

Assessment of Health Services Provided for Children by Rural Health Units of Assiut Governorate

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Abstract: Throughout the world, poor women and children are the most vulnerable and the least served groups. In 2007, 9.2 million children died before age five. Half of the world's under-five deaths occurred in Africa. The fourth Millennium Development Goals (MDG) is to reduce by two thirds, between 1990 and 2015, the under-five mortality rate. According to WHO, many sick children who are brought to the attention of health providers do not receive adequate assessment and treatment. There is little systematically collected information, however, on how well already existing activities and interventions are being provided. Identifying if the existing are, in fact being carried out as planned, and if not, which component of the system is weak, is necessary to develop the appropriate policy and program decisions for improving health outcomes. The **objectives** of this study is to describe the preparedness of rural health units in Assiut governorate to provide quality services for children in rural areas of Assiut governorate and to describe content of services provided to under 5 children. **Subjects and methods:** A cross sectional study was carried out in 12 rural health units (RHUs) using structured questionnaire for data collection. The questionnaire consisted of three parts. The first part for interviewing the senior physician, the second part was an exit interview with caretakers of children and the third part for observation of child examination and vaccination. The **results** of the study found that Health education sessions were present in 10 out of 12 RHUs. There was lack of adherence to IMCI guidelines. Health education sessions before medical consultation were reported by only 35.7% of child caretakers. The most common subjects included in these sessions were vaccination (29%), followed by child nutrition (23%) and breastfeeding (22%). Chest and abdominal examination were the most common item performed during physical examination (97% and 93.7% respectively). It was **recommended** to reinforce health education in all rural health units and increase adherence to IMCI guidelines by in-service training of physicians and nurses.

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1. Introduction

Throughout the world, poor women and children are the most vulnerable and the least served groups. In the less developed areas of the world, disease and health take the highest toll among mothers and children who make up over two thirds of the population. Perinatal mortality is as much as ten times that of infants born in industrialized countries; the infant mortality rate is six to twenty times greater than that the industrialized region of Europe and North America; the death rate among pre-school children is also up ten times high (**Frank et al., 2002**). In 2007, 9.2 million children died before age five. Half of the world's under-five deaths (4.7 million deaths) occurred in Africa, which remains the most difficult place in the world for a child to survive until age five (**UNICEF, 2009**).

The fourth Millennium Development Goals (MDG) is to reduce by two thirds, between 1990 and 2015, the under-five mortality rate (**WHO, 2005**). The global progress in reducing child mortality is insufficient to reach MDG 4 as the average annual rate of reduction (AARR) in the under-five mortality rate (U5MR) observed for 1990–2006 was 1.6% (from 93 to 72 deaths per 1000 live births) and the required during 2007–2015 in order to reach MDG 4

is 9.4%. For Egypt the reduction in under-five mortality rate was from 91 in 1990 to 35 in 2006. Therefore, Egypt is considered on track (having reduced the under-five mortality rate to below 40 per 1,000 live births or achieved an average annual reduction rate of 3.9 per cent or more since 1990) (**UNICEF, 2008**). Although Egypt will achieve the MDG targets for 2015 at the National level, it will not do so equally at the governorate level. More children suffer from anemia and other nutritional deficiencies in those governorates that rank low on the Egypt Human Development Index Scale.

According to WHO, many sick children who are brought to the attention of health providers do not receive adequate assessment and treatment (**WHO, 1999**). It is not uncommon for a provider to treat the symptom that is most evident, without conducting a full assessment of the health status of the child. For this reason, WHO and other agencies developed the strategy of Integrated Management of Childhood Illness (IMCI). The strategy promotes using every visit to a health care provider as an opportunity not only to conduct a full assessment of the child's current health and possible underlying problems, but also to provide preventive interventions such as immunization and growth monitoring (for early

detection of faltering growth) to prevent or minimize progression to illness (**Gove, 1997 and WHO/UNICEF, 2001**).

There is little systematically collected information, however, on how well already existing activities and interventions are being provided. Identifying if the existing are, in fact being carried out as planned, and if not, which component of the system is weak, is necessary to develop the appropriate policy and program decisions for improving health outcomes (**ESPA, 2004**).

Thus as a tool for addressing quality issues the Service Provision Assessment (SPA) is a survey of health facilities formulated to provide information on the general functioning of outpatient services. It helps in providing information on strength and weaknesses in the service delivery environment, and on the status of health services, from provider level that may assist policymakers in developing effective strategies to improve utilization and coverage of services and prioritizing resources to ensure better health outcomes (**ESPA, 2004**).

Objectives

1. To describe the preparedness of rural health units in Assiut governorate to provide quality services for children in rural areas of Assiut governorate.
2. To describe content of services provided to under five children in rural areas of Assiut governorate.
3. To report on client / patient satisfaction in rural areas of Assiut governorate.

2. Subjects And Methods

The research focused on basic level of services provided by health units particularly those for under five years children. The child health component is designed to assess the availability of preventive services (immunization and growth monitoring), counseling to the mothers of children attending the rural health units and outpatient care for the sick child, with a focus on the process followed in providing services to the sick child. Guidelines for the Integrated Management of Childhood Illness (IMCI) program, Expanded Program on Immunization (EPI) policy and Egypt Service Provision Assessment Survey (ESPA) set the standards against which service provision was measured.

Sample: The rural health units were classified in Assiut governorates in to four groups (north, south, east and west). From each group one district was chosen by simple random sample. From each district three rural health units were selected randomly. A total of 12 rural health units distributed along 4 districts were included in this study. The study districts and villages were:

- Abnoub district: Al-Hamam, Jazeeret Bahij and El-Swalem El-Bahariya villages
- Al-Fath district: Bani Mor, Al-Faima and Al-towabyiah villages
- Manfalout district: Bani Sanad, Om Al-Kosour and Arab Bani-Shokair villages
- El-Ghanayem district: Al-Azaizah, AL-Mashiaha and Der El-Ganadla villages.

The target of the study were the senior physician of the rural health unit, exit interview of caretakers of sick children and observation of examination of sick children and the vaccination sessions. The sample for observations was opportunistic, meaning that clients were selected for observation as they arrived because there was no way to know how many eligible clients would attend the rural health unit the days of the survey. The rule was to observe ten children (during examination and vaccination) for each rural health unit. Exit interviews were conducted for caretakers of sick children who attended the facility on the days of the survey. 40 interviews with the caretakers of children attending each rural health unit were conducted.

Study design: A cross sectional study design was carried out.

Instruments and methods of data collection: Data were collected using structured questionnaires. The questionnaire consisted of three parts. The first part was **Provider Interview**. The senior physician was interviewed for information on (system of work , administration, health services provided by the health units and supervision, and vaccine availability and storage. The second part was an **Exit Interview** assessed the client's understanding of the consultation or examination, as well as her recollection of the instructions that she received about treatment or preventive behavior. The client's perception of the service delivery environment was also elicited. The third was an **Observation Protocol** tailored to the service being provided. **Observations** of consultations for sick children, Examinations and the content of information exchanged between the provider and the client (history, symptoms, and advice) were components of the observation. The clients who were included in the exit interview were different from those included in the observation.

The researcher trained data collectors and supervised them during field work. Pilot study was conducted on two health units for testing the questionnaires. Data was collected by spending one week in each unit to complete the required sample size. Data collection was conducted from 1st October up till 10th December, 2012. Verbal consent was obtained from both the service providers and caretakers of sick children before filling the questionnaire.

The statistical package for social sciences (SPSS) software version 11 was used for entry and analysis of data. Separate file for data entry for each part of the questionnaire (provider interviews, exit interviews and observation of consultation) was used. Chi square and T-test was used to evaluate the difference between groups. A significant P-value was considered if less than 0.05.

3. Results

Physician interview regarding administrative aspects and activities of rural health units (Tables 1 – 3):

A total of 12 rural health unit (RHU) physicians were interviewed, the results were as follows:

- There were only one physician in six RHUs, one of them was present in the RHU only two days per week.
- Lab. Technicians was present in 9 out of 12 RHUs.
- A resident physician was present in only 2 out of 12 RHUs
- Periodic meeting of the health team of the RHU was present in 9 out of 12 RHUs
- Periodic meeting of the RHU administrative committee was present in only 3 out of 12 RHUs

- Health education sessions were present in 10 out of 12 RHUs
- Supervisory visits were present in all (12) of the visited RHUs
- There was an educational kitchen in only 2 of the visited RHUs which were not working.
- There was no official referral system in any of the visited RHUs
- There was routine management meetings in 9 out of 12 RHUs, of them 4 had documentation of recent meetings.
- **Vaccination:** vaccine supply, organization of the vaccine inside the fridge according the expiry date, presence of thermometer inside the fridge, presence of temperature chart and most types of vaccines are present in most of the visited RHUs (table 2).
- All RHUs are providing health services for children less than five years but not on a daily basis.
- Adherence to at least four out of eight items of IMCI guidelines was present in 10 out of 12 RHU
- Health education for mothers of sick children and adherence to infection control guidelines of MOHP were provided by 10 out of 12 RHUs.

Table (1): Physician interview: administrative aspects of rural health units (RHUs) of Assiut governorate, 2012.

Characteristics / Districts	Abnoub (n=3)	Al-Fath (n=3)	El-Ghanayem (n=3)	Manfalout (n=3)	Total (n=12)
No. of health service provision days per week / RHU:					
- Two	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	1 (8.3)
- Three	0 (0.0)	0 (0.0)	0 (0.0)	2 (67.7)	2 (16.6)
- six	2 (66.7)	3 (100.0)	3 (100.0)	1 (33.3)	9 (75.0)
Mean ± SD	5.2 ± 1.5				
Number of physician / RHU:					
- One	2 (66.7)	1 (33.3)	2 (67.7)	1 (33.3)	6 (50.0)
- Two	1 (33.3)	1 (33.3)	1 (33.3)	2 (67.7)	5 (41.7)
- Five	0 (0.0)	1 (33.3)	0 (0.0)	0 (0.0)	1 (8.3)
Mean ± SD	1.8 ± 1.1				
Number of nurses / RHU:					
- Five	1 (33.3)	1 (33.3)	0 (0.0)	0 (0.0)	2 (16.7)
- Eight	1 (33.3)	0 (0.0)	0 (0.0)	1 (33.3)	2 (16.7)
- More than eight	1 (33.3)	2 (67.7)	3 (100.0)	2 (67.7)	8 (66.6)
Mean ± SD	11.7 ± 7.1				
Number of sanitarian / RHU:					
- Three or less	2 (66.7)	2 (66.7)	0 (0.0)	1 (33.3)	5 (41.7)
- Four or more	1 (33.3)	1 (33.3)	3 (100.0)	2 (66.7)	7 (58.3)
Mean ± SD	3.3 ± 1.5				
Presence of lab. Technician / RHU:					
- None	0 (0.0)	2 (66.7)	0 (0.0)	1 (33.3)	3 (25.0)
- One	2 (66.7)	1 (33.3)	1 (33.3)	2 (66.7)	6 (50.0)
- Two	1 (33.3)	0 (0.0)	2 (66.7)	0 (0.0)	3 (25.0)
Mean ± SD	1.0 ± 0.7				
Presence of resident physician/RHU:	0 (0.0)	1 (33.3)	0 (0.0)	1 (33.3)	2 (16.7)
Routine management meeting of the health team	2 (66.7)	3 (100.0)	2 (66.7)	2 (66.7)	9 (75.0)

Table (1): Continued;

Characteristics / Districts	Abnoub (n=3)	Al-Fath (n=3)	El-Ghanayem (n=3)	Manfalout (n=3)	Total (n=12)
Documentation of recent meeting of health team of RHU	2 (100.0)	1 (33.3)	0 (0.0)	1 (50.0)	4 (44.4)
Periodic meeting of administrative committee of RHU	0 (0.0)	1 (33.3)	1 (33.3)	1 (33.3)	3 (25.0)
Presence of educational kitchen	1 (33.3)	0 (0.0)	0 (0.0)	1 (33.3)	2 (16.7)
Training of attendants in the kitchen	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Presence of health education sessions	3 (100.0)	3 (100.0)	2 (66.7)	2 (66.7)	10 (83.3)
Last health educational session:					
- Since 4 days or less	3 (100.0)	1 (33.3)	1 (50.0)	1 (50.0)	6 (60.0)
- More than 4 days	0 (0.0)	2 (66.7)	1 (50.0)	1 (50.0)	4 (40.0)
Presence of supervisory visits	3 (100.0)	3 (100.0)	3 (100.0)	3 (100.0)	12 (100.0)
No. of activities performed during the supervisory visit					
- 0 – 3 items	1 (33.3)	0 (0.0)	1 (33.3)	1 (33.3)	3 (25.0)
- 4 – 5 items	2 (66.7)	1 (33.3)	1 (33.3)	1 (33.3)	5 (41.7)
- 6 – 7 items	0 (0.0)	2 (66.7)	1 (33.3)	1 (33.3)	4 (33.3)
Mean ± SD	3.3 ± 2.8	3.3 ± 2.8	4.3 ± 2.5	4.1 ± 3.1	4.5 ± 2.3
Were the vaccines organized according to expiry date “first expire first out” in the fridge:	3 (100.0)	3 (100.0)	3 (100.0)	3 (100.0)	12 (100.0)
Presence of thermometer inside the refrigerator:	3 (100.0)	3 (100.0)	3 (100.0)	3 (100.0)	12 (100.0)
Completeness of temperature chart:	3 (100.0)	3 (100.0)	3 (100.0)	3 (100.0)	12 (100.0)
Last supply with vaccine within 1 month:	3 (100.0)	3 (100.0)	3 (100.0)	3 (100.0)	12 (100.0)
Estimation of target children for each vaccine	3 (100.0)	3 (100.0)	3 (100.0)	3 (100.0)	12 (100.0)

*Activities of the supervisory visit:

1. Revision of the records of the RHU
2. Discussion of policy and health affairs
3. Hold a meeting with the team of the RHU
4. Recording of notes in the visit records.
5. Discussion of the problems which may occurs in the RHU with the health team
6. Discussion of technical problems which may occur during service delivery
7. Assessment of performance of health team during service provision

Table (2): Distribution of study districts of Assiut governorate by availability of vaccines

Vaccine / vitamin A	Abnoub (n=3)	Al-Fath (n=3)	El-Ghanayem (n=3)	Manfalout (n=3)	Total (n=12)
- BCG	3 (100.0)	3 (100.0)	3 (100.0)	3 (100.0)	12 (100.0)
- Polio	3 (100.0)	3 (100.0)	3 (100.0)	3 (100.0)	12 (100.0)
- DPT	2 (66.7)	3 (100.0)	2 (66.7)	3 (100.0)	10 (83.3)
- Hepatitis B	0 (33.3)	1 (33.3)	1 (33.3)	2 (66.7)	4 (33.3)
- DPT-Hepatitis B	2 (66.7)	3 (100.0)	2 (66.7)	1 (33.3)	8 (66.7)
- MMR	3 (100.0)	3 (100.0)	3 (100.0)	3 (100.0)	12 (100.0)
- Tetanus toxoid	3 (100.0)	2 (66.7)	3 (100.0)	3 (100.0)	11 (91.7)
- Vitamin A	3 (100.0)	3 (100.0)	3 (100.0)	3 (100.0)	12 (100.0)

Table (3): Distribution of study districts of Assiut governorate by health services provided for children less than five years, 2012

Characteristics / Districts	Abnoub	Al-Fath	El-Ghanayem	Manfalout	Total (n=12)
Provision of health services for children <5 years	3 (100.0)	3 (100.0)	3 (100.0)	3 (100.0)	12 (100.0)
No. of days during which services are provided for young children					
- One - Two	1 (33.3)	0 (0.0)	1 (33.3)	1 (33.3)	3 (25.0)
- Three	0 (0.0)	0 (0.0)	1 (33.3)	2 (66.7)	3 (25.0)
- Six	2 (66.7)	3 (100.0)	1 (33.3)	0 (0.0)	6 (50.0)
Mean ± SD	4.6 ± 2.3	6.3 ± 0.7	3.3 ± 2.5	2.3 ± 1.2	4.0 ± 2.2
Growth monitoring for children	3 (100.0)	3 (100.0)	2 (66.7)	3 (100.0)	11 (91.7)
Adherence to IMCI guidelines (a total of 8 items)*:					
- One – two item	0 (0.0)	0 (0.0)	1 (33.3)	1 (33.3)	2 (16.7)
- Four – five items	3 (100.0)	2 (66.7)	0 (0.0)	1 (33.3)	6 (50.0)
- Six – eight items	0 (0.0)	1 (33.3)	2 (66.7)	1 (33.3)	4 (33.3)
Mean ± SD	4.7 ± 0.6	5.3 ± 2.3	5 ± 3.6	4 ± 2	4.7 ± 2.1

Table (3): Continued.

No. of items covered by counseling of caretakers of children**:	1 (33.3) 1 (33.3) 1 (33.3)	0 (0.0) 0 (0.0) 3 (100.0)	0 (0.0) 1 (33.3) 2 (66.7)	1 (33.3) 1 (33.3) 1 (33.3)	2 (16.6) 3 (25.0) 7 (58.3)
Adherence to infection control guidelines of MOHP:	3 (100.0)	3 (100.0)	2 (66.7)	2 (66.7)	10 (83.3)

***Items of IMCI guidelines:**

1. Presence of specific record for every child in the health unit:
2. Recording of child data in the health card
3. IMCI counseling cards for provider to use:
4. IMCI mothers cards (to give to caretaker)
5. Take weight
6. Take temperature
7. Assess immunization status
8. To continue breastfeeding and increase fluid intake during child illness

Exit interview with caretakers of young children (Tables 4 – 7):

Socio-demographic characteristics of respondents (table 4): Mothers accompanied sick children during seeking medical care in 83.2% of cases. 38.6% of mothers of sick children were illiterate compared to 26.5% of their fathers. Regarding occupations of mothers of sick children were housewife in 82.1 % and 37.8% of their fathers were farmers. The mean age of children was 18.9 months.

Symptoms of sick children (through caretaker interview) (Table 5 and 6): The most common complaints of sick children were cough, difficult breathing, sore throat or ear problems (38.2%) (symptoms of acute respiratory tract infections), followed by diarrhea (27.7%). 23.4% of children were seeking medical advice within one day of complaint and about another half (50.1%) of them within two days of beginning of symptoms. The younger the age of the child, the higher possibility of having symptoms of different diseases ($P=0.156$). Males had more symptoms of acute respiratory infections (ARI) and fever, whereas females had more diarrheal attack ($P=0.201$) (Table 6).

Care provided for sick children (through caretaker interview) (Table 7): 93% of caretakers of young children reported that the physician explained how to administer oral treatment. IMCI guidelines recommend that the first dose of a medicine (particularly an antibiotic) should be provided at the facility so that treatment can begin immediately. This practice also provides an opportunity to reinforce the dosage to the caretaker and to ensure that the child is able to take the medicine. Only 6.8% of mothers reported that care

****Items of counseling of caretakers of children:**

1. Vaccination
2. Nutrition
3. Breastfeeding
4. Growth monitoring
5. Child illnesses
6. Treatment of childhood illnesses

provider gave the first dose of any oral medicines. Adherence to IMCI guidelines and counseling provided by physicians to caretakers of sick children were significantly higher in RHUs of El-Ghanayem district than RHUs of other districts ($P <0.001$ for both). Only about one third (35.7%) of caretakers of sick children were subjected to health education sessions before medical consultation. The most common subjects included in these sessions were vaccination (29%), followed by child nutrition (23%) and breastfeeding (22%). Abnoub and El-Ghanayem districts had significantly higher health education sessions than other districts ($P <0.001$). The most common subjects included in these sessions were, vaccination (29.1%), nutrition of young children (23%) and breastfeeding (22%).

Observation of child examination and vaccination (table 8 and 9): Revision of child immunization was significantly higher in RHUs of El-Ghanayem district than RHUs of other districts ($P <0.001$). The most commonly observed examination procedure were chest (97%) and abdominal (93.9%) examination. Items of child examination performed were significantly higher in Abnoub and El-Ghanayem districts than other districts ($P <0.001$). Counseling for caretakers of young children were significantly higher in RHUs of Al-Ghanayem than RHUs of other districts ($P <0.001$).

Most of the observed child vaccination in RHUs of Assiut governorate had disposable syringes, refrigerator (or cold box) and water and soap for cleaning and washing. Ice packs for keeping vaccine cold was present in significantly higher percentage of RHUs of Abnoub and El-Ghanayem than RHUs of other districts ($P = <0.001$).

Table (4): Distribution of socio-demographic characteristics of caretakers and sick children by study districts of Assiut governorate, 2012:

Characteristics / Districts	Abnoub (n=143)	Al-Fath (n=119)	El-Ghanayem (n=117)	Manfalout (n=108)	Total (n=487)
Who accompanied the child during exam.					
- Mother	136 (95.1)	91 (76.5)	97 (82.9)	81 (75.0)	405 (83.2)
- Father	4 (2.8)	16 (13.4)	7 (6.0)	5 (4.6)	32 (6.6)
- Others	3 (2.1)	12 (10.1)	13 (11.1)	22 (20.4)	50 (10.2)
Mother's education:					
- Illiterate	66 (46.2)	48 (40.3)	28 (23.9)	46 (42.6)	188 (38.6)
- Read and write/ basic education	16 (11.2)	24 (20.2)	34 (29.0)	19 (17.6)	93 (19.1)
- Secondary	56 (39.2)	39 (32.8)	35 (29.9)	19 (17.6)	149 (30.6)
- University	5 (3.5)	8 (7.7)	20 (17.1)	24 (22.2)	57 (11.7)
Father's education:					
- Illiterate	66 (46.2)	34 (28.6)	7 (6.0)	46 (42.6)	153 (31.4)
- Read and write/ basic education	23 (16.1)	19 (15.9)	31 (26.5)	22 (20.4)	95 (19.4)
- Secondary	43 (30.1)	61 (51.3)	57 (48.7)	38 (35.2)	199 (40.9)
- University	11 (7.7)	5 (4.2)	22 (18.8)	2 (1.8)	40 (8.2)
Mother's occupation:					
- House wife	129 (90.2)	111 (93.3)	108 (92.3)	52 (48.1)	400 (82.1)
- Employee	4 (2.8)	1 (0.8)	7 (6.0)	1 (0.9)	13 (2.7)
- Others	10 (7.0)	7 (5.9)	2 (1.7)	55 (51.0)	74 (15.2)
Father's occupation:					
- Farmer	64 (44.8)	23 (19.3)	32 (27.4)	65 (60.2)	184 (37.8)
- Employee	12 (8.4)	20 (16.8)	28 (23.4)	7 (6.5)	67 (13.8)
- Technical / Skilled worker	14 (9.8)	5 (4.2)	13 (11.1)	1 (0.9)	33 (6.8)
- Worker	14 (9.8)	24 (20.2)	11 (9.4)	16 (14.8)	65 (13.3)
- Others	39 (27.2)	47 (39.5)	33 (28.7)	19 (17.6)	138 (28.3)
Sex of the child:					
- Male	73 (51.0)	75 (63.0)	53 (45.3)	53 (49.1)	254 (52.2)
- Female	70 (49.0)	44 (37.0)	64 (54.7)	55 (50.9)	233 (47.8)
Age of the child:					
- 0 - < 1 year	82 (57.3)	48 (40.3)	32 (27.4)	41 (38.0)	203 (41.7)
- 1 - < 2 years	36 (25.2)	25 (21.0)	27 (23.1)	19 (17.6)	107 (22.0)
- 2 - < 3 years	13 (9.1)	21 (17.6)	28 (23.9)	14 (13.0)	76 (15.6)
- 3 - < 4 years	8 (5.6)	13 (10.9)	13 (11.1)	15 (13.9)	49 (10.1)
- 4 - 5 years	4 (2.8)	12 (10.1)	17 (14.5)	19 (17.6)	52 (10.7)
Mean (\pm SD) age in months	13.1 \pm 11.3	18.9 \pm 14.9	22.4 \pm 15.1	23.0 \pm 18.3	18.9 \pm 15.4

Table (5): Symptoms of children seeking medical advice at the survey time in rural areas of Assiut governorate, 2012

Characteristics / Districts	Abnoub (n=143)	Al-Fath (n=119)	El-Ghanayem (n=117)	Manfalout (n=108)	Total (n=487)
Symptoms (complaints):					
- Cough / difficult breathing	31 (21.7)	46 (38.7)	22 (18.8)	33 (30.6)	132 (27.1)
- Throat problem	19 (13.3)	7 (5.9)	14 (12.0)	4 (3.7)	44 (9.0)
- Ear problem	5 (3.5)	1 (0.8)	0 (0.0)	4 (3.7)	10 (2.1)
Subtotal (cough/ difficult breathing, throat and ear problems)	55 (38.5)	54 (45.4)	36 (20.8)	41 (38.0)	186 (38.2)
- Diarrhea	33 (23.1)	34 (28.6)	39 (33.3)	26 (24.1)	132 (27.1)
- Fever	21 (14.7)	20 (16.8)	16 (13.7)	20 (18.5)	77 (15.8)
- Eye symptoms	25 (17.5)	2 (1.7)	15 (12.8)	9 (8.3)	51 (10.5)
- Skin symptoms	6 (4.2)	3 (2.5)	4 (3.4)	6 (5.6)	19 (3.9)
- Others	3 (2.1)	6 (5.0)	7 (6.0)	6 (5.6)	22 (4.6)
Duration of the symptom:					
- One day	41 (28.7)	36 (30.3)	13 (11.1)	24 (22.2)	114 (23.4)
- Two days	82 (57.3)	53 (44.5)	70 (59.8)	39 (36.1)	244 (50.1)
- Three days	8 (5.6)	15 (12.6)	24 (20.5)	25 (23.1)	72 (14.8)
- Four and more days	12 (8.4)	15 (12.5)	10 (8.6)	20 (18.5)	57 (11.7)
Mean duration of symptom (\pm SD)	2.3 \pm 2.3	2.6 \pm 2.7	2.3 \pm 1.0	3.0 \pm 2.8	2.5 \pm 2.3
P - value	0.061				

Table (6): Relationship between symptoms and other child characteristics in rural areas of Assiut governorate, 2012

Child characteristics	Symptoms						Total (column%)
	ARI symptoms	Diarrhea	Fever	Eye symp.	Skin symp.	Others	
Age of the child:							
- 0 -	72 (38.9)	68 (51.5)	30 (39.0)	21 (41.2)	6 (31.6)	6 (27.3)	203 (41.7)
- 1 -	39 (21.0)	32 (24.2)	17 (22.1)	10 (19.6)	7 (36.8)	2 (9.1)	107 (22.0)
- 2 -	35 (18.8)	16 (12.1)	12 (15.6)	7 (13.7)	3 (15.8)	3 (13.6)	76 (15.6)
- 3 -	21 (11.3)	6 (4.5)	10 (13.0)	6 (11.8)	1 (5.3)	5 (22.7)	49 (10.1)
- 4 - 5 yrs	19 (10.2)	10 (7.6)	8 (10.4)	7 (13.7)	2 (10.5)	6 (27.3)	52 (10.7)
P - value	0.108						
Sex of the child:							
- Male	105 (56.5)	59 (44.7)	45 (58.4)	22 (43.1)	9 (47.4)	14 (63.6)	254 (52.2)
- Female	81 (43.5)	73 (55.3)	32 (41.6)	29 (56.9)	10 (52.6)	8 (36.4)	433 (47.8)
P - value	0.201						
Mother's education:							
- Illiterate	64 (34.4)	42 (31.8)	41 (53.2)	25 (49.0)	8 (42.1)	8 (36.4)	188 (38.6)
- Literate	122 (65.6)	90 (68.2)	36 (46.8)	26 (51.0)	11 (57.9)	14 (63.6)	299 (61.4)
P - value	0.020						
Father's education:							
- Illiterate	66 (35.5)	35 (26.5)	23 (29.9)	19 (37.3)	4 (21.1)	6 (27.3)	153 (31.4)
- Literate	120 (64.5)	97 (73.5)	54 (70.1)	32 (62.7)	15 (78.9)	16 (72.7)	334 (68.6)
P - value	0.426						
Total (row%)	186 (38.2)	132 (27.1)	77 (15.8)	51 (10.5)	19 (3.9)	22 (4.6)	487 (100.0)

Table (7): Exit interview of caretakers of sick children in rural areas of Assiut governorate, 2012.

Characteristics / Districts	Abnoub (n=143)	Al-Fath (n=119)	El-Ghanayem (n=117)	Manfalout (n=108)	Total (n=487)
Adherence to IMCI guidelines:					
1. Did the physician tell the care taker about the diagnosis of the child's illness	107 (74.8)	55 (46.2)	111 (94.9)	70 (64.8)	343 (70.4)
2. Did the physician describe signs or symptoms in the child for which the caretaker should immediately bring the child back to the facility	39 (27.3)	35 (29.4)	50 (42.7)	27 (25.0)	151 (31.0)
3. Did the provider discuss a return appointment for when the child should be brought back for follow-up	31 (21.7)	34 (28.6)	72 (61.5)	29 (26.9)	166 (34.1)
4. Did the physician explain how to administer oral treatment(s)	131 (91.6)	108 (0.8)	113 (96.6)	102 (94.4)	454 (93.2)
5. Did the physician ask the caretaker to repeat instructions on how to administer the oral medications	9 (6.3)	27 (22.7)	53 (45.3)	29 (26.9)	118 (24.2)
6. Did the care provider give the first dose of any oral medicines	12 (8.4)	11 (9.2)	9 (7.7)	1 (0.9)	33 (6.8)
Number of items of IMCI guidelines followed by the RHU:					
- None	5 (3.5)	9 (7.6)	0 (0.0)	3 (2.8)	17 (3.5)
- 1 - 2 items	99 (69.2)	71 (59.6)	40 (34.1)	72 (66.7)	282 (57.9)
- 3 - 4 items	33 (23.1)	17 (14.3)	45 (38.5)	19 (17.6)	114 (23.4)
- 5 - 6 items	6 (4.2)	22 (18.4)	32 (27.4)	14 (13.0)	74 (15.2)
- Mean ± SD	2.3 ± 1.1	2.3 ± 1.7	3.5 ± 1.3	2.4 ± 1.4	2.6 ± 1.5
P - value*	<0.001				
Subjects of caretaker counseling provided by the physician:					
1. Breastfeeding and continuation of feeding during child illness	86 (60.1)	49 (41.2)	56 (47.9)	24 (22.2)	215 (44.1)
2. Importance of growth monitoring	99 (69.1)	39 (32.8)	76 (65.0)	22 (20.4)	234 (48.5)
3. Suitable food for the child	71 (49.7)	24 (20.2)	76 (65.0)	17 (15.7)	188 (38.6)

Table (7): Continued.

Characteristics / Districts	Abnoub (n=143)	Al-Fath (n=119)	El-Ghanayem (n=117)	Manfalout (n=108)	Total (n=487)
Number of subjects of caregiver counseling provided by physician:					
- None	29 (20.2)	51 (42.9)	19 (16.2)	78 (72.2)	177 (36.3)
- One item	24 (16.8)	38 (31.9)	22 (18.9)	11 (10.2)	95 (19.5)
- Two items	38 (26.6)	16 (13.4)	42 (35.9)	5 (4.6)	101 (20.7)
- Three items	52 (36.4)	14 (11.8)	34 (29.1)	14 (13.0)	114 (23.4)
- Mean ± SD	1.7 ± 1.1	0.9 ± 1.0	1.8 ± 1.0	0.6 ± 1.1	1.3 ± 1.2
P - value*			<0.001		
Health education sessions before medical consultation	126 (88.1)	4 (3.4)	43 (36.8)	1 (0.9)	174 (35.7)
P - value**			<0.001		
Subjects of health education sessions:					
1. Vaccination	92 (64.3)	1 (0.8)	38 (32.5)	1 (0.9)	132 (29.1)
2. Nutrition of young children	82 (57.3)	2 (1.7)	27 (23.1)	1 (0.9)	112 (23.0)
3. Breastfeeding	82 (57.3)	2 (1.7)	22 (18.8)	1 (0.9)	107 (22.0)
4. Growth monitoring	17 (11.9)	2 (1.7)	0 (0.0)	1 (0.9)	20 (4.1)
5. Child illnesses	12 (8.4)	0 (0.0)	0 (0.0)	1 (0.9)	13 (2.7)
6. Treatment of child illness	12 (8.4)	0 (0.0)	0 (0.0)	1 (0.9)	13 (2.7)
Number of subjects included in health education sessions:					
- None	34 (23.8)	115 (96.6)	79 (67.5)	107 (99.1)	335 (68.8)
- 1 – 2 items	42 (29.4)	3 (2.5)	16 (13.7)	0 (0.0)	61 (12.5)
- 3 – 4 items	61 (42.7)	1 (0.8)	22 (18.8)	0 (0.0)	84 (17.3)
- 5 – 6 items	6 (4.2)	0 (0.0)	0 (0.0)	1 (0.9)	7 (1.4)
- Mean ± SD	2.1 ± 1.5	8.4 E-2±0.4	3.0 ± 0.8	0.2 ± 1.0	0.9 ± 1.4
P - value*			<0.001		
Did caretaker understand the instructions provided by the physician	64 (44.8)	28 (23.5)	80 (68.4)	19 (17.6)	191 (39.2)
P - value **			<0.001		

* T – test was used ** Chi – square test was used.

Table (8): Observation of child examination in rural areas of Assiut governorate, 2012.

Characteristics / Districts	Abnoub (n=47)	Al-Fath (n=28)	El-Ghanayem (n=28)	Manfalout (n=29)	Total (n=132)
Revision of child immunization	41 (87.2)	9 (32.1)	28 (100.0)	7 (24.1)	85 (64.4)
P - value*			<0.001		
Child examination:					
1. Chest exam.	47 (100.0)	27 (96.4)	28 (100.0)	26 (89.7)	128 (97.0)
2. Abdominal exam.	47 (100.0)	25 (89.3)	24 (85.7)	28 (96.6)	124 (93.9)
3. Weight measurement	41 (87.2)	20 (71.4)	28 (100.0)	11 (37.9)	100 (75.8)
4. Temperature measurement	31 (66.0)	11 (39.3)	19 (67.9)	8 (27.6)	69 (52.3)
5. Counting of respiratory rate	4 (8.5)	7 (25.0)	3 (10.6)	5 (17.2)	19 (14.4)
No of items performed during child examination:					
- 1 – 2 items	2 (4.3)	1 (3.6)	0 (0.0)	14 (48.2)	17 (12.8)
- 3 items	14 (29.8)	21 (75.0)	10 (35.7)	7 (24.1)	52 (39.4)
- 4 – 5 items	31 (66.0)	6 (21.4)	18 (64.3)	8 (27.6)	63 (47.7)
- Mean ± SD	3.6 ± 0.6	3.2 ± 0.7	3.6 ± 0.5	2.7 ± 1.0	3.3 ± 0.8
P - value**			<0.001		
Subjects of mother counseling:					
1. Explain the diagnosis of child's illness	47 (100.0)	20 (71.4)	28 (100.0)	20 (69.0)	115 (87.1)
2. Explain the dose of the drug	47 (100.0)	28 (100.0)	28 (100.0)	26 (89.7)	129 (97.7)
3. Explain route of administration of the drug	45 (95.7)	26 (92.9)	28 (100.0)	16 (55.2)	115 (87.1)
4. When to return for follow up	6 (12.8)	9 (32.1)	20 (71.4)	9 (31.0)	44 (33.3)
5. When to return immediately	6 (12.8)	9 (32.1)	17 (60.7)	10 (34.5)	42 (31.8)
6. Breastfeeding	43 (91.5)	12 (42.9)	22 (78.6)	4 (13.8)	81 (61.4)
7. Proper nutrition	37 (78.7)	11 (39.3)	24 (85.7)	2 (6.9)	74 (56.1)
8. Ask the caretaker to repeat instructions	0 (0.0)	11 (39.3)	7 (25.0)	10 (34.5)	28 (21.1)
9. Provision of health education cards	24 (51.1)	3 (10.7)	6 (21.4)	0 (0.0)	33 (25.0)

Table (8): Continued.

Characteristics / Districts	Abnoub (n=47)	Al-Fath (n=28)	El-Ghanayem (n=28)	Manfalout (n=29)	Total (n=132)
No. of subjects of counseling performed:					
- None	0 (0.0)	0 (0.0)	0 (0.0)	3 (10.3)	3 (2.3)
- 1 – 3 items	3 (6.4)	12 (42.8)	0 (0.0)	16 (55.2)	31 (23.5)
- 4 – 6 items	18 (38.3)	8 (28.6)	11 (39.3)	0 (0.0)	37 (28.1)
- 7 – 9 items	26 (55.3)	8 (28.6)	17 (60.7)	10 (34.2)	61 (46.1)
- Mean ± SD	6.1 ± 1.3	4.0 ± 2.3	7.4 ± 1.5	3.7 ± 2.9	5.5 ± 2.4
P – value**			<0.001		
Recording in the child card	45 (95.7)	15 (53.6)	28 (100.0)	16 (55.2)	104 (78.8)
P – value*			<0.001		
Recording in the hospital records	47 (100.0)	18 (64.3)	28 (100.0)	15 (51.7)	108 (81.8)
P – value*			<0.001		

* Chi – square test was used.

** T – test was used.

Table (9): Observation of child vaccination in rural areas of Assiut governorate, 2012.

Characteristics / Districts	Abnoub (n=43)	Al-Fath (n=27)	El-Ghanayem (n=29)	Manfalout (n=30)	Total (n=129)
Recording in the hospital records	43 (100.0)	27 (100.0)	29 (100.0)	30 (100.0)	129 (100.0)
Recording in the child card	43 (100.0)	27 (100.0)	29 (100.0)	30 (100.0)	129 (100.0)
Presence of disposable syringes	41 (95.3)	26 (96.3)	29 (100.0)	26 (86.7)	122 (94.6)
Presence of refrigerator (or vaccine cold box)	43 (100.0)	27 (100.0)	29 (100.0)	30 (100.0)	129 (100.0)
Presence of ice packs	43 (100.0)	17 (63.0)	29 (100.0)	22 (73.3)	111 (86.0)
P – value			<0.001		
Presence of water for hand washing	41 (95.3)	27 (100.0)	29 (100.0)	29 (96.7)	128 (99.2)
Presence safe box for disposal of used syringes	43 (100.0)	26 (96.3)	29 (100.0)	29 (96.7)	127 (98.4)

Respondents' satisfaction regarding health care provided for young children (Table 10):

Prior to leaving the facility, caretakers of sick children were interviewed for their opinions on the processes of the consultation and the quality of the providers' services. The caretaker was read a list of specific issues commonly related to client satisfaction and was asked to answer yes or no.

There was discrepancy between respondents' satisfaction in different districts of Assiut governorate. Respondents of RHUs of Manfalout district were more satisfied by suitability of waiting

time (not prolonged), whereas respondents of RHUs of Al-fath district were more satisfied by suitability of waiting place. Respondents of E-Ghanayem district were more satisfied by suitable examination time and sufficient explanation about child illness by the physicians. Respondents of Abnoub district were more satisfied by availability of drugs and suitability of working hours. The main causes of client satisfaction were, suitable working hours (80.7%) and sufficient explanation about child illness (79.1%).

Table (10): Respondents' satisfaction regarding child health services in rural areas of Assiut governorate, 2012.

Characteristics / Districts	Abnoub (n=143)	Al-Fath (n=119)	El-Ghanayem (n=117)	Manfalout (n=108)	Total (n=487)
Waiting time (suitable)	88 (61.5)	65 (54.6)	85 (72.6)	87 (80.6)	325 (66.9)
P – value			<0.001		
Waiting place (suitable)	91 (63.6)	79 (66.4)	56 (47.9)	49 (45.4)	275 (56.5)
P – value			0.001		
Examination time (suitable)	80 (55.9)	71 (59.7)	78 (66.7)	66 (61.1)	295 (60.6)
P – value			0.368		
Sufficient explanation about child illness	101 (70.6)	79 (66.4)	112 (95.7)	93 (86.1)	385 (79.1)
P – value			<0.001		
Efficiency of health service provider	61 (42.7)	72 (60.5)	85 (72.6)	39 (36.1)	257 (52.8)
P – value			<0.001		
Availability of drug in the health unit	53 (37.1)	9 (7.6)	41 (35.0)	24 (22.2)	127 (26.1)
P – value			<0.001		
Working hours (suitable)	135 (94.4)	71 (59.7)	107 (91.5)	80 (74.1)	393 (80.7)
P – value			<0.001		
Cleanliness of the health unit (clean)	88 (61.5)	95 (79.8)	114 (97.4)	53 (49.1)	350 (71.9)
P – value			<0.001		

4. Discussion

This study included 12 physician interviews, 487 exit interviews with caretakers of sick children, 132 observation of child examinations and 129 observation of child vaccinations to assess the quality and content of services provided by RHUs for young children.

Management of rural health units: in the present study, there was routine management meetings in 9 out of 12 RHUs, of them 4 had documentation of recent meetings. ESPA, 2004 reported that around one-third of facilities hold routine management meetings; and less than 10% have documentation of recent meetings.

Referral Systems: Clients who are referred to other facilities without any formal documentation risk being refused services or having services delayed if the referral facility must assess them as totally new clients. Thus, systematic means to support clients needing services from a higher-level facility in receiving these services is an important aspect of quality of care. This study collected information on whether any official or printed form of referral was present or not. The result of this study found that there was no printed or official forms of referral system. The ESPA 2004 found that thirty percent of facilities in Upper Egypt either have an observed referral form or are the referral facility. The result of this study is lower than that of ESPA 2004, because this study considered only the official or printed form whereas in ESPA 2004 all forms including documents the reason for referral and any treatment already provided, is used for referrals were considered for referral (whether printed, official or not).

External Supervision: Supervision from external managers provides an opportunity to ensure that system-wide standards, guidelines, and protocols are followed at the facility level. It also provides an opportunity to expose staff to a wider scope of ideas and relevant experiences. The results of this study found that all visited RHUs received external supervision during the past 6 months. ESPA 2004 found that, 99 percent of RHUs had received external supervision (a supervisory visit from authorities external to the facility) during the past six months.

Availability of Child Health Services: Among essential preventive and curative child health services, availability of outpatient care for sick children, routine childhood immunization services (EPI), and routine growth monitoring services were assessed by this study. All the visited RHUs were providing outpatient care of sick children, routine childhood immunization, and observers noted that 75% of children were weighed. The ESPA 2004 reported that outpatient care for sick children, routine childhood immunizations,

and growth monitoring was offered by 85%, 72% and 57% of RHUs of Upper Egypt.

Child Health Care: According to the IMCI approach, an evaluation of a child's growth is recommended to provide an objective evaluation of the current nutritional status and to detect any chronic latent nutritional problems. Growth monitoring includes comparing the child's current weight with a standard (based on age). IMCI guidelines concerning feeding practices of children include exclusive breastfeeding until age six months, followed by breastfeeding until two years of age, with the introduction of locally available foods based on a balanced nutritional plan. In this study, activities for nutritional assessment or discussion of nutritional status or feeding practices were observed or reported by the caretaker. Health education about breastfeeding and proper nutrition was reported by 24% and 22% of caretakers of children. Observers noted 75% of the sick children were weighed. ESPA 2004 reported that 50% of sick children were weighed compared to 42% in ESPA 2002.

Vaccination: The main rationale for childhood vaccination is that it reduces child mortality significantly and is a cost effective way to improve child health, particularly for poor households located in high-disease environments (e.g. **Koenig et al. 2001, Breiman et al., 2004, Brenzel et al., 2006**). Indeed, there is evidence that vaccination guards not only against a particular disease but also can provide a wide range of health benefits (**Contreras, 1989, Fonseca et al., 1996**) making it a particularly valuable public health measure

Monitoring Systems for Vaccines: Vaccines must be stored at an appropriate temperature to maintain potency. WHO and UNICEF policy is to monitor the temperature of a refrigerator (or cold box) at a minimum of twice daily and to record the temperature on a graph as proof of monitoring (**WHO, 1998**). For evidence of adequate storage conditions, facilities were assessed for 1) presence of a functioning thermometer in the refrigerator, 2) a temperature of 0° to 8°C6 at the time of the survey, and 3) a completed temperature graph (completed twice a day) for the past 30 days. The results of this study found that vaccine supply, organization of the vaccine inside the fridge according the expiry date, presence of thermometer inside the fridge, presence of temperature chart and most types of vaccines are present in almost all visited RHUs.

ESPA 2004 reported that all of the facilities offering child immunization services (99 percent) have cold boxes and ice packs for transporting vaccines and for maintaining the cold chain during vaccination sessions.

It is a recommended WHO policy to routinely distribute high-dose vitamin A capsules to children, to provide protection from respiratory infections that are more common when children are depleted in vitamin A. This activity has been added to the EPI program components in many countries. In Egypt, the policy is to provide the high-dose vitamin A at 9 and 18 months of age. The results of this study found that vitamin A was present in all the visited RHUs. ESPA 2004 reported that 95% of facilities storing vaccines also have vitamin A in their immunization area. This is an increase over 2002, when 79 % of eligible facilities had vitamin A available in the immunization service area.

Observation of child vaccination: In this study, recordkeeping that provides information for monitoring immunization activities was observed in 100% of the observed immunization sessions. ESPA 2004 reported that 95% of facilities have an up-to-date register (or tally sheets) for documenting the immunizations provided.

The results of this study found that, presence of disposable syringe, refrigerator, ice packs and sharp box was present in 94.6%, 100%, 86% and 98% of the observed vaccination sessions. ESPA 2004 found that new, sterile needles and syringes were observed to be used universally for immunizations, and sharps boxes are used for disposing of needles in most (90 %) of the observed immunizations provided.

Health education and child health and survival: In the present study, health education sessions were reported by 10 out of 12 physician and by only 35.7% of mothers of young children. Cross-country comparisons using large data sets, such as the World Fertility Survey and the DHS, have shown that education in general and female education in particular exert a very strong influence in reducing child morbidity and mortality (**Boerma et al., 1990; Caldwell and Caldwell ,1990; Bicego and Boerma 1993; and Murthi et al., 1995**). At the micro level, more in-depth quantitative and qualitative research that examines women's health-enhancing behavior has arrived at similar conclusions (**Bhuiya and Streatfield, 1991; Bourne and Walker, 1991**). Many theories that attempts to explain the relationship between maternal education and child health and survival, is related to the effective use of health care services (**Caldwell, et al., 1983, Tekce and Shorter, 1984; Mbache and Can de Walle, 1987; Boerma, et al., 1990 UNICE, 2000**). Three broad pathways of influence, linking maternal education to child mortality, that result in greater utilization of modern health services have been suggested: educated women are better able to break away from tradition to utilize modern means of safeguarding their own health and that of their children (**Cleland, 1990**); educated

women are better able to utilize what is available in the community to their advantage (**Barrera, 1990; Caldwell, 1990; Goodburn et al. 1990**); and educated women may be able to make independent decisions regarding their own and their children's health leading to greater utilization of modern health facilities (**Caldwell, 1986**). According to **EDHS, 2008**, child mortality levels are inversely related mother's education. The infant and under-five mortality rates among children born to women with no education is 37.6 and 44 deaths per 1000 live birth compared with 22.2 and 24.7 deaths per 1000 births among children born to women who have completed secondary school or higher (**El-Zanaty and Way, 2009**).

Symptoms of sick children: In the present study, the most common symptoms of sick children seeking medical care were cough, difficult breathing, sore throat or ear symptoms (38.2%) (symptoms of acute respiratory tract infections), followed by diarrhea (27.7%), fevers (15.8%) and eye problems (10.5%). In rural areas of Assiut governorate (2003), the reported diagnoses of child illness during last health consultation were acute respiratory infections (32.4%), diarrheal diseases (25.9%), fevers (21.2%), skin manifestations (5.5%) and eye infections (4%) (**Ahmed, 2003**). **Aboel-Seoud and Salem (1993)** found, that the main causes of the last three visits to pediatrician was: diarrheal diseases (42.1%), fevers (33.6%), acute respiratory infection (26.8%), skin diseases (3.1%) and eye troubles (1.6%). The two-week period prevalence of main symptoms among children less than five years in rural areas of Assiut governorate, were acute respiratory infections (16.4%), fevers (12.5%), diarrheal diseases (10.5%), skin diseases (3.4%), and symptoms of eye infections (2.4%) (**Ahmed, 2003**). In Sohag governorate, the two-week period prevalence of symptoms among young children were, 55% for cough, 72.6% for fever, 27.3% for diarrhea, 47% for common cold and 42% for eye infections (**Zarzour et al., 1994**). The two week period prevalence of diarrhea and symptoms of acute respiratory infections reported by Egyptian DHS among children less than five years were 9% and 8% respectively (**El-Zanaty and Way, 2009**). The two week morbidity among under-five children reported by the IMCI survey (2000) which covered rural and urban areas of Alexandria (Sharq), Menoufia (Menouf) and Assiut (Sahel Seleem) governorates in late September was: fever (46%), cough (41.5%), pneumonia (12.7%), diarrhea (24%) and conjunctivitis (15.2%) (**MOHP, 2000**).

The differences in the health problems prevalence in different studies may be due to:

- Differences in recall ability of the mothers,
- Difference in mother perception of health problems,

- Differences in geographical areas covered by these studies,
- Time at which these studies was conducted (winter / summer, recent or old study) as there are seasonal variations in the pattern of some diseases as diarrheal diseases (more common in summer) and ARI (more common in winter) and most of the diseases shows downward trend with time (this study was conducted in October through December).

Duration of symptom of sick children: In the present study, 23.4% of children were seeking medical advice within one day of complaint and about another half (50.1%) of them within two days of beginning of symptoms. The mean duration of complaint was 2.5 days.

Lack of timely utilization of appropriate health care has been identified as one important factor of child mortality (**Akesode, 1982, Fassin et al., 1988, Hunte and Sultana, 1992, Reddaiah and Kapoor, 1992 and Chaudhary and Butta, 1997**).

Aboel-Seoud and Salem (1993) found, that 28.2% of women did not go to doctor at the same day of beginning illness as they depend on their previous experience with frequent occurring illness or they repeat old doctor prescriptions if the condition seems to be the same. 21.1% of women mentioned cost as the second cause of delay in health care seeking during child illness. Domestic work burden was a limiting factor among 19.1% of caretakers.

In Egypt, Berman 1998 reported that cost was one of the major reasons individuals did not seek treatment or enter a hospital, as 30% of individuals did not seek outpatient care and 54% were not hospitalized due to cost.

In **IMCI report (2000)**, the main causes mentioned for delay in care seeking: majority (71%) of caretakers expressed economic limitation, while (21%) think that the child's condition did not warrant care seeking. Domestic burden was a limiting factor among 8.3% of caretakers (MOHP, 2000). In a study conducted in rural areas of Assiut governorate, the main causes of delay in seeking care reported by caretakers were economic limitations (64.8%) and child's condition does not warrant (17.4%) (**Ahmed, 2003**).

Respondents' satisfaction: Patient satisfaction has long been considered an important component when measuring health outcomes and quality of care (**Vuori 1987, and Cleary and McNeil, 1988**). It is reported that low patient satisfaction is associated with lower trust in caretakers and greater chance in physician changes resulting in less continuity of care, (**Keating et al., 2002**) while, high patient involvement in care has been associated with higher trust and satisfaction (**Hickson et al., 1994 and Stelfox et al., 2005**).

In the present study, the main causes of client satisfaction were, suitable working hours (80.7%) and sufficient explanation about child illness (79.1%). ESPA 2004 reported that the efficiency of the physician (41%) and the nearness of the facility (64%) were two of the main reasons for using the facility for the child's health services.

On the other hand, **Aboel-Seoud and Salem (1993)** found, that the main cause of un-satisfaction was the careless, un-human, non-ethical behavior of the workers in these places (49%), and the second cause was lack of equipments (47%), and the causes for selecting a health service were: clever doctor (45.2%), cheap service (34.5%), near service (34.4%) and because of convenience (21.6%). Also, another study conducted in rural areas of Assiut governorate, found that the main causes of dissatisfaction of caretakers were that the drug did not cure the child (35.1%), bad health service (29%) and unavailability of drugs (23.4%) (**Ahmed, 2003**).

5. Conclusion and Recommendations

The present study concluded that:

- There was deficiency of physician per rural health unit (there may be less than one physician / rural health unit) which was reflected on the services provided by the rural health unit.
- There was absence of working educational kitchen and official referral system.
- Although the system for supervision was strong and almost all facilities received external supervision, still the services provided for young children is far from being ideal.
- **Vaccination:** vaccine supply, organization of the vaccine inside the fridge according the expiry date, presence of thermometer inside the fridge, presence of temperature chart and most types of vaccines are present in most of the visited RHUs
- Regarding observation for child examination, it was significantly better in RHUs of Abnoub and El-Ghanayem than RHUs of other districts.
- Adherence to the guidelines of IMCI was not to the full extent.
- There was significant differences between different districts of Assiut governorate regarding services provided for young children with Aboub and El-Ghanayem districts having better services than other districts.
- Health education sessions before medical consultation was reported by only 35.7% of interviewed caretakers of young children with significantly higher percentage in Abnoub and El-Ghanayem districts than other districts.

From the above mentioned results, it was recommended to:

- Increase the number of physicians per rural health unit to be at least one or two physicians per each rural health unit.
- Reinforce the educational kitchen and referral system in the rural health unit.
- Reinforce health education in all rural health units specially during waiting time before medical consultation.
- Increase awareness and adherence to the IMCI guidelines by in-service training for physicians and nurses.

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