

Factors Affecting Sleeping Pattern of Early Childhood in Assuit City Egypt

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ABSTRACT

Every living creature needs to sleep. Sleeping is the primary activity of the brain during early development which has profound influences on health and wellbeing across the life course. It is influenced by various factors involving biological, neuro-developmental, psychosocial, behavioral and environmental factors, as far as modern civilization and new changes in lifestyle. However, sleep problems are common and highly prevalent in early childhood children. Reduced or disrupted sleep, especially if it occurs at key times in development, can lead to serious consequences on all aspects of child development and for almost all body organs and system. **The aim** of this study is to identify factors affecting sleeping pattern of early childhood children in Assiut City. Descriptive research **design** was used in this study. This study was carried out in two nursery schools in Assiut City: (University Nursery School) as an urban area and (Ezz Nursery School) as a rural area. Both were selected randomly to constitute Assiut City. The study **sample** consisted of 200 healthy early childhood children and their parents. Their age ranged from (1-6 years old) of both sexes. Data were collected during the period from the beginning of June 2014 to the end of September 2014 through using specially-designed structured interview questionnaire. **The results** of this study revealed that studied children's sleeping start time was very late, about one third and more (32%, 41%) of them start to sleep between 10 -12 PM, (43%, 39%) of them awake early at 7 AM, more than half (51%, 54%) of them sleep for 6 -8 hours /day, near half and more (46%, 55%) of them have sleeping naps. Asphyxia is the most reported post-natal problem and colic is the commonest reported complain among them. Television was the most used (86%) device for entertainment in their homes. Highly statistically significant difference is found between their sleeping duration and reported post-natal problems ($P=0.001$); and also statistically significant difference is found between their sleeping duration and the use of mobile devices ($P=0.023$), their sleeping behaviors related to the need of a pacifier or their crying till asleep ($P=0.001$, $P=0.030$) respectively and also with their mothers' behavior of excessive pampering ($P=0.022$). The study **concluded** that, in Assiut City, early childhood children sleeping start time is very late. Despite that, they wake up early; consequently, their sleep duration is less than required according to their ages. Daytime napping is common as expected according to their ages. Asphyxia is the most reported post-natal problem and colic is the commonest reported complain among them. The children's sleeping duration is affected by many biological, neurodevelopmental, environmental, psychosocial and behavioral factors. The study **recommended** educating parents about children's normal sleeping patterns and limiting the use of media, particularly in bedrooms to promote good sleep habits and improve the quantity and quality of the child's sleep.

Key words: Sleeping pattern, naps, early childhood

INTRODUCTION

Every living creature needs to sleep. It is the primary activity of the brain during early development (**National Sleep Foundation, 2016**) Sleep is a vital, complex and essential biological process that is required on a daily basis for all humans

regardless of age, sex or ethnic origin (**ALDabal and BaHammam, 2011**). A healthy diet is not the only thing that will help children continue to grow and develop physically, mentally, and socially. Children also need adequate amounts of sleep in order to allow their bodies time to recharge for each new day. Getting children to want to go to sleep is not always an easy task (**Oswalt, et**

al., 2008). Young children's sleep is often a concern for parents. The maturation of the sleep-wake system and the consolidation of nocturnal sleep is a very prominent and rapid process in early childhood. It is influenced by the child's psychosocial context, modern civilization and new changes in lifestyle. Therefore, it is crucial for professionals to identify factors that could facilitate children's sleep, and to be sensitive to the impact poor or insufficient sleep can have on the child's development (Sadeh, 2013 and BaHammam, et al., 2006).

Sleep can be defined as a normal state of altered consciousness during which the body rests. It is characterized by decreased responsiveness to the environment and a person can be aroused from it by external stimuli. So, sleep is the state of natural rest which is necessary for health and survival (Psychiatric nursing, 2013). According to a simple behavioral definition, sleep is a reversible behavioral state of perceptual disengagement from and unresponsiveness to the environment (Carskadon and Dement, 2011). Sleeping patterns are a person's clock-hour schedule of bedtime and arise time as well as nap behavior; it may also include time and duration of sleep interruptions (National Sleep Foundation, 2012). In addition, sleep period is defined as that between sleep onset time and sleep end time, whereas the period between bedtime and sleep onset time is called sleep latency (Lwasaki, et al., 2010). Sleep is very individual and can vary a lot at any age; sleeping patterns vary between cultures and families. Children in one family may have very different sleep needs of those in another family. Sometimes a child's sleeping pattern does not match their parents' expectations. It is important for parents to meet their child's need for comfort in the way that gives them time to rest (Women's and Children's Health Network, 2014).

There are two alternating types or states of sleep. The first one is Non-Rapid Eye Movement (NREM) or "quiet sleep". During the deep states of NREM sleep, blood supply to the muscles is increased, energy is restored, tissue growth and repair occur, and important hormones are released for growth and development. The second one is Rapid Eye Movement (REM) or "active sleep". During REM sleep, our brains are active and dreaming occurs. Our bodies become immobile, breathing and heart rates are irregular. Newborns spend 50 percent of their time in each of these states and the sleep cycle is about 50 minutes. At about six months of age, REM sleep comprises about 30 percent of sleep. By the time children reach preschool age, the sleep cycle is about every 90 minutes. By the age of two, most children have spent more time asleep than awake and overall, a child will spend 40 percent of their childhood asleep (National Sleep Foundation, 2016).

According to the National Sleep Foundation, toddlers need about 12 -14 hours of sleep in a 24 -hour period. When they reach about 18 months of age, their nap times will decrease to once a day lasting about one to three hours while preschoolers need about 11 to 13 hours of sleep every night . In addition, many preschoolers take naps during the day ranging between one and two hours per day and often stop napping after five years of age (National Sleep Foundation, 2016). It is well known that sleep duration in children decreases with age (BaHammam, et al., 2006). In early childhood inadequate or poor sleep at night in children may have negative consequences on a host of functional domains, including memory, mood, behavior, learning, and health (McDonald, et al, 2014 and Owens, 2007). Healthy sleeping habits are essential to foster proper cognitive, behavioral, emotional and physical development in children. Accordingly, early detection and intervention is necessary to

reduce or eliminate poor sleeping habits as soon as possible (Touchette, 2011).

Sleep disorders in children are classified into two groups, the dyssomnias (difficulty in initiating or maintaining sleep) and parasomnias (disorders that disrupt sleep after it has been initiated), some sleep disturbances are temporary (Mindell, 1993) and A dair and Bauchner, 1993). Gaylor, et al.,(2001) established a more appropriate nosology for young children to identify insomnia and sleep disorders :- 1)- night waking (> 2 waking / night [1-2 years] and >1 waking / night [2 years or older]); and 2)- sleep onset problems (> 30 minutes to fall asleep [1-2 years] and > 20 minutes to fall asleep [2 years or older]) according to three degrees of severity:- a)- normal disturbance (1 episode per week), b)- perturbation (2-4 episode per week), and c)- disorder (5-7 episodes per week), for at least one month. Many toddlers experience sleep problems, including resisting going to bed and nighttime fears and nightmares are also common. Preschoolers commonly experience nighttime fears and nightmares. In addition, sleepwalking and sleep terrors peak during preschool years (National Sleep Foundation, 2016).

It is only in the last 30 years that child sleep problems have gained the attention of the scientific community. Consequently, early childhood health professionals should be knowledgeable about the ontogeny of sleep so that they are able to distinguish between "normal" sleep, disturbances, symptomatic of the normal sleep maturation process, and "real" early childhood problems (Touchette, 2011).

Sleeping patterns and sleep behaviors of children are influenced by a number of factors, including biological, cultural, social and family background, parental and environmental factors (Mindell, et al., 2010 and Meltzer, et al., 2011). Studies show that

difficulties in the prenatal period, such as long delivery, low birth score (e.g. muscle tone, reflex), low birth weight, prematurity, twins, asphyxia, separation anxiety, parents' bedtime routine, anxious, over-protective or depressive mothers, night breastfeeding, lack of parental presence and sleeping in the parental bed (co-sleeping) which are influenced by ethnicity and socio-economic status of parents (Touchette, 2011). Meanwhile a child may sleep more during growth spurts or after physical activity with friends or family and media use (video games, movies, television, cell phones, the internet) and may sleep less when teething or physically ill like a stuffy nose, fever, or earache, nausea, vomiting, colic or pain (Rose , 2013 and Adams ,et al. ,2004). Other factors, like cultural and climatic factors, appear to affect sleep duration in children (BaHammam, et al., 2006). It is therefore imperative to identify the factors likely to foster or to hinder good sleep so that childhood sleep problems can be treated (Touchette, 2011).

The nurse can play a pivotal role in environmental modification and parent teaching to minimize the impact of sleep disturbance (Psychiatric Nursing, 2013). An environment that is safe and supports healthy sleep is a top priority for child care. Creating a calm atmosphere, following a regular routine and providing cues for sleep are variables that wise parents should be flexible and understanding to child's sleeping patterns (Rose, 2013). Researchers agree that education is a key not only to the treatment of existing sleep disturbances but for prevention of sleep problems (Francoeur, 2008)

Significance of the Study:

Sleep is a basic requirement for a child's growth and brain development and is important for health and wellness, especially for growing infants and young children.

Unfortunately, little is known about factors affecting sleeping patterns of early childhood children despite the high prevalence of poor sleep and sleep-related disorders. Therefore, this study was done to identify factors affecting sleeping patterns of early childhood children in Assiut City, Egypt.

Aim of the Study:

The aim of this study is to identify factors affecting sleeping pattern of early childhood children in Assiut City.

Subjects and Method:-

Research Design:

Descriptive research design was used in this study.

Setting:

This study was carried out in two nursery schools in Assiut City (University Nursery School) as an urban area and (Ezz Nursery School) as a rural area. Both were selected randomly to represent Assiut City.

Sampling:

The study sample targeted in this work consisted of 200 healthy early childhood children and their parents. Their age ranged from 1-6 years old of both sexes; 100 from urban nursery school and 100 from rural nursery school. Children were selected from all classes in each nursery school. There were no inclusion criteria, apart from being an enrolled child in these nursery schools.

Tools of Data Collection:

One tool was used to collect the required data for this study:

1- A structured interview questionnaire.

The tool was developed and designed precisely by the investigators in an Arabic form to collect the necessary data and was validated by a jury of experts from both pediatric nursing and neurological fields. It consisted of 5 major parts regarding factors affecting the children sleeping patterns and their sleeping patterns or habits:-

a)-Demographic characteristics of the studied children and their parents, such as (name, age, sex, nursery school type and place, grade level as well as parents' age, educational level, working condition and marital status).

b)-Socio-demographic characteristics of studied children's families and environmental background as (family type and size, residence, child birth order, type of housing, number of rooms, ventilation, devices and possibilities for entertainment as (television, computer, laptop, I.pad, mobile and electronic games).

c)-Medical history of the studied children and their mothers' as type and duration of delivery, prenatal or immediate postnatal problems as (asphyxia, low Apgar score, prematurity, low birth weight or low muscle tone) and the child's current health condition as (chronic diseases, epileptic seizure or colic).

d)-Studied children sleeping patterns as sleep start time, wake-up time, duration, naps, sleeping type, place as co-sleeping and child sleeping behaviors to fall asleep as (presence of the mother or play material, night breastfeeding, a pacifier and an overly hasty response).

e)-Parent's sleeping characteristics and behaviors as fixed sleeping time, any bedtime habits or practices, previous separation

anxiety, mother-child relationship and maternal behaviors as (anxious, depressive, insecure, overprotective, or aggressive mothers and excessive pampering of the child).

Method:

An official permission to conduct the study was obtained from the Ministry of Education and the directors of each nursery school in Assiut City after explaining the purpose of the study.

Pilot Study:

A pilot study was carried out on 10% (20) early childhood children from both nursery schools to test the clarity and applicability of the study tools and to estimate the time needed to collect data. According to the results of the pilot study, the needed modifications were done. A jury acceptance of the final form was secured before actual study work from both pediatric nursing and neurological fields to test its contents' validity.

Field of the Work:-

The study was conducted over a period of four months; from the beginning of June 2014 to the end of September 2014. Interviewing the studied children's parents was conducted according to their available time in the morning or at the end of the study day to collect the necessary data. The time needed for each interview ranged from 30 to 45 minutes.

Ethical Considerations:

Written informed consent was provided by a parent of each child participating in the study and they were secured that data will be confidential and used only for the research purpose.

Statistical Analysis:

The obtained data were coded, analyzed and tabulated using SPSS 19.0 statistical software packages. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, means and standard deviations for quantitative variables. P values less than 0.05 levels are considered statistically significant.

Results:

Table (1): Demographic characteristics of studied children

Items	University Nursery (n= 100)		Ezz Nursery (n= 100)		P-value
	No.	%	No.	%	
	Child sex:				
Male	45	45	58	58	
Female	55	55	42	42	
Child age:					0.171
1 - < 3 years	27	27	36	36	
3 - 6 years	73	73	64	64	
Nursery school place:					0.000*
Rural area	0	0	97	97	
Urban area	100	100	3	3	
Grade level:					0.001*
Pre kindergarten	46	46	38	38	
KG1	48	48	37	37	
KG2	6	6	25	25	

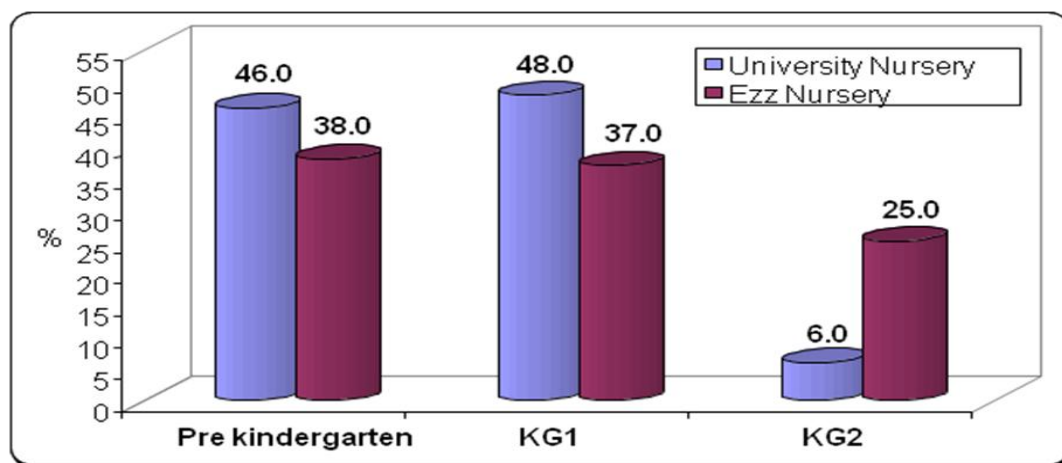


Fig. (1): Studied children grade level

Table (2): Demographic characteristics of studied children parents

Items	University Nursery		Ezz Nursery		P-value
	(n= 100)		(n= 100)		
	No.	%	No.	%	
Mother Age:					0.084
20 - < 25	7	7	15	15	
25 - < 30	35	35	41	41	
30 - < 35	46	46	33	33	
35 - < 40	11	11	7	7	
≥ 40	1	1	4	4	
Mother educational level:					0.003*
Basic education	5	5	10	10	
Secondary	34	34	53	53	
University or higher	61	61	37	37	
Mother Working condition:					0.537
Working	68	68	72	72	
Not working	32	32	28	28	
Father Age:					0.837
20 - < 25	0	0	0	0	
25 - < 30	15	15	17	17	
30 - < 35	27	27	26	26	
35 - < 40	36	36	31	31	
≥ 40	22	22	26	26	
Father Educational level:					0.027*
Basic education	7	7	5	5	
Secondary	41	41	60	60	
University	52	52	35	35	
Father Working condition:					0.774
Working	93	93	94	94	
Not working	7	7	6	6	
Parent Marital status:					0.245
Married	97	97	100	100	
Divorced	3	3	0	0	

Table (3): Socio-demographic characteristics of studied children families

Items	University Nursery		Ezz Nursery		P-value
	(n= 100)		(n= 100)		
	No.	%	No.	%	
Type of family:					0.007*
Nuclear family	60	60	41	41	
Extended family	40	40	59	59	
Child birth order:					
First	38	38	38	38	
Second	37	37	36	36	
Third	16	16	18	18	0.988
Forth	6	6	6	6	
Fifth and more	3	3	2	2	
Family size :					0.967
3 members	16	16	17	17	
4-5 members	70	70	70	70	
> 5 members	14	14	13	13	
Residence:					0.046*
Rural	7	7	16	16	
Urban	93	93	84	84	
Type of housing:					0.006*
Owned	65	65	82	82	
Rent	35	35	18	18	
Number of rooms:					0.084
1 room	5	5	1	1	
2 rooms	28	28	27	27	
3 rooms	50	50	63	63	
4 rooms or more	17	17	9	9	
Home ventilation (as stated by study subjects:-					0.121
Good	85	85	92	92	
Bad	15	15	8	8	
Devices and possibilities for entertainment					
Television	86	86	86	86	...
Computer	67	67	53	53	0.043*
Laptop	28	28	10	10	0.001*
Electronic games	56	56	48	48	0.258
Mobile	25	25	5	5	0.000*

Table (4): Medical history of the studied children and their mother's

Items	University Nursery		Ezz Nursery		P-value
	(n= 100)		(n= 100)		
	No.	%	No.	%	
Any Prenatal problems:					0.876
Present	28	28	29	29	
Not present	72	72	71	71	
Type of delivery:					0.479
Normal	49	49	54	54	
C.S.	51	51	46	46	
Duration of delivery:					0.724
Normal period	81	81	79	79	
Long delivery	19	19	21	21	
Immediate postnatal problems of infant:					0.866
Present	23	23	22	22	
Not present	77	77	78	78	
Postnatal problems:					
Asphyxia	7	30.4	7	31.8	0.92
Low Apgar score	5	21.7	6	27.3	0.666
Prematurity	4	17.4	4	18.2	0.945
Low birth weight	5	21.7	5	22.7	0.936
Low muscle tone	2	8.7	0	0	0.489
Child current health condition:					
Normal	69	69	55	55	0.041*
Chronic disease	2	2	1	1	0.561
Epileptic seizure	0	0	1	1	0.361
Colic	29	29	43	43	0.039*

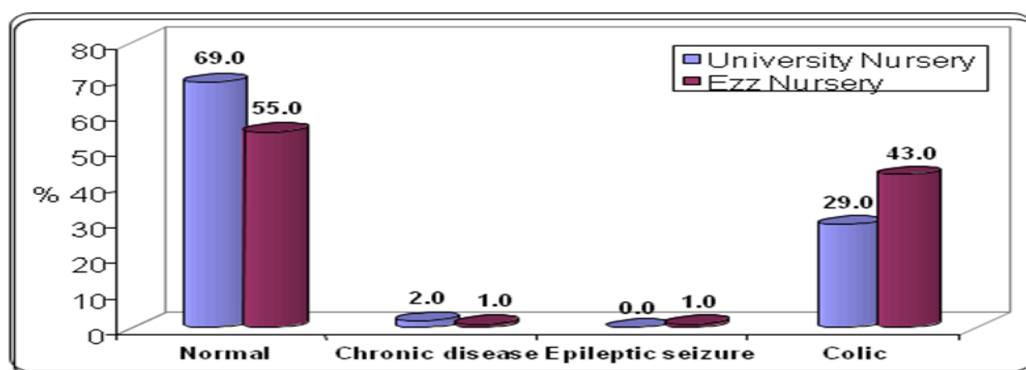


Fig. (2): Child current health condition

Table (5): Sleeping pattern of the studied children

Items	University Nursery (n= 100)		Ezz Nursery (n= 100)		P-value
	No.	%	No.	%	
	Sleep start time:				
At 8 P.M	15	15.0	9	9.0	
At 9 P.M	22	22.0	24	24.0	
10 – 12 P.M	32	32.0	41	41.0	
After 12 P.M	20	20.0	20	20.0	
No fixed time	11	11.0	6	6.0	
Sleep walk up time:					0.115
6 A.M	31	31.0	22	22.0	
7 A.M	43	43.0	39	39.0	
After 7 A.M	26	26.0	39	39.0	
Sleep duration:					0.314
< 6 hours	10	10.0	11	11.0	
6 – 8 hours	51	51.0	54	54.0	
8 – 10 hours	28	28.0	31	31.0	
10 – 12 hours	11	11.0	4	4.0	
Sleep naps:					0.203
Present	46	46.0	55	55.0	
Not present	54	54.0	45	45.0	
No. of naps / Day:					0.398
One	44	95.7.0	49	89.1	
Two or more	4.3	4.3.0	10.9	10.9	
Nap duration / hours :					0.272
Mean ± SD	1.99 ± 0.62		1.87 ± 0.43		
Range	1.0 – 3.0		1.0 – 3.0		
Sleeping type:					0.272
Deep and continuous	41	41.0	39	39.0	
Light sleep with motions	59	59.0	61	61.0	
Child sleeping place:					0.814
Alone in his / her bed	9	9.0	10	10.0	
In brothers / sisters bed (co- sleeping)	49	49.0	45	45.0	
In parent's bed (co-sleeping)	36	36.0	41	41.0	
Sleep on mother lab or arm	6	6.0	4	4.0	
Child sleeping behaviors:					
Normal fall to sleep	22	22.0	11	11.0	0.036*
Cry before fall to sleep	16	16.0	10	10.0	0.207
Presence of play material beside him	14	14.0	11	11.0	0.521
Night breast feeding	5	5.0	12	12.0	0.076
Presence of pacifier in his mouth	5	5.0	3	3.0	0.718
Presence of mother beside him	45	45.0	39	39.0	0.390
An overly hasty response	15	15.0	25	25.0	0.077

Table (6): Parent's sleeping characteristics and behaviors

Items	University Nursery		Ezz Nursery		P-value
	(n= 100)		(n= 100)		
	No.	%	No.	%	
Fixed sleep time:					0.298
Present	24	24	18	18	
Not present	76	76	82	82	
Bed time habits or practices:					0.836
Present	13	13	14	14	
Not present	87	87	86	86	
Mother child relationship:					--
Good	96	96	96	96	
Bad	4	4	4	4	
Pervious presence of separation anxiety:					--
Present	6	6	6	6	
Not present	94	94	94	94	
Maternal behaviors with child:					
Normal mother	23	23	8	8	0.003*
Anxious mother	34	34	31	31	0.651
Depressive or insecure mother	9	9	1	1	0.009*
Over-protective mother	7	7	10	10	0.447
Aggressive mother	41	41	59	59	0.011*
Excessive Pampering of the child	4	4	5	5	0.733

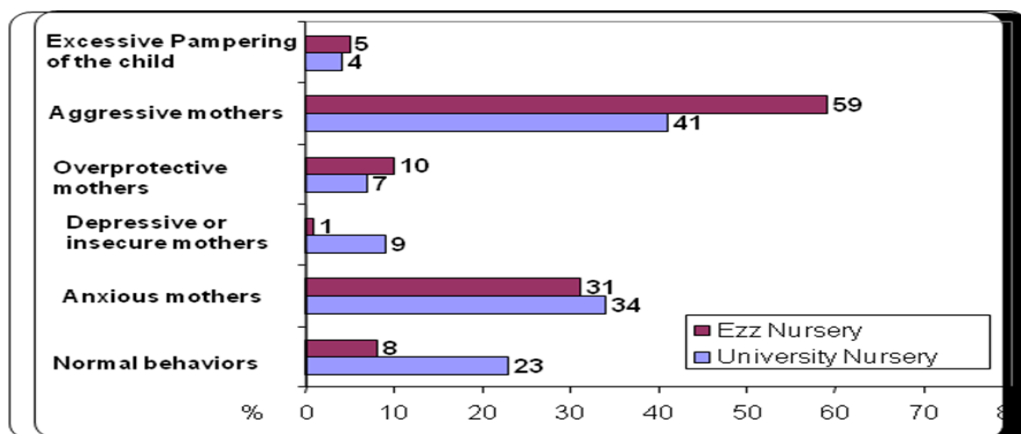


Fig. (3): Maternal behaviors with child

Table (7): Relationship between studied children Sleeping duration and presence of devices or possibilities used for entertainment

Items	Sleep duration in bed (hours)								P-value
	< 6 hours		6 - 8 hours		8 - 10 hours		10 - 12 hours		
	No.	%	No.	%	No.	%	No.	%	
Television:									0.764
Present	17	9.9	91	52.9	52	30.2	12	7	
Not present	4	14.3	14	50	7	25	3	10.7	
Computer:									0.913
Present	14	11.7	63	52.5	34	28.3	9	7.5	
Not present	7	8.8	42	52.5	25	31.3	6	7.5	
Laptop:									0.259
Present	2	5.3	22	57.9	9	23.7	5	13.2	
Not present	19	11.7	83	51.2	50	30.9	10	6.2	
Electronic games:									0.214
Present	7	6.7	57	54.8	30	28.8	10	9.6	
Not present	14	14.6	48	50	29	30.2	5	5.2	
Mobile:									0.023*
Present	0	0	13	43.3	12	40	5	16.7	
Not present	21	12.4	92	54.1	47	27.6	10	5.9	

Table (8): Relationship between studied children Sleeping duration and their and their mother's medical history.

Items	Sleeping duration in bed (hours)								P-value
	< 6 hours		6-8 hourss		8-10 hours		10-12 hours		
	No.	%	No.	%	No.	%	No.	%	
Any prenatal problems:									0.071
Present	11	19.3	26	45.6	15	26.3	5	8.8	
Not present	10	7	79	55.2	44	30.8	10	7	
Type of delivery:									0.484
Normal	11	10.7	54	52.4	33	32	5	4.9	
C.S.	10	10.3	51	52.6	26	26.8	10	10.3	
Duration of delivery:									0.43
Normal period	15	9.4	83	51.9	48	30	14	8.8	
Long delivery	6	15	22	55	11	27.5	1	2.5	
Immediate postnatal problems of infant:									0.001*
Present	7	15.6	21	46.7	8	17.8	9	20	
Not present	14	9	84	54.2	51	32.9	6	3.9	

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Table (9): Relationship between studied children sleeping duration and their sleeping behaviors

Child sleeping behavior	Sleep duration in bed (hours)								P-value
	< 6 hours		6-8 hours		8 - 10 hours		10 - 12 hours		
	No.	%	No.	%	No.	%	No.	%	
Normal	1	3	22	66.7	8	24.2	2	6.1	0.252
Cry	7	26.9	12	46.2	5	19.2	2	7.7	0.030*
Present of play material beside him	3	12	11	44	7	28	4	16	0.358
Night breast feeding	3	17.6	11	64.7	2	11.8	1	5.9	0.324
Put pacifier in child mouth	4	50	0	0	3	37.5	1	12.5	0.001*
Present of mother beside	8	9.5	39	46.4	31	36.9	6	7.1	0.267
An overly hasty response	3	7.5	20	50	12	30	5	12.5	0.54

Table (10): Relationship between studied children sleeping duration and their maternal behaviors

Maternal behaviors with child	Sleep duration in bed (hours)								P-value
	< 6 hours		6-8 hours		8 - 10 hours		10 - 12 hours		
	No.	%	No.	%	No.	%	No.	%	
Normal	2	6.5	17	54.8	10	32.3	2	6.5	0.859
Anxious mother	6	9.2	33	50.8	21	32.3	5	7.7	0.927
Depressive or insecure mother	3	30	4	40	1	10	2	20	0.053
Overprotective mother	1	5.9	11	64.7	3	17.6	2	11.8	0.524
Aggressive mother	11	11	49	49	33	33	7	7	0.703
Excessive Pampering of the child	0	0	4	44.4	2	22.2	3	33.3	0.022*

Table (1): Shows demographic characteristics of the studied children. It was found that near three fourths (73%) and two thirds (64%) of studied children were preschoolers and their age ranged from 3-6 years old while (27%, 36%) of them were toddlers aged from 1-3 years old in both University and Ezz Nursery Schools respectively, and that less than half (45 %) of them were males, while more than half (55%) were females in University Nursery School and more than half (58%) were males and

(42%) were females in Ezz Nursery School. Regarding nursery school place and children grade levels, University Nursery School constitutes (100%) of studied children from urban areas while Ezz Nursery School constitutes (97%) from rural areas and the rest (3%) were from urban areas and that (46% , 38%) of them were in pre-kindergarten, (48 % , 37%) were in KG1 level while only (6%, 25%) were in KG2 level respectively, with statistically significant differences between the two nurseries.

Table (2): Shows demographic characteristics of the studied children's parents. It was found that near half (46%) of studied children's mothers' age ranged from 30 - <35 years old in University Nursery School and (41%) ranged from 25 - <30 years old in Ezz Nursery School, while only (7%, 15%) of them ranged from 20 - <25 years old and (1%, 14%) aged 40 years or older in both University and Ezz Nursery respectively. Regarding parents' education, more than one third (34%, 41%) of the parents were secondary school graduates, followed by (61%, 52%) hold university degrees and postgraduate degrees in University Nursery School. In the same context, more than half (53%, 60%) of them were secondary school graduates, followed by (37%, 35%) hold university degrees and postgraduate degrees in Ezz Nursery School respectively. As regards parents' working condition, the majority (93%, 94%) of fathers had jobs and more than two thirds (68%, 72%) of mothers were working. As regards parents' marital status, the vast majority (97 %, 100 %) of them were married.

Table (3): Demonstrates socio-demographic characteristics of studied children's families. Sixty percent and forty one percent of them were nuclear families and forty percent and fifty nine percent were extended families respectively. Regarding child birth order and family size, being the first child in his family constitutes (38%) of the studied children in both nursery schools followed by (37%, 36 %) being the second child, followed by less than one fifth being the third child and only (6% & 3%, 2%) being the fourth and the fifth child or more respectively. More than two thirds of families (70%, 70%) had from four to five members. As regards home ventilation, devices and facilities for entertainment, the majority of homes (85%, 92%) had good ventilation and families had more than one device used for entertainment in their homes. Televisions

were the most used devices (86%) for entertainment among studied families, followed by computers (67 %, 53 %) followed by electronic games (56 %, 48 %), followed by laptops (28 % , 10 %) followed by mobiles (25%, 5%) respectively, with statistically significant differences between the two nurseries .

Table (4): Illustrates the medical history of the studied children and their mothers. It was found that near three fourths and more (72%, 71% & 77%, 78%) of studied children didn't have any prenatal or immediate postnatal problems, while less than one fourth (23%, 22%) of them had immediate postnatal problems. The most reported post-natal problem was asphyxia that constitutes nearly one third (30.4%, 31.1%) of them, followed by low Apgar score (21.7%, 27.3%), followed by low birth weight (22.7%, 22.7%) respectively. Regarding the type and duration of delivery, more than half (54%) of studied children in Ezz Nursery School were delivered normally while more than half (51%) of those in University Nursery School were delivered by C.S and most (81%, 79%) of their mothers had normal duration of delivery respectively. As regards current health condition, Colic is the commonest reported complain among them that constitutes nearly one third and less than half (29%, 43%) respectively with a statistically significant difference between the two nurseries.

Table (5): Depicts sleeping patterns and behaviors of the studied children. It reveals that studied children's sleep start time was very late , about one third and more (32% ,41%) of them go to sleep between 10 -12 PM and one fifth (20%) start their sleep after 12 PM while only (15% , 9%) start their sleep at 8 PM respectively in both University and Ezz Nursery schools, (43% ,39%) of them wake up early around 7 AM while more than one fourth and one third (26% ,39%) of

them wake up late after 7 AM respectively. Regarding sleep duration, it was found that the resultant night sleep duration for more than half (51% , 54%) of them was from 6 -8 hours /day while only (11 % , 4%) sleep from 10-12 hours /day respectively . As regards sleep naps and sleep type, near half and more (46 % , 55%) of them had sleeping naps, the vast majority (95.7%, 89.1%) of them had one nap/day. The mean nap duration/hours was (1.99 ± 0.62 , 1.87 ± 0.43) with a range of (1.0 - 3.0) hours respectively, and about two thirds (59%, 61%) of them had light sleeping. As regards children's sleeping place and behaviors to fall asleep , children may need more than one behavior to fall asleep, less than half (45%, 39 %) of them need the presence of their mothers beside him or her, less than one fifth and one fourth (15 % , 25%) need an overly hasty response to fall asleep, while only (5% , 12% & 5% ,3%) need night breastfeeding and the presence of a pacifier in his mouth to fall asleep respectively. Co-sleeping in their brothers or sisters bed presents near half and less (49% ,45%) while co-sleeping in their parents' bed constitute more than one third (36% ,41%) respectively .

Table (6): Describes parents' sleeping characteristics and behaviors. It was observed that more than two thirds (76%, 82%) of studied children's parents didn't have fixed sleep time and also the majority (87%, 86%) of them didn't have any bed time habits or practices in both University and Ezz Nursery Schools respectively. Regarding the mother-child relationship and previous presence of separation anxiety, the vast majority (96%, 94%) of studied children had a good relationship with their mothers and didn't have any previous separation anxiety respectively. As regards maternal behaviors with the children, mothers may experience more than one behavior with their children as follows: (41%, 59 %) of them were aggressive, more than one third (34%, 31%)

were anxious and (23 % , 8 %) had normal behaviors respectively with statistically significant differences between the two settings.

Table (7): Displays the relationship between studied children's sleeping duration and the presence of devices or facilities used for entertainment in their homes. A statistically significant difference was found between children's sleeping duration and the use of mobile devices ($P= 0.023$).

Table (8): Presents the relationship between studied children's sleeping duration and their mothers' medical history. A highly statistically significant difference was found between children's sleeping duration and reported the presence of immediate post-natal problems ($P= 0.001$).

Table (9): Demonstrates the relationship between studied children's sleeping duration and their sleeping behaviors. A statistically significant difference was found between children's sleeping duration and their sleeping behaviors related to the need of putting a pacifier in their mouth and their crying to fall asleep ($P=0.001$, $P= 0.030$) respectively.

Table (10): Shows the relationship between studied children's sleeping duration and their mothers' behaviors with them. A statistically significant difference was found between children's sleep duration and their mothers' excessive pampering of them ($P=0.022$).

Discussion:

Sleep is the price we pay for plasticity on the prior day and the investment needed to allow fresh learning the next day (**Kelly, et al., 2013**). Sleep problems are common and highly prevalent in early childhood children,

affecting approximately 20% to 30% of those young children (**Moore, 2010**). In addition, poor sleep can lead to serious consequences on all aspects of child development and affects almost all body organs and systems (**Petit, 2012**) and (**ALDabal and BaHammam, 2011**). Furthermore, sleeping through the night is a milestone that is not always maintained once it has been reached (**Thiedke, 2001**), usually due to a vast number of factors involving biological, neurodevelopmental, behavioral, social, cultural and environmental factors (**Mindell, 2006**). Therefore, it is imperative to identify factors affecting sleeping pattern of early childhood children, so that sleep problems can be treated (**Touchette, 2011**).

The findings of the present study revealed that near three fourths and two thirds of studied children were preschoolers (3-6 years) old while more than one fourth and one third of them were toddlers (1-3 years) old. About half of them were females or males in both University and Ezz Nursery Schools respectively. These findings are approximately in accordance with **Ravikiran, et al.,(2011)** who presents that from 513 child screened for sleep problems in India, 252 were preschoolers (2- 6 years) and also with a study in Tehran for a total of 215 children (2-12 years old). Of these subjects 101 were in preschool age group (2-6 years old); 49 females (48.8%) and 52 males (51.5 %) (**Mohammadi, et al., 2007**) while disagrees with **Blair, et al., (2012)** who found that boys were more likely to experience shorter sleep than girls. In addition, age is an important factor to be considered when investigating children's sleeping patterns. Children undergo alterations according to the age and some behaviors or attitudes (night feeding or enuresis) will be considered normal (**Silva, et al., 2005**).

As regards studied children's grade level and nursery school place; nearly half of them in University Nursery School and more than one third in Ezz Nursery School were in pre-kindergarten and KG1 respectively. This can be explained as follows: more than two thirds of mothers were working mothers; therefore, they enrolled their children early in nursery schools in both urban and rural areas.

Regarding demographic characteristics of the studied children's parents as an important psychosocial factor. Unsurprisingly, the present study reveals parents' high educational levels. Near half of studied children's mothers' age ranged from 30 - <35 years old in University Nursery School and (41%) age ranged from 25 - <30 years old in Ezz Nursery School respectively. These findings are in contrast to **Belisio, et al., (2010)** and **McDonald, et al., (2014)** who reported that the parents' educational level is related to their child's sleep. A higher educational level can be associated with a higher quality of sleep. Children of illiterate or minimally educated mothers sleep later and show a reduction in total sleep duration. Hence, maternal education emerged as a significant influence on shorter sleep in early childhood. Likewise, the young age of mothers under study in Ezz Nursery School can be attributed to the fact that most of them are from a rural area.

As regards parents' working condition and marital status, the majority of fathers and more than two thirds of mothers had jobs respectively, and the vast majority of them were married. These findings are in agreement with **Stewart, (2013)** and **Touchette, (2011)** who reported that maternal employment affects sleeping patterns of children. Mothers who work outside their home reported that their children's sleep is more fragmented than that of children whose mothers are at home and also with **Phillips, (2009)** who observed that

the marital state of parent's influences the well-being of children. Children of married parents are of good health because they tend to go for walks and are told stories more often than children of single parents.

Regarding socio-demographic characteristics of studied children's families which constitute social and environmental factors. Sixty percent and forty one percent of them were nuclear families and forty percent and fifty nine percent were extended families, being the first or second child in his family constitutes more than one third of the studied children, followed by less than one fifth being the third child in both nursery schools respectively. This can be explained by that; the majority of families were from urban areas where small-size and nuclear families are common.

Regarding family size, residence, type of housing and number of rooms, it was found that more than two thirds of families had from four to five members, (65%, 82%) owned houses respectively. These findings are consistent with **McDonald, et al., (2014)** who found that multiple factors within the child's environment are associated with shorter sleep in early childhood, not all operating in the same way. The number of older children living in the same house emerged as independent predictors of shorter sleep, but appeared to exert as a more general influence on sleep duration but not associated with neither bedtime nor wake time. Living with many people is associated with a greater level of chaos, so, this could disrupt either end of the night-time sleep episode.

As regards home ventilation, devices and possibilities for entertainment, it was found that there is a statistically significant difference between studied children's sleeping duration and the use of mobile devices ($P= 0.023$). Notably, some families had more than one device used for

entertainment in their homes. Televisions were the most used devices (86%) for entertainment among studied families, followed by computers (67%, 53%), followed by electronic games (56%, 48%), followed by laptops (28 %, 10 %) followed by mobiles (25%, 5%) respectively. These results go on line with that of **McDonald, et al., (2014)** and **Moore, (2010)**, they found that longer periods of TV exposure in the evening and the use of technology in the bedroom (computer, TV, cell phone, video games) are associated with children's decreased sleep quantity and quality, predictive of greater bedtime resistance, more difficulty in maintaining sleep and shorter sleep duration.

Likewise, medical history of the studied children and their mothers such as biological and neurodevelopmental factors affects sleeping patterns. Highly statistically significant differences were found between studied children's sleeping duration and reported presence of immediate post-natal problems of them ($P= 0.001$); less than one fourth of them had immediate postnatal problems and the most reported post-natal problem was asphyxia, which constitutes nearly one third of the reported problems, followed by low Apgar score (21.7%, 27.3%), followed by low birth weight (22.7%, 22.7%) respectively, more than half of them were delivered normally or by C.S, whilst most of their mothers had normal duration of delivery. These findings are congruent with **Touchette, (2011)** who reported an association between poor sleep consolidation and difficulties in the immediate post-natal period, such as low birth weight, asphyxia and low Apgar score, conversely with delivery duration.

As regards current health condition, colic is the commonest reported complain among them and constitutes nearly one third and less than half respectively, These

findings are in agreement with **Thiedke, (2001)** who stated that while colic is not a sleep problem, colicky infants appear to have a shorter duration of total sleep because the strategies that parents develop to decrease the crying spells (i.e. frequent holding, car rides) interfere with the adoption of normal sleeping patterns.

Focusing specifically on sleeping patterns and behaviors of the studied children, this study revealed that, in Assiut City, early childhood children sleep start time was very late. Despite that, less than half of them wake up early at 7 AM; consequently, their sleep duration was less than required for their ages. The resultant night sleep duration for more than half of them was from 6-8 hours /day, while only (11%, 4%) sleep from 10-12 hours /day respectively. These findings are in accordance with **Sadeh, (2013)** who reported that 20 to 30 percent of children are considered to be poor sleepers during the first three years of their lives and that high rates of poor sleep have been documented in preschool and kindergarten children. Furthermore, sleep-wake patterns evolve rapidly during early development and are considered to be one of the major developmental or health concerns during this period. In contrast to the findings of **National Sleep Foundation, (2016)** which state that toddlers need about 12-14 hours of sleep in a 24-hour period while preschoolers need about 11 to 13 hours of sleep every night, **Ravikiran, et al., (2011)** found that the sleep duration of preschoolers is more than that stated above. In similar studies, **Mohammadi, et al., (2007)** showed that child's usual wake-up time was late in preschool age group.

As regard ,highly statistically significant differences were found between children's sleeping duration and reported presence of immediate post-natal problems of them (P= 0.001) and also statistically

significant differences were found between their sleeping duration and the use of mobile devices (P= 0.023), their sleeping behaviors related to the need of putting a pacifier in their mouth or their crying to fall asleep (P=0.001, P= 0.030) respectively, and also with their maternal behavior of excessive pampering (P=0.022), while there were no statistically significant differences between studied children's sleeping duration and their or their parents' demographic characteristics. This may be illustrated as follows: the higher educated the parents are, the more aware they become of the importance and needed strategies for fostering regular sleep habits for their children.

Regarding sleep naps, daytime napping was common as expected according to their age. Near half and more of studied children had sleeping naps, the vast majority of them had one nap/day, the mean nap duration/hours was (1.99 ± 0.62 , 1.87 ± 0.43) with a range of (1.0 - 3.0) hours respectively. These findings are consistent with the recommendations of **National Sleep Foundation, (2016)** which reports that when toddlers reach 18 months of age, their nap times will decrease to once a day, lasting about one to three hours, while preschoolers nap ranging between one and two hours per day and also with **Ward, et al., (2008)** who found that, of 52 healthy children aged from 3-5 years old, the majority of children take naps. Moreover, despite the fact that midday naps are a characteristic of early childhood, very little is understood about the structure and function of these sleep bouts. Naps benefit memory consolidation of young children. Following a nap; children recalled 10% more of the spatial locations than when they had been kept awake (**Kurdziel, et al., 2013**). Unfortunately, napping is a sleep habit that presents alterations according to the age. The frequency of naps is high in the first year of life, decreasing throughout the preschool

period and finally disappearing in school age children (Silva, et al., 2005).

As regards child sleeping type and place, about two thirds of studied children had light sleeping; co-sleeping with their brothers or sisters is experienced by near half and less of them, while co-sleeping with their parents is experienced by more than one third. These results go on line with that of **Women's and Children's Health Network, (2014)** which reported that 80% of young children sleep is light sleep but by adolescence the percentage decreases considerably to 20% and with **Ravikiran, et al., (2011)** who reported that co-sleeping was familiar among preschool children. Also, **Worthman and Brown, (2007)** found that co-sleeping was a common habit among Egyptian families, their study shows that over three-quarters of nighttime sleep and nearly half of afternoon naps involved co-sleeping. Consequently, co-sleeping is clearly associated with sleep problems; moreover, it is influenced by ethnicity and socio-economic status. In Western culture, sleeping alone is considered a keystone in the concept of "a good sleeper" (**Touchette, 2011**).

Interestingly, as regards studied children's sleeping behaviors, statistically significant differences were found between sleeping duration and sleeping behaviors such as the use of a pacifier or crying to fall asleep ($P=0.001$, $P= 0.030$) respectively. However, a child may need more than one behavior to fall asleep, less than half of the studied children require the presence of their mothers, less than one fifth and one fourth of them need an overly hasty response to fall asleep, (16%, 10%) cry before falling asleep, while only (5%, 12% & 5%, 3%) need night breastfeeding or a pacifier in order to fall asleep respectively. Studies have shown that inadequate parenting behavior at bedtime, such as the lack of parental presence while the child falls asleep, is the best predictor of

sleeping problems in young children. However, it is important not to think that night breastfeeding hinders sleep consolidation, an overly hasty response is more likely the cause of the establishment of the attachment relationship between the mother and the infant rather than the means of feeding (**Touchette, 2011**).

Overwhelmingly in this study, parents' sleeping characteristics and behaviors affect children's sleeping pattern. Statistically significant differences were found between studied children's sleeping duration and their maternal behavior of excessive pampering of them ($P=0.022$). Nevertheless, it is notable that the vast majority of studied children had a good relationship with their mothers and didn't have any previous separation anxiety. On the other hand, more than two thirds of studied children's parents didn't have fixed sleep time; also the majority of them didn't have a bedtime routine in both Nursery Schools respectively. These findings are consistent with **Koulougietti, et al., (2013)** and **Moore, (2010)** who reported that there is some emerging evidence that regular daytime routines are predictive of longer sleep duration in preschoolers. When routines and rules are absent, become inconsistent, or are dependent on the child's requests, conflict arises and bedtime is delayed. Moreover, irregular bedtimes may disrupt healthy brain development in young children (**Kelly, et al., 2013**).

Unfortunately, in the present study, less and more than half of the studied children mothers were aggressive, more than one third of them were anxious, while only (9%, 1% & 7%, 10% & 4%, 5%) were depressive, over-protective mothers or use excessive pampering of the child respectively, with statistically significant differences between the two nurseries. These findings are in agreement with **Touchette, (2011)** who showed that anxious, overprotective,

depressive or insecure mothers are more likely to have children with sleep problems compared to other mothers.

Conclusion:

This study concluded that, in Assiut City, early childhood children's sleep start time is very late. Despite that, the children wake up early and consequently, their sleeping duration is less than the expected requirements for their ages. Daytime napping is common as expected for their age. Asphyxia is the most reported post-natal problem and colic is the commonest reported complain among them. The children's sleeping duration is affected by many biological, neurodevelopmental, environmental, psychosocial and behavioral factors in which there were highly statistically significant differences between their sleeping duration and reported presence of immediate post-natal problems and also statistically significant differences were found between their sleeping duration and the use of mobile devices, their sleeping behaviors related to the need of putting a pacifier in their mouth or their crying to fall asleep and also with their maternal behavior of excessive pampering while there were no statistically significant differences between studied children's sleeping duration and their or their parent's demographic characteristics.

Recommendations:

- 1- Educating parents about children's normal sleeping patterns and naps at every child's visit.
- 2- Systemic screening of children for sleep problems in order to identify early development of sleep disorders.
- 3- Parents should limit the use of media, particularly in the bedroom, to promote good

sleep habits and improve the quantity and quality of the child's sleep.

4-Educating young children early about the importance of sleep may encourage children not to sacrifice sleep for other attractions.

5-Positive reinforcement strategies must be encouraged among parents.

6-Communication between all individuals involved, including the child, the parents, pediatric nurse, the pediatrician or sleep specialist, the school psychologist, teachers and other professionals is required.

7-Additional research is needed to identify the impact of lifestyle behaviors on sleeping pattern of children

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