psychiatric Outpatient Clinic at El-Hadara University Hospital.
Subjects:
A convenience sampling of 139 mothers had children with Attention Deficit Hyperactivity Disorder who fulfill the following criteria was taken:

- Age of children range from 6-12 years
- Free from other neurological disorders e.g. cerebral Palsy, Epilepsy
- Free from any physical disability.

The study sample was estimated based on Epi info program which used to estimate the sample size using the following parameters:

- Population size is 270,mothers have children with ADHD
- Expected frequency is 50%,

- Margin of errors is 5%,
- Confidence coefficient is 95%,
- Minimum sample size is 103,
- Research of current study = 139.

Tools of the study:
Two tools used in this study.
Tool One: Socio- Demographic and medical Data for both mothers' and children: this tool developed by the researcher:
Part A: Maternal data such as; age, level of education, mother's occupation, residence and family size ….etc.
Part B: Children data as age, gender, birth order ….etc.
Part C: Clinical data for mothers and children's

- Medical data for mothers as history of birth e.g. type of delivery, problems during delivery….etc.
- Medical data for children's as birth asphyxia, trauma, preterm and medical history of the child.

Tool Two: Mother's knowledge about Needs of their Children's with Attention Deficit Hyperactivity Disorders: Structured Interview Schedule.
This tool hade developed by the researcher after thorough review of literature to assess maternal awareness about the needs of their children with ADHD. It included the following:
Assess mother knowledge about the needs of their children with attention deficit hyper activity disorder:

- Assess the knowledge of mothers about the safety measures needed for their children to prevent injuries include: trauma, burn, cutting injury, poisoning.
- Educational needs which is divided into two parts :

1. Educational needs at school as: time of education, place of education, class room distractibility and social challenges.
2. Criteria of environment that promote learning achievement at home as: time of education, place of education

- Nutritional needs for ADHD which divided into two parts:

1. Foods which are restricted for ADHD children's as: fatty foods, Chochalets , artificial food coloring, sugar.
2.Foods which are allowed for ADHD children's as: bonefish and grains.

- Exercise prescribed for ADHD e.g.: regular daily exercise, type of exercise used.
- Importance of medication as: right dose, right route, continuity of medication.
- Follow up as: importance of regular follow up, continuity of behavioral therapy.
- **Scoring system of the two tools:**

The Score to assess mother's knowledge about ADHD child needs was as follows:Known items are given score (1) – Don't know items are given score (zero). Then, a total score will be calculated for each item as (Safety needs, Educational needs ….etc.). A percentage of the score given for mother's Knowledge was obtained. Then, these scores were classified to determine the mother's level of knowledge
The level of mother's knowledge will be categorized as the follows:
The percent scores of both tools were classified to determine the functional performance as the following:
Score 65% or more of total scores were considered good level of knowledge, from ≥50% to less than 65% of total scores were considered fair level of knowledge, less than 50% of total scores were considered poor level of knowledge.

Method

1. The study was approved by the Ethics Committee of the Faculty of Nursing, Alexandria University.
2.An official letters was directed from the Faculty of Nursing in Alexandria University and sent to the directors Pediatric Neurological Disorder Outpatient Clinic of Alexandria University Children's Hospital at Smouha, Child and Adolescent Psychiatric Outpatient Clinic at El-Hadara University Hospital. The permission was taken to collect the necessary data after explaining the aim and nature of study.
3.Tool I and Tool II were developed by the researcher after through the review of literature and translated into Arabic language by the researcher
4. Tool I and Tool II were submitted to jury members of five experts in the field of Pediatric nursing, faculty of Nursing (Alexandria University), to assure the content validity, completeness and clarity of items and appropriateness of translations. Every jury member was informed about the aim and method of the study. Comments and suggestions of jury were considered, and the tools were modified accordingly. Tool I was 97.5%, Tool II was 93.5%
5. The Tool I –part I and part II was tested for its reliability by using Alpha Cronbach's statistical test for internal consistency of tool items. The data was analyzed; the correlation coefficient was (0.9).The Tool II was

tested for its reliability on a sample of 15 subjects using Alpha Cronbach's statistical test for internal consistency of tool items. The data was analyzed; the correlation coefficient was (0.8).which mean the tool were reliable.

6. Before embarking on the actual study, a pilot study was carried out on 15 mothers of children with ADHD to test the applicability of the study tools and to identify obstacles that may be faced during data collection and then necessary modifications were done. These patients were excluded from the actual study subjects.

7. Data collection:

- After securing administrative approval, data collection was initiated covering a period of 9months (from Nov 2018 to August 2019).

8.The total subjects consisted of 150 mothers who have child with Attention Deficit Hyperactivity Disorder

9. The data obtained at the outpatient clinic, in which **Tool I Part I:** Mother data such as; age, level of education, mother's occupation, residence and family size ….etc.**Part II**: Children data as age, gender, birth order, history of birth e.g. type of delivery, birth asphyxia, trauma, preterm and medical history of the disease of the child and family.**Tool Two**: Mother's knowledge about Needs of their Children's with Attention Deficit Hyperactivity Disorders: Structured Interview Schedule. Every mother was interviewed individually for 10-15minutes after explaining the purpose of the study. All patients met the included criteria of subjects' selection in the study.

10. Ethical Considerations:

- Written informed consent for participation will be obtained from every mother after explanation of the study aim.
- mothers have the right to withdrawal at any time of the data collection
- Mothers Privacy will be taken into consideration and confidentiality of data will be assured.

11. Limitations of the study

1. After data collection and analysis, it was found that large sample size and the specific inclusion criteria, leading to decreased availability of patients who possessed the criteria. Therefore, data collection took longer time to be completed.
2. One setting (human capacity development center) the majority of mothers refused to participate in research so it is excluded from setting areas.

III. Results

Tables (1) show that distribution of children according to their characteristics it was clarify that the majority of children (39.5%) were aged between 6-<8 year. moreover, more than half of children (69.1% were male. concerning to birth order the highest percentage of (45.9%) were second child order. As regard to type of school85.6% of children were in ordinary school.

Table (2) show percentage distribution of children medical history it was illustrates that more than two third (84.9%) of children with ADHD have been discovered at time ranged from 1year to 3 years.

As regard to pervious hospitalization the majority of children were hospitalized with fever (4%) moreover, the highest percentage of children with medical history (16.8%) diagnosed with bronchial asthma.

Table (3) clarify distribution of mothers according to their socio-demographic characteristics it was represents the highest percentage of mothers (39.6%) were secondary education .regarding to residence more than two third of studied mothers (69.1%)were lived in urban areas.

Table (4) revels percentage distribution of mothers according to their medical and obstetric history it was clear that 17.2% of mothers had medical history during pregnancy. Moreover, 6.5% of mothers exposed to radiation during pregnancy. On other hand about 7.2% of children delivered prematurely.

Table (5) clarify that relationship between mother knowledge about educational need at school for their children and mothers socio-demographic characteristics .it was illustrated that there is significant difference between mother knowledge about their children educational need at school and family income(x^2= 13.54 p= (*0.001).

Although there is no significant relation between mother age, educational level , occupation, marital status and mother knowledge about their children need educational need at school(x^2= 3.82, 8.11, 2.21, 4.94 p=0.431, 0.777, 0.331, 0.294 respectively)

Table (6) reflect relationship between mothers knowledge about educational need at home for their children and mothers socio-demographic characteristics.it was clear that only 30.2% of mothers had fair level of knowledge about their children educational need at home. There is significant relation between mother occupation and mother knowledge about their children educational need at home (x^2= 13.49, p= *0.04)

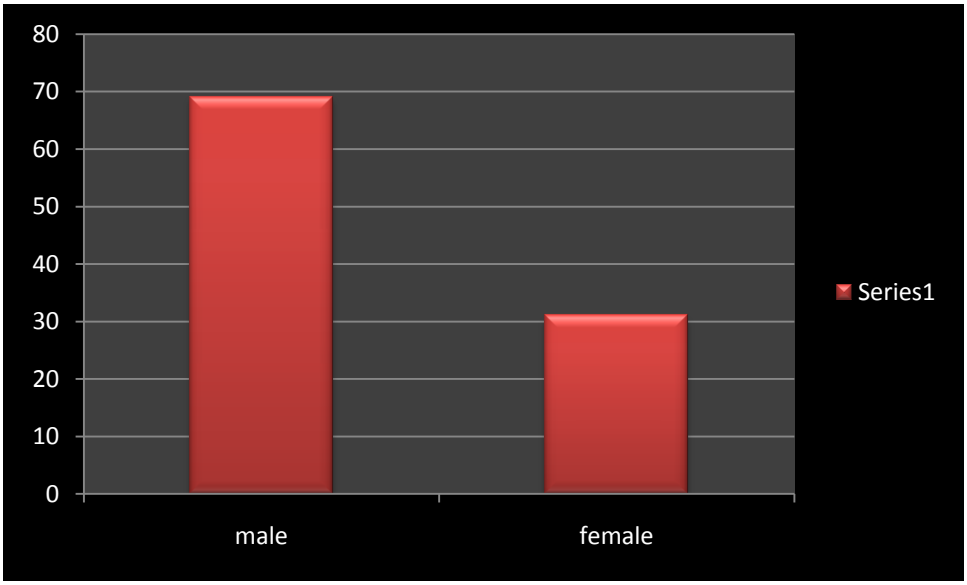
Although there is found no significant relation between mother age , educational level, marital status, family income and mother knowledge about educational need at home for their children(x2= 3.42, 22.61 ,2.4, 5.35)
p= 0.490,*00.31, 0.663, 0.069)

Table (7) portrays that relationship between mother knowledge about nutritional need for their children and mother socio demographic characteristics it was clarify that the highest percentage of mothers aged between 30-<40 years (31.4%) had fair level of knowledge while only 27.3% had good level of knowledge about nutritional need for their children .

There is found a significant relation between mother knowledge about nutritional need for their children and mother socio demographic characteristics. (*0.00, *0.002,*0.002,*0.004)

Table (1): Distribution of Children according to their characteristics

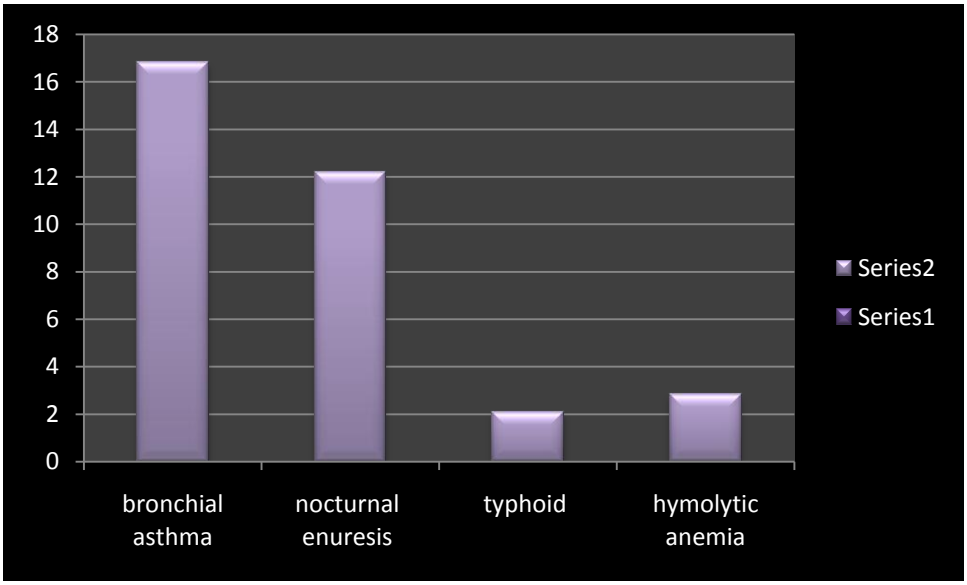
Characteristics	No (N=139)	%
Age in years		
6- < 8	55	39.5
8- < 10	50	36
10 -≤12	34	23.3
Total	139	100
Gender		
Male	96	69.1
Female	43	30.9
Total	139	100.0
birth Order		
first	50	35.9
Second	61	43.9
Third	18	13
Fourth	10	7.2
Total	139	100
Type of school		
Ordinary school	119	85.6
Special need school	20	14.4
Total	139	100



Distribution of children's with ADHD according to their Gender

Table (2): Characteristics and medical history of children with ADHD

Characteristics	No (n=139)	%
Onset of children diagnosed with ADHD		
>2 month - <1 year	10	7.2
>1 year - <3 years	118	84.9
>4 years – 5 years	10	7.2
Pervious Hospitalization (n=15)		
Fever	6	4.0
Surgical operation	5	3.3
Fracture	2	1.3
Gastroenteritis	1	.7
pneumonia	1	.7
Non Hospitalized	124	89.2
Child have medical Disease		
Yes	50	35.9
Bronchial asthma	26	16.8
Nocturnal enuresis	17	12.2
Chronic hemolytic anemia	4	2.8
Typhoid	3	2.1
No	89	64.1

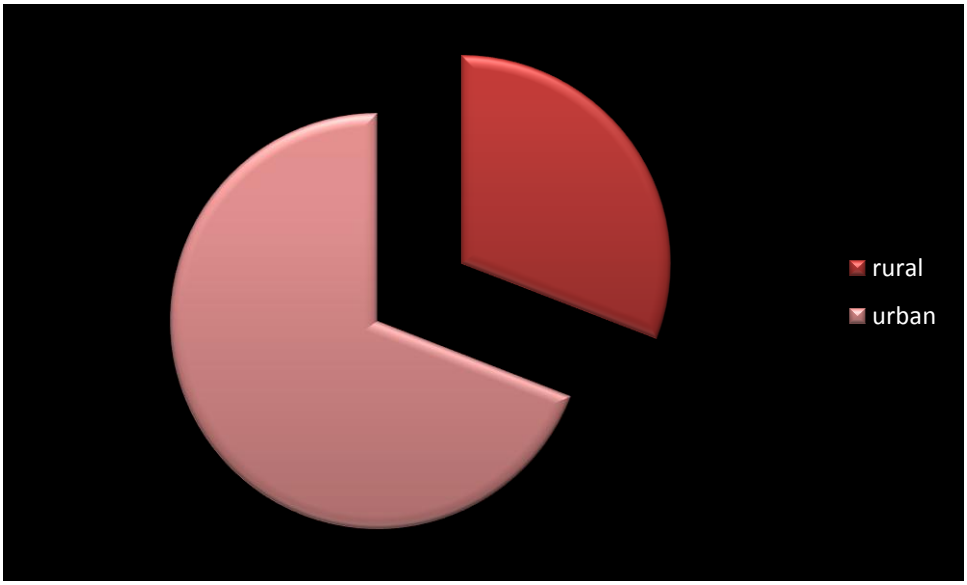


Distribution of children's according to their medical history

Table (3):Socio Demographic Characteristics of mothers'having children with ADHD

Characteristics	No (n=139)	%
Mother age		
20 -< 30	15	10.8
30 -< 40	107	77.0
40 and more	17	12.2
Educational level		
Illiterate	14	10.1
Read and write	14	10.1
Primary education	15	10.8
Preparatory education	12	8.6
Secondary education	55	39.6
University education	28	20.1
Master degree	1	0.7
Mother occupation		

Employee	42	30.2
Housewives	97	69.8
Marital status		
	124	
Married	13	89.2
Divorced	2	9.4
Widow		1.4
Family income		
Enough	68	48.9
Not enough	71	51.1
Residence		
Rural	43	30.9
Urban	96	69.1



Distribution of mothers' according to their residences

Table (4): Medical and Obstetric History of Mother having children with ADHD

Characteristics	No	%
Disease occur during pregnancy	24	17.2
yes		
Hypertension	9	6.5
Eclampsia	6	4.3
Sever vomiting	4	2.6
Diabetes	3	2.2
Hypotension	1	0.8
Cancer	1	0.8
No	115	82.8
Drugs given during pregnancy		
yes	24	17.2
Antihypertensive	15	10.8
Antiemetic	4	2.8
Oral hypoglycemia	3	2.1
Analgesic	1	0.7
Hypotensive medication	1	0.7
No	115	84
Exposure to radiation during pregnancy		
Yes	9	6.5
No	130	93.5
Type of delivery		
Normal delivery	50	36.0
Cesarean section	89	64.0
Problem during delivery		
yes	23	16.6
Premature labor	10	7.2

Premature rapture of membrane	9	6.5
Meconium aspiration	4	2.9
No	116	83.4

Table (5) Relationship between mother knowledge about educational need at school for their children and mothers socio demographic characteristics

Mother socio demographic characteristics	**Mothers Knowledge about children educational need at school**						**Total**		**X2**	**Sig**
	Poor		Fair		Good		**N**	**%**		
Mothers age /years	N	%	N	%	N	%				
	42	30.2	74	53.2	23	16.5				
20 - < 30	5	3.6	9	6.5	1	0.7	15	10.8	3.82	0.431
30 -<40	32	23.0	54	38.8	21	15.1	107	77.0		
40 and more	5	3.6	11	7.9	1	0.7	17	12.2		
Mothers Educational level										
Illiterate	2	1.4	9	6.5	3	2.2	14	10.1	8.11	0.777
Read & write	6	4.3	5	3.6	3	2.2	14	10.1		
Primary education	7	5.0	5	3.6	3	2.2	15	10.8		
Preparatory education	5	3.6	5	3.6	2	1.4	12	8.6		
Secondary education	15	10.8	27	19.4	13	9.4	55	39.6		
University education	7	5.0	16	11.5	5	3.6	28	20.1		
Master degree	0	0	1	0.7	0	0	1	0.7		
Mothers occupation										
Working	9	6.5	23	16.5	10	7.2	42	30.2	2.21	0.331
housewives	33	23.7	45	32.4	19	13.7	97	69.8		
Marital status										
Married	39	28.1	57	41.0	28	20.1	124	89.2	4.94	0.294
Divorced	3	2.2	9	6.5	1	0.7	13	9.4		
Widow	0	0	2	2.9	0	0	2	1.4		
Family income										
Enough	12	8.6	35	25.2	21	15.1	68	48.9	13.54	*0.001
Not Enough	30	21.6	33	23.7	8	5.8	71	51.1		

X2= Chi-Square Test significant at P $\leq$0.05

Table (6) Relationship between mother knowledge about educational needs at Home for their children and mothers socio demographic characteristics

Mother socio demographic Characteristics	**Educational needs at Home**						**Total**		**X2**	**Sig**
	Poor		Fair		Good		**N**	**%**		
Mothers age /years	N	%	N	%	N	%				
	42	30.2	74	53.2	23	16.5				
20 - < 30	5	3.6	9	6.5	1	0.7	15	10.8	3.42	0.490
30 -<40	32	23.0	54	38.8	21	15.1	107	77.0		
40 and more	5	3.6	11	7.9	1	0.7	17	12.2		
Educational level										
Illiterate	4	2.9	5	3.6	5	3.6	14	10.1	22.61	*00.31
Read & write	10	7.2	2	1.4	2	1.4	14	10.1		
Primary education	4	2.9	8	5.8	3	2.2	15	10.8		

Preparatory education	4 2.9	6 4.3	2 1.4	12 8.6		
Secondary education	15 10.8	31 22.3	9 6.5	55 39.6		
University education	5 3.6	21 15.1	2 1.4	28 20.1		
Master degree	0 0	1 0.7	0 0	1 0.7		
Mother occupation					13.49	*0.04
Working	8 5.8	32 23.0	2 1.4	42 30.2		
Housewives	34 24.5	42 30.2	21 15.1	97 69.8		
Marital status						
Married	39 28.1	65 46.8	20 14.4	124 89.2	2.4	0.663
Divorced	3 2.2	7 5.0	3 2.2	13 9.4		
Widow	0 0	2 1.4	0 0	2 1.4		
Family income					5.35	0.069
Enough	16 11.5	43 30.9	9 6.5	68 48.9		
Not Enough	26 18.7	31 22.3	14 10.1	71 51.1		

X2= Chi-Square Test significant at P $\leq$0.05

Table (7) Relation between mother knowledge about Nutritional need for their children according to their characteristics

Mother socio demographic Characteristics	Nutritional needs			Total N %	X2	Sig
Mothers age /years	Poor N % 4633.1	Fair N % 52 37.4	Good N % 41 29.5			
20 - < 30	2014.3	7 5.0	5 3.5	3223.0	1.81	*0.044
30 -<40	22 15.8	38 27.3	33 23.7	93 66.9		
40 and more	4 2.8	7 5.0	3 2.1	14 10.1		
Educational level						
Illiterate	64.3	6 4.3	6 4.3	1813.0	13.28	*0.000
Read & write	107.2	7 5.0	4 2.9	2116.0		
Primary education	5 3.5	2 1.4	3 2.1	10 7.5		
Preparatory education	3 2.1	4 2.9	5 3.5	12 8.7		
Secondary education	1812.9	23 16.5	11 7.9	5237.5		
University education	2 1.4	10 7.2	12 8.6	24 17.3		
Mother occupation					2.49	*0.002
Working	25 18.0	18 12.9	12 8.6	55 39.5		
Housewives	2115.1	34 24.4	29 20.7	8460.5		
Marital status						
Married	3323.7	44 31.6	38 27.3	11582.7	2.65	0.618
Divorced	12 8.6	7 5.0	3 2.1	22 15.9		
Widow	1 0.8	1 0.8	0 0	2 1.4		
Family income					1.73	*0.00.2

Enough	10 8.3	25 20.7	21 17.4	56 40.3		
Not Enough	3625.9	27 19.4	20 14.3	8359.7		

X2= Chi-Square Test significant at P $\leq$0.05

IV. Discussion

Attention Deficit Hyperactivity Disorder (ADHD) is the most common neurodevelopment disorder diagnosed in school age children[-]. It is characterized by chronic symptoms of inattention, impulsivity, and hyperactivity that lead to functional impairment experienced in multiple settings[.] Attention deficit hyperactivity disorder causes significant impairment in children's lives because its symptoms interfere with attainment of the normal developmental milestone of childhood such as academic, fine motor, social and adaptive skills(nelson 2015,)

Results of the current study had reflected that more than two third of children's had ADHD (69.1%) were males (table (1)). It may be due to genetic risk factors. Similarly Vogley J (2019) and Novik T (2006) findings came in harmony with the result of the present study. The previous two studies found that (15.7 %) were girls and (84.3 %) were boys (a ratio of 1:5)

Regarding the birth order, the present study revealed that more than one third of children's with ADHD were first and second birth order (35.9, 43.9%respectively). Birth order is consider one of the most influential environmental factors in child development and affecting cognitive abilities as well as behavioral traits. This finding is in the same line with the result of a study done by Evrensel R, (2013) conducted in Uskudar University, Istanbul. They assessed birth order in children diagnosed with ADHD. They reported that the first born children are more likely to have ADHD.

On the other hand Berger I, et al 2009 conducted in faculty of health science Jerusalem. They assessed that attention deficit hyper activity disorder and birth order. The finding revealed that there was no correlation between birth order and vulnerability to ADHD among all the studied families.

The present study clarified that nearly half of children with ADHD had medical history, and 16.8 % of them had asthma (table (2)). It may be due to shared factors and role of allergic mechanism shared between asthma and ADHD. These finding are consistent with those of Cortese S in 2018 who conducted in Academic unit of psychology and clinical and experimental science and assessed the association between ADHD and asthma. Moreover the study by Grizenko N, et al (2015) which was conducted at department of Psychiatry University of McGill University, had assessed the increase risk of asthma in children with ADHD and the role of prematurity and maternal stress during pregnancy. Both of these mentioned previously studies had found significant association between asthma and ADHD.

Considering to mothers' age, the present study had shown that more than three quarters of mothers' were in age group from 30 to less than 40 years (table3). These finding was not in the same line with that of Milkkelsen S, (2017). It was conducted in department of public health, and studied the parental age and attention Deficit Hyperactivity Disorder. They found that the younger maternal and parental age were associated with higher risk of being diagnosed with ADHD.

The present study revealed that the most of mothers have children with ADHD were married. This came consistent with the finding of Russell A et al (2015). It was conducted in institute of health research, United Kingdom. They found that maternal age at child birth; marital status and financial difficulties were significantly associated with ADHD. On the other hand this finding is incongruent with the findings of Choi W (2016) who conducted a study in Department of occupational and environmental medicine, Gachon University in Korea. It assessed the level of lead in blood, parental marital status and the risk of attention deficit hyperactivity disorder in elementary school. ADHD was found more frequency in those children with blood lead level and with single parent than others with two parent family.

Moreover, nearly three quarters of mothers had children with ADHD were from urban areas (Table (3)). This may be due to increased risk of air pollution in urban areas which associated with increase the risk of ADHD. These finding comes congruent to the findings by Siddique S, et al (2011) that was conducted in central pollution control, environmental health center board and Aersol monitor, Canada. They assessed Attention Deficit hyperactivity disorder in children who were chronically exposed to high level of vehicular pollution. This reported that ADHD was found in 11% of urban children of Canada and major risk for male gender, with low socio economic status. They concluded that there was a possible association between air pollution and behavior problems in children.

On the other hand, Guzman J 2018 found that there was no evidence for increased risk of ADHD symptoms with increasing prenatal air pollution level in children aged from 3 to 10 years. This study was conducted in Grenoble, France by a team of environmental epidemiology applied to reproduction and respiratory health.

As regard to family income the existing study clarified that more than half of mothers had insufficient family income. It may be due to long term medication and follow up related to the child condition. This result is congruent to the results of Russell A, (2015). They reported that financial difficulties, housing tenure, maternal age at birth of child and marital status were significantly associated with an outcome of ADHD condition.

As regarding to present studied mothers' past medical history, one quarter of them had history of premature labor (table (4)). This had led to preterm babies. Preterm babies usually had decreased gray matter concentration; increased white matter and decreased shape in widespread areas which could associate with ADHD. This present finding goes hand by hand, with that of Chu S. (2012) study which was conducted in Department of Child Psychiatry and Sleep Center (Memorial Hospital). It assessed the relationship between attention deficit hyperactivity disorder and premature infants in Taiwanese. It was found that extremely preterm infant have an increased risk of attention problems. Similarly in 2013, Micheal T et al found that the ADHD group had significantly higher rate in both of prematurity and low birth body weight than control group children.

Furthermore, the existing study illustrated that around one quarter of the present studied mothers had past medical history during pregnancy including high blood pressure. This may be due to increased risk of neuro-developmental disorder including ADHD. The present study results came in harmony with those of Castejón O et al (2018) and Grizenko N (2012). They both assessed the maternal stress, pregnancy disease and child hyperactivity and Attention Deficit (ADHD). They found that there was a significant relation between mother medical history and children with ADHD whether with Hypertension and/or hyper emesis gravidarm.

This study revealed that almost more than one quarter of the studied mothers were on antihypertensive medication during pregnancy. This might increased the risk of ADHD in their young children. This finding is consistent with that of Jong P et al (2010) conducted in University of Nijmegen, Netherlands. They assessed Antihypertensive treatment during pregnancy and functional development at primary school age. They reported that most of the studied children were exposed to some of Anti-hypertensive medication in utero and this might increase the risk of ADHD occurrence.

The present results showed that 6% of studied mothers were exposed to radiation during pregnancy. In general exposure to radiation in utero may cause brain developmental defects, consequent functional deficits that lead to ADHD. This finding is congruent to the finding of Li D (2019) which conducted in Kaiser Permanente Northern California. The study assessed that association between maternal exposure to magnetic felid nonionizing during pregnancy and risk of ADHD. The study found a significant association between maternal exposure to radiation during pregnancy and increase risk of ADHD. These children had twice risk to ADHD than others and increased risk of ADHD that persist to adolescent.

As regard type of delivery, the present study showed that more than two third of the studied mothers whose children with ADHD had delivered via C.S. This result may be due to psychological effects caused by C.S. It might also increase the risk of depression and post traumatic stressors for mother which had negative effect on their children. This finding comes consistent to the finding by Curran E (2016) and Amiri S (2012) in the same field. They reported that was a significant relation between C.S and increase risk of ADHD P= 0.001.

This study portrays that 16.6 % of mothers suffered from complication during delivery whether meconium aspiration and/or premature rupture of membrane. It may be due to lack of knowledge about the importance of prenatal care. This finding is consistent to the findings by Ketzer C (2012) conducted in University federal, Brazil, as well as Amor L (2005) conducted in Laval University Canada. They assessed perinatal complication in children with ADHD. They reported that children with ADHD had significantly higher rate of neonatal complication compared with unaffected siblings. The neonatal complications consider one of the environmental risk factor that may increase risk of ADHD in children.

It was clear that nearly half of the studied mothers had poor level of knowledge about their children educational need. It may be due to decrease in their level of education as well as their decreased financial level.(Table (5)) Nevertheless, there was no significant relation between mother knowledge about their children safety needs and their educational level (p= 0.777). The present study comes congruent with the study done in Tahran by Dodangi N in 2017 conducted in University of social welfare and rehabilitation. The study had evaluated knowledge and attitude of parent of children with ADHD, reporting that parent had very low level of knowledge and even incorrect beliefs. This study found that the studied parent knowledge significantly correlated with their educational level which comes contradicting the present study results in this part as previously mentioned.

This present finding reported that 23.1% of studied mothers had poor level of knowledge about nutritional needs for their children. The present results revealed that most of the mothers were working in addition to their decreased level of education as more than half of mothers were secondary education (table (7)). This finding is consistent with the finding of the study by Shoorki A (2011) that was conducted in College of medicine and Health science, Oman. The study assessed the effect of Omani mother's nutritional knowledge and attitudes on their children. The study found that low dietary adequacy in the studied children, lower level of both nutritional knowledge and low food related health attitude of children in mothers came related to their mothers

low educational level and high ranked occupation. They reported that the parent knowledge significantly correlated with their educational level (0.01)

References

[1]. Amiri S, Malek A, Sadegfard M, Abdi S (2012) Pregnancy-Related Maternal Risk Factors of Attention-Deficit Hyperactivity Disorder: A Case-Control Study. Journal of ISRN pediatrics .available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3374940/

[2]. Amor,L., Grizenko ,N., Schwartz,G., Lageix,P., Baron,C., Stepanian ,T., etal (2005) Perinatal complications in children with attention-deficit hyperactivity disorder and their unaffected siblings. Journal of psychiatry and neuroscience 30(2):120-126.

[3]. Barbaresi WJ, Colligan RC, Weaver AL, Voigt RG, Killian JM, Katusic SK. Mortality, ADHD, and psychosocial adversity in adults with childhood ADHD: A prospective study. Pediatrics 2013;131(4):637-644.

[4]. Boland S. The Role of School Nurses in the Early Identification, Referral and Provision of Services for Students with Early Signs of Mental, Provision of Services for Students with Early Signs of Mental, Emotional or Behavioral Disorders: A Dissertation Emotional or Behavioral Disorders.2012 available at : https://escholarship.umassmed.edu/cgi/viewcontent.cgi?article=1033.

[5]. Castejono O, Galindaz P, Torres L Leal J, Villasmil A, GrumbaumE,etal (2018) Maternal Stress, Pregnancy Diseases and Child Hyperactivity and Attention Deficit (ADHD) journal of scientific and technical research 10(26)717

[6]. Center of Disease Control and Prevention. Data and Statistics Attention Deficit Hyperactivity Disorder 2016 available at: https://www.cdc.gov/ncbddd/adhd/data.html Retrieved on march 2020.

[7]. Center of Disease Control and Prevention. Treatment of ADHD 2019 avalible at https://www.cdc.gov/ncbddd/adhd/treatment.htmlRetrieved at march 2020

[8]. Center of Disease Control and Prevention. ADHD in the class room 2019 available at https://www.cdc.gov/ncbddd/adhd/school-success html.retrived at March 2020.

[9]. Choi W, Kwon H, Lim M, Lim J (2016) Blood Lead, parental marital status and the risk of attention-deficit/hyperactivity disorder in elementary school children: A longitudinal study available at: https://www.researchgate.net/publication/289503951_Blood_Lead_parental_marital_status_and_the_risk_of_attentiondeficithyperactivity_disorder_in_elementary_school_children_A_longitudinal_study

[10]. Chu S , Tsai M, Hsu J, Huang H , Huang Y (2012) The relationship between attention deficit hyperactivity disorder and premature infants in Taiwanese: a case control study BMC psychiatry 23; 12: 85.

[11]. Curran ,E. ,Khashan,A., Dalman,C., Kenny,L., Cryan,J. Dinan,T. Kearney ,p. (2016) obstetric mode of delivery and attention deficit /hyperactivity disorder . International journal of epidemiology 45 (2):532-42.

[12]. David K.Urion. Nelson Text book of pediatrics 21 th ed.Canada:Saunders Elsevier;2020 Chapter 49 Learning and developmental disorders.p262-4.

[13]. El-Gendy S, El-bitar E, El-Awady M, Bayomy H, Agwa E attention-deficit / hyperactivity disorder: prevalence and risk factors in Egyptian primary school children [Ph.D thesis puplished]; Department of Community Medicine, Faculty of Medicine , Benha University, Benha ,Egypt.

[14]. Fleming M, etal Educational and health outcomes of children treated for ADHD; 17(7)207 James pediatrics

[15]. Grizenko N ,Osmanlliu E, Fortier M , Joober R (2015) Increased Risk of Asthma in Children with ADHD: Role of Prematurity and Maternal Stress during Pregnancy PMC .24(2): 109-15. Available at https://pubmed.ncbi.nlm.nih.gov/26379722/

[16]. Guzman J, Forns J, SunyerJ, Esteban R, Porta D, Ghassabin A etal (2018) Air Pollution Exposure during Pregnancy and Symptoms of Attention Deficit and Hyperactivity Disorder in Children in Europe National of library of medicine 29(5):618-626.

[17]. Hockenberry M, Wilson D. Wong's Essentials of Pediatric Nursing. 9th ed. St. Louis: Mosby; 2013.Chapter 17, Health problem of school-age children and adolescents. P. 504-6.

[18]. James tawna. Health promotion throughout the life span .8th edition St.louis: Mobsy;2014.Chapter 15, Application of Health promotion. P.492-3.

[19]. Jong, D., Zielhuis, G., Gelder, V., Pellegrino, A., Gabreels, F. , Eskest, T. (2010) Antihypertensive treatment during pregnancy and functional development at primary school age in a historical cohort study. National library of medicine 117(9):1080-6.

[20]. Jorgenson C, Evaluating nutrition recommendations from social media for children with ADHD master thesis Department of family and consumer sciences California state university, long beach USA 2018.

[21]. Karen J, Robert M. Nelson Essentials of Pediatrics. 20thed. Philadelphia: Saunders Elsevier; 2015 .Chapter 13, Behavioral disorder. p41-2.

[22]. Ketzer,C., Gallois,C., Martinez,A., luis,A.(2012) .is there an association between perinatal complications and attention deficit hyperactivity disorder –inattentive type in children an adolescent .Brazilian journal of psychiatry.34(3).

[23]. Li ,D., Chen ,H., Ferber , H., Hirst,A., Odouli,R. (2019) Association Between Maternal Exposure to Magnetic Field Nonionizing Radiation During Pregnancy and Risk of Attention-Deficit/Hyperactivity Disorder in Offspring in a Longitudinal Birth Cohort. Journal of Jama network 3(3).

[24]. Madkour A, Helmy E. Madkour's Essentials of Pediatrics.15th ed. Alexandria: Ayad Press; 2016. Chapter 15, Behavioral pediatrics. p. 320

[25]. Michael T, Downey L, Kuban K (2013) Extreme prematurity and attention deficit: epidemiology and prevention PMC 7:578 available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3776954/

[26]. Mikkelsen S, OlsenJ, Bech B, Obel C (2017) Parental age and attention-deficit/hyperactivity disorder (ADHD) International Journal of Epidemiology, 46, (2), 409–420, available at: https://academic.oup.com/ije/article/46/2/409/2617180

[27]. Millichap j, yee m. the deit factor in attention –deficit hyperactivity disorder pediatrics .2012:129(2):330-7.available at : http://www.ncbi.nlm.nih.gov/ PubMed /22232312.

[28]. Russell A, Ford T, Russell G (2015) Socio-economic associations with ADHD: finding from a mediation analysis journal of PMC 1: 10(6) available at: https://pubmed.ncbi.nlm.nih.gov/26030626/

[29]. Sandra F a practical guide for helping children and teens with ADHD .USA. Awily brand .2015 chapter 2:p 180-3.

[30]. Siddique S, Banerjee M, Ray M, Lahiri T(2011) Attention-deficit hyperactivity disorder in children chronically exposed to high level of vehicular pollution National of library of medicine 170(7):923-9

[31]. singhA, yeh c, verma N, Das A .overveiwof Attention Deficit Hyper activity Disorder in young children 3(2): 2115 2015 PMC. available at https://www.ncbi.nlm.nihgov/pmc/articles/PMC4768532/

[32]. Theule J, Wiener J, Tannock R. Parenting stress and ADHD: a comparison of mothers and father. Journal of Emotional and Behavioral Disorder 2012; 21(1): 3-17.

[33]. Woo H, Kim D, Hong Y, Kim Y, Seo J, Choe B. Dietary patterns in children with Attention Deficit/Hyperactivity Disorder (ADHD). PMC Nutrients. 2014; 6(4): 1539-53.