



HOME ENVIRONMENT AND ITS RELATION TO CHILD HEALTH IN A RURAL AEA, ASSIUT GOVERNORATE

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ABSTRACT:

Children health is threatened from a variety of environmental agents, such as contaminated food and water, polluted indoor and outdoor air, traffic accidents, unsafe housing, environmental tobacco smoke, and exposure to more than 15 000 synthetic chemicals.

Aim of the study: To assess the home environmental hazards and its health effects on children aged from 2–5 years in a rural area, Assiut Governorate, Egypt.

Subject & Methods: This study was conducted using a hybrid design including field cross sectional part and interventional part by using a multistage random sample method, the following steps was conducted to select the study sample. All villages of Awlad-Elyas rural area affiliated to Assiut Governorate were included in the study (4 villages). From each village 25% of rural families having children aged 2–5 years were systematic randomly selected. The total number was (415) families.

Tools: Two tools used for data collection the first was structured personal interview and the second was home assessment checklist. Anthropometric measures: weight, height and body mass index was calculated for the children. Data analyzed using SPSS version 16.

Results: The mean age of mothers was 30.8 ± 6.2 years, nearly half of them were at age group <30 years. One third of them were illiterate. The majority of mothers were housewives. (30.1%) of the children complained of pneumonia while 26.7% complained of asthma. For more than two thirds (69.4%) the cause of asthma was exposure to dust and fumes as reported by the mother. Conclusion: There is a strong relation between garbage disposal, animal's enclosure with respiratory complain, pneumonia and asthma of children were habitation with not separated animal's enclosure

Recommendation: Health classes for mothers should be held in MCH centers, well baby clinic and hospitals. It will include knowledge regarding home environmental hazards and its relation to children's health. Arranging a national day for environmental sanitation to increase the public awareness about that issue. And utilizing mass media is one the best methods to increase public awareness of mothers regarding home environmental hazards among their children and to correct the false concepts and habits.

INTRODUCTION:

Environmental hazards in the home that are of concern to both children and adults include environmental tobacco smoke, carbon monoxide and airborne particulates from wood-burning stoves, nitrogen dioxide from natural gas stoves, formaldehyde and other synthetic materials covering the indoor surfaces of many mobile homes (Mishra, 2003). The environments in which children live affect their health. Recognized risk factors are lack of sanitation, poor water supply, poor food safety, air pollution particularly indoor pollution in developing countries and poor housing–hazardous chemicals (Tallinn, 2008).

Poor quality of available water supplies is a major environmental concern in Egypt. Water contamination by point sources of pollution from industrial and domestic discharge occurs in many parts of Egypt particularly in the rural areas, (African Development Bank, 2000 & World Bank, 2000).

In developing countries homes using biomass fuels and exposure levels are usually much higher among young children who stay indoors and who are often carried on their mother's back or lap while cooking (Mishra, 2003). In this respect, there are many environmental factors that may increase the incidence of diseases and affect the health of children under 5 years. These factors are air pollution, water pollution, food pollution, household wastes, insect and rodent control and safety housing (Melanie, 2002 & Anders and Stig, 2007). In the home, tobacco smoke

contributes to a number of health effects that can be chronic, such as childhood asthma (Kovesi, *et al.*, 2006).

Air pollution can affect our health in many ways with both short-term and long-term effects. Different groups of individuals are affected by air pollution in different ways. The process of early growth and development is important for the health of the child in general and, therefore, may also be a critical time when air pollution exposures can have lasting effects on future health (Ritz and Wilhelm, 2008). Short-term effects of pollution include irritation to the eyes, nose and throat, and upper respiratory infections such as bronchitis and pneumonia. Other symptoms can include headaches, nausea, and allergic reactions. Short-term air pollution can aggravate the medical conditions of individuals with asthma and emphysema. Long-term health effects can include chronic respiratory disease, lung cancer, heart disease, and even damage to the brain, nerves, liver, or kidneys (Norilsk, 2008).

Infectious organisms can contaminate food at any point during its processing or production. Contamination can also occur at home if food is incorrectly handled, improperly cooked or inadequately stored. Illness is not inevitable after you eat contaminated food. The effects depend on the contaminant, the degree of contamination, your age and your health (Mayo Clinic, 2009). The community health nurse is an important member of the team of health professionals promoting and protecting the public's health from environment threats (Allender & spradley, 2001).

Aim of study:

The study aimed to assess the home environmental hazards and their health effects on children aged from 2-5 years in a rural area in Assiut Governorate.

SUBJECTS & METHODS:

The study was carried out using a hybrid design including field cross sectional part and interventional part during the year 2008-2009 in four villages of Awlad-Elyas rural area affiliated to Assiut governorate. It considered as a mother village with four satellite villages, namely Kardos, East Elbarod, West El-Barod and Keman Saeed, which were located at about 5 km south of Sedfa District.

Environmental pollution is a major health hazard. Poor environmental quality is directly responsible for some diseases such as diarrhea and respiratory infection. The number of children exposed to environmental pollution increases. (Viegi *et al.*, 2004). According to the United Nations World Population Prospects report, the under-five mortality rate of the world was 73.7 and in Egypt was 33.8 deaths per 1000 births. (United Nations World Population Prospects report, 2008).

By using a multistage random sample method, the following steps was conducted to select the study sample: All villages of Awlad-Elyas rural area affiliated to Assiut Governorate were included in the study (4 villages). From each village 25% of rural families having children aged 2-5 years were systematic randomly selected. The total number

was (415) families One child aged 2-5 years per family was included in this study. During home visits and mother interviews for data collection the researcher's also assessed the home environment and children using a health assessment sheet.

Meeting of the administrative personal of the health directorate in Assiut was held to clarify the objective of this study & its strategies, so it was important to have feedback from these administrative key personnel about the overview plan and it was important to have their full support and cooperation.

Tools of the study:

Tool I:

A Structured interview questionnaire was adopted to gathered information concerning: socio-demographic background: about children's family would be assessed using Fahmy and Elsherbiny Scale (1984). It includes: Parent's Education, Occupation, Family income, Crowding index & Home sanitation.

Health assessment of children which includes: growth measurement such as height, weight, head and chest circumferences, triceps skin fold thickness, arm circumference, general appearance from head to toes, general hygiene, eye problems: (eye discharge, boils, inflammations....etc), ear problems: inflammation of the middle ear (fever, ear pain, discharge) ear obstruction and its frequency, respiratory problems (cough, T.B., inflammation of bronchi, bronchial asthma ... etc), gastrointestinal problems (diarrhea, abdominal colic, parasitic diseases), skin problems (boils, scabies, warts

.... etc), scabies (itching around umbilicus, between fingers etc) and infectious diseases (measles, German measles poliomyelitis, chicken pox ... etc).

Tool II:

An observation checklist was developed to assess home environment includes:

Type of building material (brick, tin, mud) type of roof, painting, type of floor, ventilation, lighting, source of water supply, sewage disposal, cooking facilities, vector control, presence of animal sheds & home safety: the presence of wood for cooking, warmth, presence of drug, detergents, insecticides and storage of pesticides inside the home.

Pilot study:

A Pilot study was carried out before starting data collection on 10 mothers with their children out of the actual number of the sample. Data obtained were analyzed manually. To clarify the constructed questionnaire as well as the time needed to fulfill each questionnaire sheet. Also, the necessary modifications were done to reach the final form.

Ethical Issues:

The researchers stressed on the issue of confidentiality and fill out the questionnaires anonymously. The instrument required between 30 and 45 minutes. Family participation was voluntary, however, no family refused to cooperate in the research. Oral consent for participation in the study was taking, home

visits were done to complete the questionnaires by personal interviews.

Collection of data:

In each home, an explanation of the purpose of the research was made clear to the mothers and family members to gain their cooperation before starting data collection. Assessment data collection (socio-demographic data for children's family, health assessment of children, and observation checklist to assess home environment and interview questionnaire sheet to assess mother's knowledge, practices about home environment). Weight and height were measured. Body mass index was used to determine the degree of obesity. Obesity was defined as BMI more than 95 percentile while less than 5 is consider under wight, from 5 to less than 85 was normal, from 85-95 was consider overweight by using EPIInfo, nutritional program (CDC, 2005). Data collection were done in (415) homes in a period of 6 months (from the end of July, 2008 to the end of January, 2009).

Statistical analysis:

Data were analyzed using SPSS (version 16). The frequencies, percentages, the mean and standard deviation were computed. Chi-squared test was used as the test of significance; $P < 0.05$ was considered significant. Body Mass Index was calculated by using BMI percentile by nutritional program EPIInfo 2000.

RESULT:

Table 1 shows that the mean age of mothers was 30.8 ± 6.2 years. Nearly half of them were in the age group <30 years. About one third of the mothers were illiterate and the majority of them were housewives. As regards father education, more than one third had technical education, 30.6% were employees. And 41.7% of the families were middle socioeconomic standard.

Regarding to age of children, 43.4% of the them were in the age group 4-5 years and more than half of them were males and 47.2% were females.

Fig. 1 shows that (1.9%) of the children were exposed to measles, 12.7% of the children exposed to chicken pox, and 0.7% of the children had a history of infection with typhoid and rheumatic fever, as reported by the mother.

Table 2 Illustrates the anthropometric measurements of children aged 2-5 years. Regarding child weight for children aged 2-3, 3-4 and 4-5 y. were 7-2, 10-20 and 11-26 Kg. respectively.

Fig. 2 shows that: 48.0% of children were overweight and 19.8% were obese and 8.4% were under weight.

Table 3 shows that housing condition, around fifth of mother were cooking in the living room or the place were she live 89.7% of them had source of ventilation door and window. As regards stove use, the great majority used a gas stove and 73.7% of the studied houses garbage was collected and thrown up.

Regarding animal enclosure, 51.3% had a separated animal enclosure while 20.7% did not. The majority of animal's sewage disposal was collected and thrown down in the farm.

Table 4 illustrates the relationship between housing conditions of studied families and respiratory diseases among children aged 2-5 years. Most of the children (71.4%) had a source of ventilation in those houses was door only, suffering from asthma, compared with 28.3% of the children for whom the door and windows were source of ventilation. This difference is statistically significant ($P < 0.013$).

As regards complaining from tonsillitis, a statistically significant difference ($P < 0.005$) was found among the sources of ventilation and tonsillitis. Also, there is a highly statistically significant difference between garbage disposal and complaining from respiratory troubles, pneumonia and asthma, $P < 0.001$, 0.000 and 0.000, respectively.

As regards animals' enclosure, for more than half (54.7%) of the children habitation with not separated from animals' enclosure, complaining from respiratory troubles, compared with 39.4% for whom habitation was separated from animals' enclosure. This difference is statistically significant ($P < 0.003$). Also, a statistically significant difference (0.031) was found among children complaining from pneumonia and separated & unseparated animals' enclosure. A highly statistically significant difference was found among children suffering from otitis media & tonsillitis and separated & unseparated animals' enclosure ($P < 0.001$).

Table 5 reveals to the relationship between respiratory diseases among children and had smokers among their family members. As regard of those who had respiratory troubles, pneumonia, asthma, otitis media and tonsillitis, 71.6, 80.0, 73.9, 79.5 and 72.5 of them had smokers among their family members respectively compared to only 28.4, 20.0, 26.1, 20.5 and 27.5 of non smokers family members respectively.

Table 6 founded that 55.6% of the children suffering from respiratory troubles were warming during winter while 35.3% were not warming during winter. This difference is highly statistically significant ($P=0.000$).

As regards the relationship between respiratory diseases and the presence of the child beside the mother during baking in the furnace, it was found that 59.0%, 44.4%, 36.8, 30.6% and 47.2 of the children complaining of respiratory troubles, pneumonia, asthma, otitis media and tonsillitis, respectively, were present beside the mothers during baking, comparing with those not present beside their mothers during baking the difference is highly statistically significant.

Also it was found that 35.2% of children who were exposed to dust during sweeping, compared with 22.7% of the children who were not exposed to dust, were complaining of

asthma. This difference is statistically significant ($P=0.017$). Also 28.1% of the children who were exposed to dust during sweeping, compared with 12.5% of the children who were not exposed to dust, were complaining of otitis media. This difference is highly statistically significant ($p=0.001$).

Table 7 shows the practices of mothers regarding storing, preparation and cooking of the food relation to intestinal diseases. It was found that 18.2% of the children those mothers add of remaining food on clean cooked foods compared to 8.1% of non add were exposed to food poisoning. This difference is statistically significant ($p=0.010$). Also 44.9% of children whose mothers sometimes add remaining food on clean cooked foods, compared to 28.6% of children whose mothers who do not do so, were exposed to intestinal worm infection. This difference is statistically significant ($p=0.005$).

A statistically significant differences was found between food poisoning with garbage disposal ($p<0.009$). Also, a statistically significant differences was found between animals' enclosure, storage of pesticides with intestinal trouble, intestinal worm infection, and food poisoning.

While in other practices of the mothers there are no statistically significant differences among intestinal diseases.

Table (1): Distribution of the studied sample according to their Sociodemographic characteristics

Variables	Total (N=415)	%
Mother age (years):		
< 30	189	45.5
30-	185	44.6
40-50	41	9.9
Mean ± SD	30.8 ± 6.2	
Level of mother's education:		
Illiterate	125	30.1
Read & write	79	19.0
Basic education	81	19.5
Technical	118	28.4
University	12	2.9
Mother's occupation:		
Housewife	368	88.7
Worker	47	11.3
Level of the father's education:		
Illiterate	90	21.7
Read & write	66	15.9
Basic education	89	21.4
Technical	150	36.1
University	20	4.8
father's Occupation:		
Farmer	99	23.9
Unskilled	52	12.5
Skilled laborer	110	26.5
Employee	127	30.6
Laborer	12	2.9
Seller	15	3.6
Child age (years):		
2 –	108	26.0
3 –	127	30.6
4 – 5	180	43.4
Child sex:		
Male	219	52.8
Female	196	47.2
Socioeconomic status of the family:		
Low	145	34.9
Middle	173	41.7
High	97	23.4
Crowding index:		
1 per room	87	21.0
2 per rooms	129	30.6
≥ 3 per rooms	199	48.4

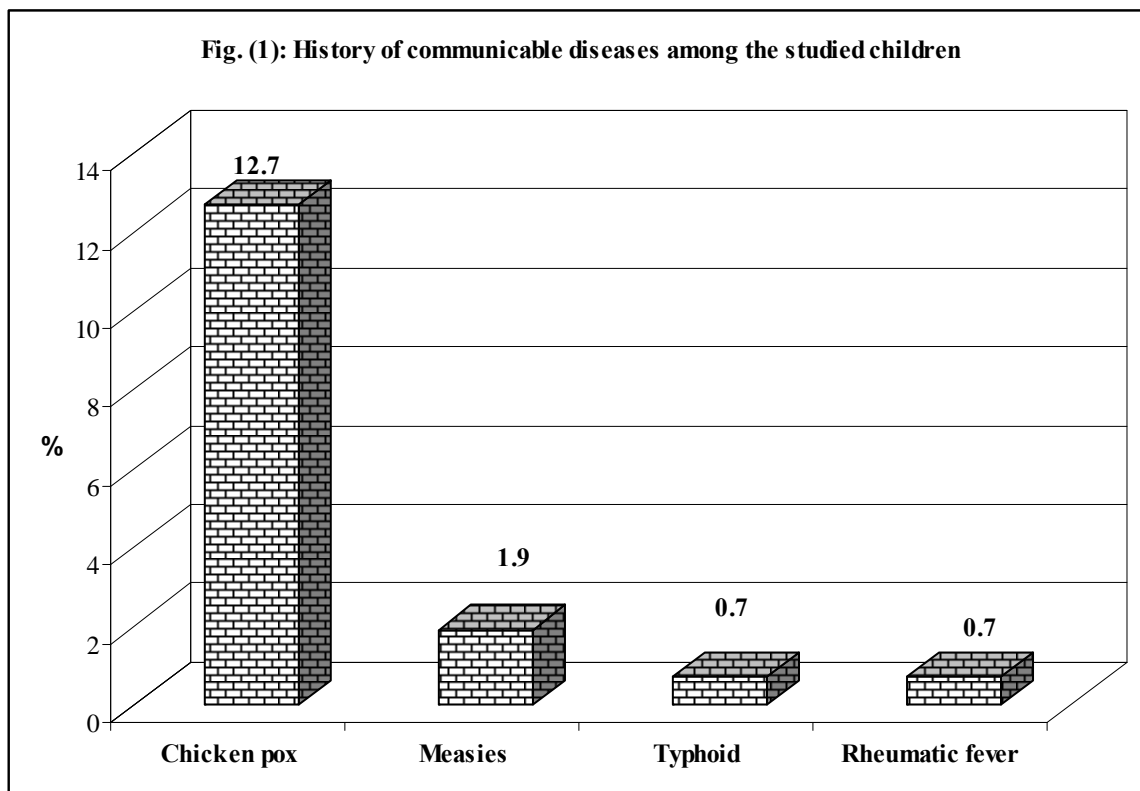


Table (2): Mean and range of anthropometric measurements of children aged 2-5 years

Parameters	Age (years)		
	2 -	3 -	4-5
Child weight (kg):			
Mean ± SD	12.66±2.34	14.53±2.39	19.22±4.04
Range	7 – 20	10 – 25	11 – 26
Child length (cm):			
Mean ± SD	78.5±9.20	86.21±8.64	101.99±8.31
Range	60 – 113	67 – 110	75 – 120
Child head circumference (cm):			
Mean ± SD	44.44±5.06	48.34±3.68	50.81±3.87
Range	35 – 57	38 – 57	35 – 57
Child chest circumference (cm):			
Mean ± SD	50.42±5.60	52.09±6.45	57.30±3.91
Range	40 – 61	39 – 65	40 – 65
Child skin fold thickness (mm):			
Mean ± SD	7.72±1.15	8.47±1.15	9.46
Range	7 – 14	7 – 14	7 – 14
Child arm circumference (cm):			
Mean ± SD	16.31±1.84	17.74±1.59	18.74±1.36
Range	12 – 19	14 – 20	15 – 20

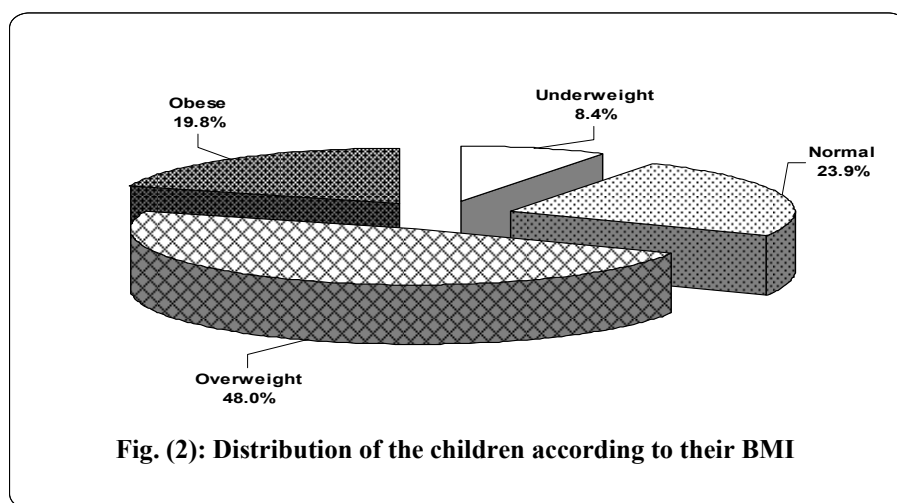


Table (3): Housing conditions related to cooking place, garbage disposal and domestic animals

Variables	Total (N= 415)	%
Cooking place:		
Separate kitchen	340	81.9
The same living place	75	18.1
Source of ventilation in separate kitchen:		
Door	14	4.1
Door and window	305	89.7
Door, window and suction fan	21	6.2
Type of stove used:		
Gas stove	403	97.1
Kerosene stove	10	2.4
Wood oven	2	0.5
Garbage disposal:		
Collected and throw down in special place	28	6.7
Collected and throw down in street	81	19.5
Collection and throw up	306	73.7
Animal's enclosure:		
Separated	213	51.3
Not separated	86	20.7
Not present	116	28.0
Animal's excreta disposal: ##		
Collected and throw down in the farm	270	90.3
Collected and throw down in front the house	17	5.7
Other	12	4.0
Storage of cleaning agents and pesticides:		
In kitchen	23	5.5
In bathe room	145	34.9
On the high shelf	224	54.0
Under the bed	11	2.7
Others	12	2.9
Storage of fertilizers:		
In the home	107	25.8
In special place	172	41.4
Out the home	20	4.8
Not found	116	28.0

More than one type of animals were found.

116 houses had no animals.

Table 4: Relationship of housing condition with respiratory diseases of studied children

Housing condition	Respiratory diseases									
	Respiratory troubles (N=197)		Pneumonia (N=125)		Asthma (N=111)		Otitis media (N=78)		Tonsillitis (N=138)	
	No.	%	No.	%	No.	%	No.	%	No.	%
Construction:										
Red bricks	183	47.3	114	29.5	103	26.6	72	18.6	126	32.6
Mud	14	50.0	11	39.3	8	28.6	6	21.4	12	42.9
P-value	0.781		0.274		0.821		0.712		0.264	
The floor:										
Slab	19	61.3	9	29.0	8	25.8	6	22.6	13	41.9
Cement	173	46.3	112	29.9	100	26.7	69	18.4	121	32.4
Mud	5	50.0	4	40.0	3	30.0	2	20.0	4	40.0
P-value	0.270		0.784		0.967		0.848		0.498	
Source of ventilation:										
Door	4	57.1	1	14.3	5	71.4	1	14.3	3	42.9
Door and window	131	44.1	84	28.3	84	28.3	50	16.8	84	28.3
Fan	58	57.4	36	35.6	19	18.8	26	25.7	48	47.5
Other	4	40.0	4	40.0	3	30.0	1	10.0	3	30.0
P-value	0.119		0.356		0.013*		0.209		0.005*	
Type of stove used:										
Gas stove	190	47.1	120	29.8	106	26.3	77	19.1	133	33.0
Kerosene stove	6	60.0	5	50.0	4	40.0	1	10.0	5	50.0
Wood oven	1	50.0	0	0.0	1	50.0	0	0.0	0	0.0
P-value	0.722		0.251		0.475		0.608		0.321	
Garbage disposal:										
Collection and throw down in special place	131	42.8	81	26.5	63	20.6	51	16.7	100	32.7
Collection and throw down in the street	12	42.9	4	14.3	6	21.4	6	21.4	13	46.4
Collection and throw down in the roof	54	66.7	40	49.4	42	51.9	21	25.9	25	30.9
P-value	0.001*		0.000*		0.000*		0.155		0.295	
Animal's enclosure:										
Separated	84	39.4	54	25.4	59	27.7	27	12.7	53	24.9
Not separated	47	54.7	35	40.7	27	31.4	27	31.4	39	45.3
Not present	66	56.9	36	31.0	25	21.6	24	20.7	46	39.7
P-value	0.003*		0.031*		0.266		0.001*		0.001*	
Cooking place:										
Separate kitchen	158	80.2	93	74.4	86	77.5	55	70.5	106	76.8
In the same living place	39	19.8	32	25.6	25	22.5	23	29.5	32	23.2
P-value	0.385		0.009*		0.004*		0.155		0.056	
Storage of pesticides:										
In kitchen	11	5.6	10	8.0	9	8.1	7	9.0	10	7.2
In bathe room	66	33.5	37	29.6	27	24.3	29	37.2	40	29.0
On the high shelf	110	55.8	71	56.8	66	59.5	34	43.6	79	57.2
Others	10	5.0	7	5.6	9	8.1	8	10.3	9	6.5
P-value	0.958		0.402		0.045*		0.010*		0.403	
Storage of fertilizers:										
In the home	61	49.2	42	49.4	40	53.3	28	54.9	42	48.8
In special place	59	47.6	42	49.4	33	44.0	22	43.1	41	47.7
Out the home	4	3.2	1	1.2	2	2.7	1	2.0	3	3.5
P-value	0.000*		0.002*		0.001*		0.005*		0.008*	

Chi-square test was used

* Significant difference

Table 5: Relationship between respiratory diseases among of studied children and smoking habits of family members

Respiratory diseases	Smoker (N= 307)		Non-smoker (N= 108)		Total (N= 415)	
	No.	%	No.	%	No.	%
Respiratory troubles:						
Yes	141	71.6	56	28.4	197	47.5
No	166	76.1	52	23.9	218	52.5
X² (P-value)	1.124 (0.289)					
Pneumonia:						
Yes	100	80.0	25	20.0	125	30.1
No	207	71.4	83	28.6	290	69.9
X² (P-value)	3.372 (0.066)					
Asthma:						
Yes	82	73.9	29	26.1	111	26.7
No	225	74.0	79	26.0	304	73.3
X² (P-value)	0.001 (0.977)					
Otitis media:						
Yes	62	79.5	16	20.5	78	18.8
No	245	72.7	92	27.3	337	81.2
X² (P-value)	1.515 (0.218)					
Tonsillitis:						
Yes	100	72.5	38	27.5	138	33.3
No	207	74.7	70	25.3	277	66.7
X² (P-value)	0.246 (0.620)					

Chi-square test was used

Table 6: Relationship between practices of the mother related to home environmental air pollution and respiratory diseases among children aged 2-5 years

Practices of the mother	Respiratory diseases									
	Respiratory troubles (N=197)		Pneumonia (N=125)		Asthma (N=111)		Otitis media (N=78)		Tonsillitis (N=138)	
	No	%	No.	%	No.	%	No.	%	No.	%
Worming during winter:										
Yes	138	55.6	80	32.3	75	30.2	48	19.4	90	36.3
No	59	35.3	45	26.9	36	21.6	30	18.0	48	28.7
P-value	0.000*		0.247		0.050		0.722		0.109	
Use:										
Kerosene stove	2	40.0	2	40.0	2	40.0	2	40.0	0	0.0
Wood	117	54.2	69	31.9	65	30.1	44	20.4	77	35.6
Heating stove	16	59.3	9	33.3	9	33.3	2	7.4	11	40.7
P-value	0.712		0.923		0.848		0.137		0.215	
During bake in furnace the child beside the mother:										
Yes	85	59.0	64	44.4	53	36.8	44	30.6	68	47.2
No	112	41.3	61	22.5	58	21.4	34	12.5	70	25.8
P-value	0.001*		0.000*		0.001*		0.000*		0.000*	
During sweeping the child beside the mother:										
Yes	69	53.9	45	35.2	45	35.2	36	28.1	45	35.2
No	78	44.3	53	30.1	40	22.7	22	12.5	53	30.1
P-value	0.099		0.353		0.017*		0.001*		0.353	
Use of pesticides:										
Yes	126	50.4	47	29.6	60	24.0	41	16.4	92	36.8
No	71	43.0	51	30.9	51	30.9	37	22.4	46	27.9
P-value	0.141		0.776		0.120		0.124		0.059	

Chi-square test was used

* Significant difference

Table 7: Practices of mothers regarding storing, preparation and cooking the food and relation to intestinal diseases among children aged 2-5 years

Practices of the mother	Intestinal diseases					
	Intestinal troubles		Food poisoning		Intestinal worm infection	
	No.	%	No.	%	No.	%
Washing hands before preparation of food:						
Yes	175	42.7	27	6.6	135	32.9
No	1	20.0	0	0.0	0	0.0
P-value	0.308		0.553		0.118	
Washing the vegetables and fruits:						
By running water	169	43.2	25	6.4	125	32.0
Soaking in water	5	50.0	0	0.0	2	20.0
P-value	0.752		0.409		0.514	
Keeping the cooked foods:						
At room temperature	34	49.3	4	5.8	28	40.6
In refrigerator	142	41.2	23	6.7	107	31.0
P-value	0.318		0.932		0.237	
Milk poling:						
Poling only	127	42.3	23	7.7	94	31.3
Poling from 5 to 10 minutes	48	42.5	4	3.5	39	34.5
Other	1	50.0	0	0.0	2	100.0
P-value	0.976		0.296		0.103	
Milk keeping:						
In refrigerator without cover	65	47.8	8	5.9	49	36.0
In refrigerator with cover	94	38.5	15	6.1	70	28.7
Outside refrigerator	13	48.1	4	14.8	11	40.7
Other	4	50.0	0	0.0	5	62.5
P-value	0.299		0.289		0.090	
Remaining foods add on clean cooked foods:						
Yes	6	54.5	2	18.2	2	18.2
No	119	40.1	24	8.1	85	28.6
Sometimes	51	47.7	1	0.9	48	44.9
P-value	0.281		0.010*		0.005*	
Garbage disposal:						
Collected and throw down in special place	130	73.9	16	59.3	96	71.1
Collected and throw down in street	15	8.5	0	0.0	7	5.2
Collection and throw up	31	17.6	11	40.7	32	23.7
P-value	0.368		0.009*		0.258	
Animal's enclosure:						
Separated	115	87.8	20	90.9	81	87.1
Not separated	6	4.6	2	9.1	3	3.2
Not present	10	7.6	0	0.0	9	9.7
P-value	0.016*		0.487		0.002*	
Storage of cleaning agents and pesticides:						
In kitchen	11	6.2	3	11.1	10	7.4
In bathe room	52	29.5	8	29.6	25	18.5
On the high shelf	99	56.2	13	48.1	92	68.1
Others	14	4.9	3	11.1	7	5.9
P-value	0.079		0.049*		0.000*	
Storage of fertilizers:						
In the home	48	40.7	7	41.2	42	45.2
In special place	65	55.1	10	58.8	46	49.5
Out the home	5	4.2	0	0.0	5	5.4
P-value	0.196		0.507		0.075	

Chi-square test was used

* Significant difference

DISCUSSION:

Environmental quality is an important determinant of human health. To achieve optimal health, man must live in a high quality environment that is healthy and safe. In developing countries homes using biomass fuels and exposure levels are usually much higher among young children who stay indoors and who are often carried on their mothers' back or lap while cooking (Mishra, 2003).

Poor housing conditions are associated with a wide range of health conditions, including respiratory infection, asthma and injuries. In the home, tobacco smoke contributes to a number of health effects that can be chronic (kovesi, *et al.*, 2006). Egyptian Demographic and Health Survey indicated that 10% of children under the age of 5 years complained of acute respiratory tract infection, and 19% suffered from diarrhea. (Ibrahim, *et al.*, 2008).

Regarding to the Socioeconomic conditions of the studied sample, the mean age of mothers was 30.8 ± 6.2 years, nearly half of them were at age group <30 years. One third of mothers were illiterate and the majority of them were housewives.

As regards the father education, the present study reported that more than one third had technical education and 4.8% only had university education. About one third were employers and 41.7% of the families were middle class, 23.4% and 28.4% were high class and low class respectively. In comparisons El-shiekh study, (2005) in rural areas in Alexandria reported that 67.6% very low class

and 16.2%, 11.9% and 4.3% were low, middle and high class respectively.

Regarding the construction material of house the present study showed that the vast majority of construction material was red bricks. 38.8% of houses had was cement floor and 28% had mud floor. The majority of houses had cement roofs and 2.4% of them only had mud roof. 80.0% of houses had both natural and artificial lighting.

Regarding to ventilation, more than two thirds of the sample had sources of ventilation, doors and windows. In the vast majority of houses, the water source was tap water and 88.9% of water closets were traditional latrines. These results agree with those of El-shiekh (2005) who reported that the majority of the homes were made from bricks, the ceilings were made from cement and more than half of the sample was made of tiles. In addition, in less than two thirds of there sample ventilation sources were doors and windows and the majority of there had tap water supply.

Concerning the indoor environmental observation, the majority of sample had sewage disposal systems by cesspool. This results agreed with El-shiekh (2005) who reported that more than half of the sample had no sewerage systems. The household wastes disposed through canals or cesspool. The health risks of uncollected solid wastes are most serious that contribute to spreading of infectious diseases such as diarrheal diseases, intestinal worm infections and typhoid fever especially for preschool children. They are likely to be exposed to uncollected waste in the streets, also

via contaminated drinking water and contaminated food

In this study more than two third of garbage disposal was collected and thrown down in the roof to be used during bake in furnace. The collections of garbage in the roof are most serious that contribute to the spreading of insect such as flies, mosquitoes and presence of rodents can live. Collection of garbage causes rodent and insect vectors that transmit a collection of viruses and disease including hepatitis and shigellosis.. (James and Donna; 2002)

Regarding to animal enclosure, the present study reveals that more than half of animal enclosure was separated while 20.7% not separated. The majority of animal's sewage disposal was collected and thrown down in the farm. The birds present in the majority of homes. The animal and birds feces become breeding areas for flies, fleas and mosquitoes. This is contribute to spreading of infectious diseases such as diarrheal disease and typhoid fever especially for preschool children The present study, mice and flea present in nearly half of houses and others of insects and rodents were present. These attribute to accumulation of garbage in the roof and unclean the house floor regarding to storage of cleaning agent and pesticides, it was found that more than half of sample storage of cleaning agent and pesticides on the high shelf and one third was storage in bathroom. House cleaning with chlorine bleach appears to protect children from the risks of asthma and of sensitization to indoor allergens while increasing the risk of recurrent bronchitis

through apparently an interaction with parental smoking. As chlorine bleach is one of the most effective cleaning agent to be found, these observations argue against the idea conveyed by the hygiene hypothesis that cleanliness increases the risk of asthma and allergy. (Bruce, *et al.*, 2004).

Regarding to numbers of children which were (415) child aged 2-5 years. More than half of them were Male, few numbers of children (6.0%) had pale face this can be explained by improved the social standard of the families.

The present study reveals that about half of children complain from respiratory troubles e.g (cough). The most causes of respiratory troubles were common cold. This is agreement with El-shiekh (2005) who reported that nearly all the studied sample had persistent common cold and cough. Moreover, nearly one third of children complains from pneumonia and complains from asthma. More than two third causes of asthma was the exposure to dust.

The present study shows that no statistical difference between smoking and respiratory complains. This result is not consistent with study of epidemiology of respiratory diseases in rural area in Assiut governorate by Khalifa (2000), who reported that highly statistically significant difference between smoking habit and chest symptoms.

The present study reported that most of children (71.4%) their source of ventilation in their house was the door only were suffering from asthma compared to 28.3% of them the door and windows were the source of ventilation this is attributed to bad ventilation in home with

door only as source of ventilation. This difference is statistically significant at ($P < 0.013$). Also their complain from tonsillitis, was statistical significant ($P < 0.005$) with the source of ventilation. This result agreed with (Khalifa, 2000; Mishra, 2003 and El-shiekh, 2005) which were reported that presence of relationship between bad ventilation and respiratory infection. It was found that highly statistically significant difference between garbage disposal and the complaining from respiratory troubles, pneumonia and asthma.

As regards animals' enclosure more than half of children were habitation with not separated animal's enclosure complaining from respiratory troubles compared to those were habitation were separated animal's enclosure. This difference is statistically significant ($P < 0.003$). Also it was found difference statistically significant (0.031) among children complaining from pneumonia and separated & not separated animal's enclosure. This result agreed with Khalifa (2000) who founded that 21.1% of individuals complaining from respiratory symptoms who live in houses where animal's pen was separated, while 42% among who live in houses where animal's pen was not separated the difference was statistically significant ($p < 0.05$). In the present study, it was found that highly statistically significant difference among children suffering from otitis media & tonsillitis and separated & not separated animal's enclosure ($P < 0.001$).

Regarding to the relationship between home environmental air pollution and respiratory diseases. It was found that more than half

(55.6%) of children suffering from respiratory troubles which were worming during winter compared to 35.3% of them didn't worming during winter. This difference is highly statistically significant ($P = 0.000$). This attribute to use of wood and animals fuels in worming. Moreover, the current study revealed that statistically significant association between the complains of children from respiratory diseases and present of them beside the mothers during bake in furnace & sweeping. This results supported by several studies, which found that a strong significant relation of indoor air pollution from biomass fuels, wood burning, dust and increase the risk for exposing young children to respiratory diseases (Smith *et al.*, 2000; World Bank, 2000; Ezzati and kammen, 2001; Kilpelainen *et al.*, 2001; Levesqu *et al.*, 2001; El-shiekh, 2005 and Gunnbjornsdottir *et al.*, 2006).

Regarding to the intestinal diseases among children. 42.4% of them complains from intestinal troubles e.g (diarrhea). This agreed with El-shiekh study (2005) who reported that the majority of the sample had diarrhea. About one third (32.5%) of them were exposed to worm infection 54.1% of worm infection was pinworm. El-shiekh study (2005) reported that nearly half of the sample had parasitic diseases; three quarter of them had Ascaris. This may be due to the poor hygiene of the children, lack of knowledge and bad healthy habits of the mothers when preparing and serving of food to their children such as improper washing or eat without washing of fresh vegetables. However, no significant difference was observed among

age groups of child and complaining from intestinal diseases. This may be explained by the children in all age of 2-5 years are a highly vulnerable group and they are active and demonstrates greater independence in daily care activities including eating, bathing, dressing and toileting.

CONCLUSION & RECOMMENDATION:

Based on the results of the present study, it can be concluded that: There is a strong relation between refuse disposal and complaining from respiratory troubles, pneumonia and asthma. The children were habitation with not separated animal's enclosure complaining from respiratory troubles more than those were habitation with separated animal's enclosure. The children suffering from respiratory troubles were worming during winter compared to those didn't worming during winter.

From the present study may recommended that:

- 1-Health classes for mothers should be held in MCH centers, well baby clinic and hospitals. It will include knowledge regarding home environmental hazards and its relation to children's health.
- 2-Arranging a national day for environmental sanitation to increase the public awareness about that issue.
- 3-Utilizing Mass media is one of the best methods to increase public awareness regarding home environmental hazards among their children and to correct the false concepts and habits.

4-The rural council has to set rules that have to be obeyed by villagers as regards sweeping of houses and streets, sanitary collection and disposal of community wastes.

5-Animal's and birds' pen should be separated from human living Place and should be hygienic.

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البيئة المنزلية وعلاقتها بصحة الطفل في منطقة ريفية بحافظة أسيوط

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تعرض صحة الطفل للعديد من العوامل البيئية التي تهددها مثل تلوث الطعام والماء والهواء داخل أو خارج المنزل، وكذلك الحوادث نتيجة البيئة غير الآمنة أو الملوثة بالدخان والتعرض لأكثر من 1500 مركب كيميائي.

تهدف هذه الدراسة إلى:

- 1- تقييم البيئة المنزلية وتأثيرها على الأطفال في سن من (2-5) سنوات في منطقة ريفية بحافظة أسيوط.
- 2- تقييم معلومات ومهارات الأمهات نحو مخاطر البيئة المنزلية.

أدوات وطرق البحث: هذه الدراسة هي خليط من جزئين (دراسة عرضية لقطاع من الأمهات وجزء آخر تداخلي). ولقد تم تطبيق هذه الدراسة باستخدام طريقة العينية متعددة المراحل في أربع قري بمنطقة أولاد إلياس الريفية بحافظة أسيوط، وهم كردوس، البارود الغربي، البارود الشرقي وكيهان سعيد. كما تم اختيار 25% من الأسر التي بها أطفال تتراوح أعمارهم من 2-5 سنوات بطريقة عشوائية منتظمة من كل قرية، لذلك بلغ العدد الكلي للأسر المختارة 415 أسرة.

تم تصميم استمارة المقابلة الشخصية لتشتمل على عدة أجزاء منها:

- 1- تقييم الحالة الاجتماعية والاقتصادية للأسرة: تشمل (تعليم الأبوين وعملهم وكذلك دخل الأسرة ومعدل الإزدحام بالمنزل..... الخ).
- 2- تقييم الحالة الصحية للطفل: تشمل (قياس الطول والوزن ومحيط الرأس وكذلك بيانات عن الأمراض المعدية..... الخ).
- 3- استمارة ملاحظة للبيئة المنزلية: تشمل علي (نوع مادة البناء والأرضية والسقف والتهوية والإضاءة والتدفئة ووجود مبيدات أو أدوية داخل المنزل..... الخ).
- 4- استمارة مقابلة لتقييم معلومات وممارسات الأمهات نحو أخطار البيئة المنزلية.

كانت أهم النتائج كما يلي:

- 1- بلغ متوسط عمر الأمهات 30.8 ± 6.2 سنة، ووجد أن حوالي نصف الأمهات بلغت أعمارهن أقل من 30 سنة، وثالث الأمهات تقريباً كن أميات، ما وجد أن أغلبية الأمهات كن ربات منزل.
- 2- كانت الحالة الاقتصادية منخفضة في 28.4%، ومرتفعة في 23.4% من الأسر.
- 3- تراوحت أعمار 43.4% من الأطفال بين 4-5 سنوات، وكان أكثر من نصف الأطفال ذكور.
- 4- تبين من الدراسة أن 47.5% من الأطفال يعانون من اضطرابات في الجهاز التنفسي، 30.1% يعانون من التهاب رئوي، 26.7% يعانون من أزمة صدرية، كما تبين من الدراسة أن سبب الأزمة هو التعرض للآتربة والغبار في 69.4% منهم كما ذكرت الأمهات.
- 5- كانت الأبواب والشبابيك هي المصدر الرئيسي للتهوية في 71.6% من المنازل. وبالنسبة لمصدر المياه فقد كان ماء الصنبور هو المصدر الرئيسي لمياه الشرب في أغلب المنازل. كما تبين أن القمامة تجمع وتلقي فوق أسطح المنازل كطريقة للتخلص منها في 73.7% من المنازل. وأن حظيرة تربية الحيوانات كانت موجودة بالمنزل ومتصلة به في 20.7%، كما كانت منفصلة عنه في 51.7% من المنازل، كما وجد أن 83.4% من المنازل يربي فيها طيور.
- 6- وجود الحشرات والقوارض فقد وجد أن 48.2% من المنازل بها فران، 8.2% بها براغيث، 14.5% بها صراصير، و7.2% بها بق.
- 7- تبين من الدراسة أن 71.4% من الأطفال الذي يعتمد مصدر التهوية بمنازلهم علي الباب فقط يشكون من الأزمة الصدرية بالمقارنة بمنازل 28.3% من الأطفال الذين تحتوى منازلهم علي الباب والشباك كمصدر للتهوية، وقد كان لهذا الاختلاف دلالة إحصائية.
- 8- توجد دلالة إحصائية عالية بين طريقة التخلص من القمامة والشكوى من أمراض الجهاز التنفسي. وكذلك وجد أن 54.7% من الأطفال الذين يعيشون مع الحيوانات بدون فصل الحظيرة يشكون من اضطرابات في الجهاز التنفسي بالمقارنة بـ 39.4% من الأطفال الذين يعيشون في مكان منفصل عن الحيوانات، وكان هذا الاختلاف له دلالة إحصائية. وأيضاً كانت هناك دلالة إحصائية بين شكوى الأطفال من الالتهاب الرئوي ومعيشتهم مع الحيوانات أو فصل الحظيرة عن مكان المعيشة.
- 9- لوحظ من نتائج الدراسة أن الأطفال المتواجدين بجوار أمهاتهم أثناء الخبز يكونون عرضة للإصابة بالعديد من الأمراض أكثر من غيرهم، ومن هذه الأمراض: (اضطرابات الجهاز التنفسي- الالتهاب الرئوي- الأزمة الصدرية- التهاب الأذن الوسطي- التهاب اللوز)، وهذا الاختلاف له دلالة إحصائية عالية.
- 10- تبين أن 35.2% من الأطفال الذين تعرضوا للغبار أثناء الكنس يعانون من الأزمة الصدرية بالمقارنة بـ 22.7% في الأطفال الذين لم يتعرضوا للغبار أثناء الكنس، وكان هذا الاختلاف له دلالة إحصائية.
- 11- توجد علاقة إحصائية بين إضافة الطعام المتبقي علي الطعام المطهي التنظيف وتعرض الأطفال الي التسمم الغذائي وإصابتهم بالديدان. ونستنتج من هذه الدراسة أن هناك علاقة واضحة بين وجود حظيرة للمواشي بالمنزل وطرق التخلص من القمامة وبين شكوى الأطفال بأمراض الجهاز التنفسي والالتهاب الرئوي والأزمة الصدرية.

توصيات الدراسة:

- 1- عمل جلسات تثقيفية للأمهات في رعاية الأمومة والطفولة وفي عيادات الأطفال وفي المستشفيات عن مخاطر البيئة المنزلية وتأثيرها على صحة الطفل.
- 2- تنظيم يوم قومي عن البيئة المنزلية الصحية لتنشيط الوعي الجماهيري.
- 3- استخدام وسائل الإعلام هي من أفضل الوسائل التي تزيد من وعي المجتمع نحو مخاطر البيئة المنزلية وتأثيرها على صحة الطفل وتصحيح المفاهيم والعادات الخاطئة.
- 4- يجب أن يضع مجلس القرية قوانين يقوم بتنفيذها أبناء القرية بما يخص كنس الشوارع والمنازل وجمع الفضلات والتخلص منها بطريقة صحية.
- 5- يجب فصل حظيرة الحيوانات والطيور عن مكان المعيشة والعمل علي نظافتها باستمرار.