



Health Services' Profile Introduced to under Five Rural Egyptian Children: A Cross-Sectional Study

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Authors' contributions

Both authors have contributed to this study in ways that conform to ICMJE's authorship criteria. Both authors contributed fully in formatting the research proposal, data collection and analysis, as well as the manuscript editing and submission.

Article Information

DOI: 10.9734/BJMMR/2015/13806

Editor(s):

(1) Toru Watanabe, Department of Pediatrics, Niigata City General Hospital, Japan.

Reviewers:

(1) Beckie Tagbo, Institute of Child Health, University of Nigeria Teaching Hospital, Enugu, Nigeria.

(2) Mortada El-Shabrawi, Cairo University, Egypt.

(3) Anonymous, USA.

(4) Anonymous, Belgium.

Complete Peer review History: <http://www.sciencedomain.org/review-history.php?iid=725&id=12&aid=7614>

Original Research Article

Received 4th September 2014

Accepted 5th December 2014

Published 3rd January 2015

ABSTRACT

Background: Children under 5 years of age represent 11.1% of total Egyptians with a mortality rate of 22/1000 live births in 2013. Family health centers are the first gates that provide them with health services. This study aimed to evaluate the health care services introduced to under 5 children in one of the rural family health centers in Egypt called Shawa family health center (SFHC) during 2012-2013.

Subjects and Methods: This is a cross sectional descriptive and analytic study, conducted in SFHC, and included two phases. Phase I: Records of births, antenatal care, immunization, well-baby and sick child visits to the clinic for the year 2012 were reviewed. Phase II: Data were collected using a structured pretested questionnaire.

Findings: Antenatal care coverage rate was 57.8% of the visits, while neonatal examination accounted for 98.6%. Thyroid screening rate was 94.5%, while immunization coverage rate was 98.9%. No vitamin A supplementation was provided. The commonest health problems among this age group of children were respiratory tract infection (67.9%) and gastrointestinal problems (15.2%); 11.3% gastroenteritis and 3.9% parasitic infestation. The mean age of participating mothers was 26±2.4 years, 89% of them were < 35 years of age, 97% were currently married, 75%

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were of secondary or lower educational level and 91% belonged to families that have income < 1200 Egyptian pound / month. Over 80% of the mothers were satisfied with the service they received. Younger mothers, of income <1200 Egyptian pound /month and having greater than a secondary education were significantly more satisfied.

Conclusion: SFHC fulfills most services recommended for children under 5 years of age. However there is shortage in some other services (e.g. low rates of antenatal and natal care, reluctance in application of integrated management of childhood illness (IMCI) program and non documentation of health education activities).

Keywords: Children under 5 years of age; Egypt; health services.

1. INTRODUCTION

Under five Egyptian children are estimated to be 9,342,000 (11.1%) of total Egyptians in 2013 [1]. They are at risk of exposure to many environmental and social factors that may lead to their illness, handicapping and even death [2]. Under 5 children mortality rate is estimated to be 22/1000 live births in Egypt in 2013 [3]. Causes of these deaths are: 30% prematurity, 21% congenital anomalies, 11% birth injuries, 11% pneumonia, 7% diarrhoea, 3% injuries, 2% neonatal sepsis and 15% others [4].

Efforts have been directed by the Egyptian Ministry of Health to promote child's health since the last three decades where many child health care projects were introduced as: the National program for control of diarrheal disease in 1983, Expanded Program of Immunizations 1985, National program of acute respiratory infections 1988, "Healthy mother/Healthy Child program 2009" and Integrated Management of Childhood Illness program IMCI [5]. Application of these programs has greatly reduced child morbidity and mortality in Egypt. The decision concerning these programs was based on comprehensive reviewing of information obtained from different sources like primary and family health centers, hospitals, etc [6].

Information about quality and efficiency of health care services introduced to these children in rural Egypt is still deficient or lacking. Therefore, efforts should be made to establish a database for these services at rural health units in Egypt and areas of shortage or negligence to be corrected.

The aim of this work was to evaluate the health care services introduced to under 5 children in one of the rural family health centers in Egypt called Shawa family health center (SFHC) during 2012-2013. Thus, we can provide a profile of health care services introduced to this category

of children which could be of potential benefit to support health promoting programs for them.

2. SUBJECTS AND METHODS

2.1 Study Locality and Setting

Shawa village, Dakahlia Governorate, Egypt. SFHC was chosen because it is accessible to the researchers and it is a model of any Egyptian rural family health center. It was conducted at the clinics of: well-baby, immunization, sick child and antenatal care in SFHC. This study extended over one year from 1st of March 2013 to end of February 2014.

2.2 Study Population

Under 5 children and their accompanying mothers visiting SFHC for different services.

Sample size for the mothers was calculated by electronic software available at <http://www.surveysystem.com/sscalc.htm> [7], with a total population of 4672; at a 95% confidence level and a confidence interval ± 5 the sample needed for the study was estimated to be 355 mothers. They were chosen using systematic random sampling technique, where every other mother was interviewed. Mothers who agreed to participate were 300 with a response rate of 84.5%.

2.3 Study Design

It is a cross sectional descriptive and analytic study, including two phases.

Phase I: Records of births, antenatal care, immunization, well-baby and sick child clinics for the year 2012 were reviewed.

Phase II: Maternal satisfaction was assessed by a structured pretested questionnaire

made up of a series of items evaluated by yes/no responses.

The questionnaire included 4 parts:

Part 1: Socio-demographic characteristics; age, marital status, education, occupation and family income.

Part 2: Accessibility to the health care service (5 questions): Distance of the center from the client's home, presence of public transportation to the center, time and money spent to reach the center and the client's satisfaction with the scheduled working hours (8 am – 2 pm).

Part 3: Mother's satisfaction concerning the health care services for under 5 children, 19 questions categorized as follow:

3.1 Convenience of mother with the services (6 questions): Waiting time for physical examination/ vaccination, and receiving medication from the pharmacy. Adequacy of place for receiving examination /vaccination or medications. Timing and difficulty in referring from one clinic to other in outpatient clinic.

3.2 Quality of care (5 questions): Maternal opinion as regards the quality of treatment that her child received, getting all medications prescribed, nurses' skills in using medical equipments, taking the opportunity to ask about her child illness and expectations about attentive listening to their problems from officers of the center.

3.3 Type of services utilized by under 5 children (8 questions): Screening for hypothyroidism, receiving health education about breast feeding, vitamin A supplement for mothers within 4 weeks after delivery, receiving written schedule about times of immunization and examination, availability of vaccines in due date, physical examination of well child during immunization days and then periodically every birth day, receiving health education about nutrition of infants and importance of periodic immunization and growth monitoring.

Part 4: 6 items to assess maternal satisfaction with outpatient services which are:

4.1 Physical facilities (7 questions): Cleanness of the building, ventilation and

light inside the center, noise in the surrounds, enough chairs in the waiting room and availability of clean toilets

4.2 Medical equipment (2 questions): Availability and integrity of medical equipments.

4.3 Doctor's service (2 questions): Doctor shows respect to the client and the time he spent with the client.

4.4 Nurse's service (2 questions): Nurse shows respect to the client and if she explained the treatment' instructions clearly.

4.5 Pharmacy services (2 questions): Pharmacists' respect to the client and how clearly he/she explains the dose and usage of medication to the client?

4.6 Laboratory tests (2 questions): Availability and affordability of laboratory tests.

2.4 Statistical Analysis

Completed questionnaires were subjected to revision and the collected data were coded, processed and analyzed using Statistical Package of Social Science (SPSS) program for Windows (Standard version 16). Utilization rates were directly calculated from the records of SFHC. Data were described in number and percentages. For categorical data, Chi-squared or Fisher exact test was used for comparison between groups. Significant predictors in bivariate analysis were entered into a regression model using forward Wald technique to predict the adjusted odds ratios (AOR) and their 95% confidence intervals were calculated. P value \leq 0.05 was considered statistically significant.

3. RESULTS

Phase 1: Description of services introduced for under fives in SFHC (data not shown in tables)

A- Health services related to neonatal period:

Antenatal care coverage rate was 57.8%.

Delivery conduction and neonatal resuscitation were not applied.

Neonatal examination was done for 98.6% of children.

Thyroid screening rate was 94.5%.

B- Health services related to infancy and early childhood:

Well baby clinic visits for thyroid scanning, vaccination and growth monitoring were recorded for 84.1% while, 15.9% of under fives visited sick baby clinic for medical examination and laboratory investigations.

1- Well child clinic services

Growth and development monitoring covered 3628 (91.4%) of infants aging < 18 months, immunization coverage rates were 98.9% for (Polio, DTP, hepatitis B) , 99.5% for BCG and 98.2% for MMR. Vitamin A supplementation was not provided to all children. Health education activities were not documented.

2- Sick child clinic services

Sick child clinic visits were sought by 744 (15.9%) of all under fives who attended SFHC. Out of them 404 (54.3%) were boys and 340 (45.7%) girls with no statistical significant difference. Infants below 1 year of age constituted 36.7% of all sick child, while, 1-5 years aged children represented 63.3%

The commonest health problems recorded among those children were respiratory tract infection (67.9%) and gastrointestinal problems (15.2%); gastroenteritis (11.3%) and parasitic infestation (3.9%). Dermatological problems represented 7.1%.The remaining 9.8% were diagnosed as malnutrition, Jaundice, eye' infection, urinary tract infection and accidents. IMCI program was not regularly applied in SFHC (data not shown in tables).

Phase II: Assessment of maternal satisfaction toward services aspects introduced to their under 5 children.

The mean age of participating mothers was 26±2.4 years, 89% of them were < 35 years of age, 97% were married, 75% were of secondary or lower educational level, all mothers were housewives and the majority of them (91%) belonged to families of income < 1200 L.E. / month (data not shown in table).

SFHC was generally accessible for 65% of mothers. Services were convenient for 78.7% of them. Majority of mothers were satisfied with waiting time for physical examination/ vaccination, waiting time for receiving medications and adequacy of outpatient timing [87%, 86.7% and 86% respectively]. On the other hand, most of mothers were unsatisfied with adequacy of places for receiving examination or

receiving medications [63% and 75% respectively]. Good quality services were supposed by 84.3% of mothers. Nearly one fourth of mothers 23% were unsatisfied as their children didn't receive physical examination on the day of immunization. Moreover, 32.3% of mothers didn't receive vitamin A supplement within 4 weeks of delivery. Health education messages about different issues were perceived by more than three quarters of mothers as shown in Table 1.

Most of the mothers were satisfied with physical facilities inside the center. More than half of mothers approved availability of medical equipments required for medical examination and were satisfied with the quality. Also, 65.7% and 69.7% of mothers mentioned that the laboratory tests were available and affordable respectively.

Majority of mothers reported that doctor showed respect to them and their children and spent enough time in examining their children. Similar findings were reported regarding nurses and pharmacists as portrayed in Table 2.

Table 3 shows socio-demographic predictors of maternal satisfaction; mothers less than 35 years, with secondary level of education and those belonging to low income families were more satisfied with statistically significant differences The logistic regression revealed that maternal age (AOR= 17.9) was the only significant independent predictor of maternal satisfaction with outpatient services provided to their under five children (Table 4).

4. DISCUSSION

Meeting the health needs of under five children who constitute a considerable sector of total Egyptians (11.1%) presents great challenges. Consequently, the points of defects in the quality of health services introduced to them need to be explored. This would be of potential benefit in supporting the under five health promotion programs in our country.

As regard health services related to neonatal period, antenatal care coverage rate was 57.8%, compared to 76.2% in rural Menofyia [8] and 30% in rural Damietta, Egypt [9]. In comparison with other countries similar to Egyptian situation and culture, it was 67.5% in Tunisia, 2006, 94.1% in Jordan, 2007 and 100% in Bahrain 2007 [10]. This relatively low rate of antenatal

care coverage in Egypt could be explained on the basis that most mothers prefer private sector because deliveries in family health centers, although equipped are not allowed. Neonatal examination was done for 98.6% of children in the studied village as parents have to bring their neonates for birth registration or screening for hypothyroidism and or administration of zero dose of vaccines. This agreed with findings in Qatar (100%) and Oman (98.9%), but higher than that of Iran (88.5%) and Lebanon (31.4%)

[10]. Total immunization coverage rate was 98.9%. This is in accordance with that reported in Tunisia 99%, Saudi Arabia 99% but slightly higher than that of Sudan 92% [11]. The high immunization coverage rate can be attributed to MOH efforts in provision of the required vaccines and health education messages that increase the mothers' awareness. Vitamin A supplement was not given to any of the children because it was not available at the MOH pharmaceutical store during the year of this study.

Table 1. Maternal satisfaction with some services introduced to under 5 children at SFHC, 2013

Variable	Satisfied mothers	
	No.	%
Convenience of service (total No. of mothers = 300)		
Waiting time for physical examination / vaccination:	261	87%
Waiting time for receiving medications from outpatient pharmacy	260	86.7%
Adequacy of place for receiving vaccination / examination	111	37%
Adequacy of place for receiving the drugs:	75	25%
Adequacy of outpatient timing:	258	86%
Receiving medical services from one department to another in outpatient	187	62.3%
<i>Total convenience score: convenient *</i>	236	78.7%
Quality of health care		
Treatment that her child received from the doctor:	267	89%
Getting all medications prescribed from the center:	246	82%
Nurse skills in using medical equipment:	253	84.3%
taking the opportunity to ask about her child illness:	271	90.3%
attentive listening to their problems from officers of the center:	246	82%
<i>Satisfaction with quality of health care generally *</i>	253	84.3%
Mothers answered yes		
Type of service	No.	%
Screening for hypothyroidism	272	90.7%
Receiving health education about breast feeding	239	79.7%
Receiving vitamin A capsule for the mother within 4 weeks after delivery	203	67.7%
Receiving written schedule for child periodic examination & vaccination	285	95%
Availability of vaccines in due date	276	92%
Did your child receive physical examination in the day of vaccination and then every birth day till age of five	231	77%
Receiving health education about nutrition of infant & lactating mother	235	78.3%
Receiving health education about importance of immunization and periodic examination	247	82.3%
Accessibility of service		
Is the center near the client's home:	119	39.7%
Presence of easy public transportation to the center	180	60%
Time she needs to reach the center is < 30 min	177	59%
Money she spend to reach the center: is < 2 LE	169	56.3%
Satisfaction with the scheduled working hours (8 am – 2 pm).	255	85%
<i>General accessibility score*: accessible</i>	195	65%

*We adopt 75% as cutoff point of total score which is the level of good services adopted by Egyptian MOHP.

#Categories are not mutually exclusive

Table 2. Maternal satisfaction toward outpatient service (physical facilities, medical equipments /lab. services and service providers) at SFHC, 2012

Variable	Satisfied mothers	
	No.	%
Physical facilities (total No. of mothers = 300)		
Cleanness of the building	192	64
Ventilation inside the center	220	73.3
Light inside the building of the center	210	69.9
No noise in the surrounds	220	73.3
Sitting chairs in waiting room	163	54.4
Available enough clean toilets	181	60.3
Physical examination rooms	205	68.3
Medical equipment/laboratory tests		
Availability of medical equipment required for medical examination	169	56.3
How good are these medical equipment	173	57.7
Availability of laboratory testes when ordered by the doctor	197	65.7
Expense of laboratory testes	208	69.3
Health care providers		
Doctor does physical examination with respect.	214	71.3
Doctor spends enough time with patient in examination	202	67.3
Nurses treat patients with respect :	217	72.4
Nurses explain the treatment clearly.	129	64.2
The pharmacists treat patient with respect	236	78.6
The pharmacists explain the use of medicine clearly.	220	73.6

Table 3. Socio-demographic characteristics predictors of maternal satisfaction with outpatient services

Socio-demographic character	Unsatisfied		Satisfied		Significance	OR (95% CI)*
	No.	%	No.	%		
	155	51.7	145	48.3		
Maternal age						
>35	124	6.1	143	93.9	Fisher exact	0.5 (0.4-0.6)
35+	31	93.9	2	6.1	P =0.001	1 (r)**
Education						
<secondary	21	56.8	16	43.2	$\chi^2=2.3, P=0.12$	1.4 (0.9-2.01)
Secondary	102	54.3	84	45.7		
>secondary	32	41.6	45	58.4		1 (r)
Marital status						
Current married	146	52.1	134	47.9	Fisher exact	1 (r)
Divorced/widow	9	45	11	55	P= 0.6	
Family income***						
<1200 LE./month	136	49.8	137	50.2	Fisher exact	0.7(0.5-0.9)
>1200 LE./month	19	70.4	8	29.6	P =0.041	

*95%CI (95%confidence interval), ** r = reference group, *** 1200 LE. equivalent to nearly 167 US\$

Table 4. Logistic regression analysis of predictors of maternal satisfaction with outpatient services

	B	P	AOR* (95% CI)**
Maternal age: <35	2.9	0.001	17.9 (4.2-76.2)
35+	-		1(r)
Constant	-2.7		
Model χ^2	31.7, P=0.001		
% correctly predicted	58		

*Adjusted Odds Ratio, **95%CI (95%confidence interval)

Considering infancy and early childhood health services, ill under five boys represented 54.3% vs. 45.7% girls with statistically insignificant difference. This is in agreement with that of rural India [12]. This sex difference may be a form of gender inequity, a problem which is widespread in rural Egypt. The commonest health problem reported was respiratory tract infections, followed by gastrointestinal problems. This is in accordance with Madhu Singh et al. [13]. However, in North Pakistan, malaria, fever and diarrhea were found in almost one third of under 5 children [14]. The high Respiratory tract infections rate reported in Shawa Village is attributed to high levels of air pollution resulting from open incineration of agricultural wastes and from a nearby fertilizer factory.

Regarding convenience of health services in SFHC, 87% of mothers were satisfied with waiting time for physical examination, vaccination and receiving medications from the pharmacy. In contrast to only 47.4% in Dhaka, Bangladesh were satisfied [15]. However, this was lower than that reported by Rashmi et al. [16] in Karnataka, India (92%). This discrepancy may be due to different clients /provider ratio in these countries.

In this study, about three fourths of mothers were unsatisfied with adequacy of places for examination or receiving medications. The inadequacy of places in SFHC can be attributed to the limited surface area of the center.

In this work majority of mothers (> 90%) were satisfied with quality of treatment her child received. This is higher than that reported by Rashmi et al. [16] and Sodani et al. [17] in India (80% and 71% respectively). In Lower Egypt, Madiha et al. [18] mentioned that deficiency of drugs in the center was a major (77%) cause of mothers dissatisfaction. The quality and availability of treatment received depend mainly on pharmaceutical policy and health budget.

As regard nurses' skills using medical equipment, it satisfied majority of mothers in SFHC. This is similar to that of Rashmi et al. [16] in Karnataka, India, but, is markedly higher than that of Madiha et al. [18] in rural Lower Egypt.

Majority of mothers (90.3%) in this study were satisfied with the offered opportunity to ask about her child illness, and attentive listening of center's officers. This is higher than that of Rashmi et al. [16] who mentioned that 77.8% of studied mothers in Karnataka, India reported that

the doctor gave them the opportunity to ask about their children illness. Meanwhile, Das et al. [19] reported 94% of patients in rural Bengal, India.

Concerning the type of services, majority (> 90%) of studied mothers reported that their children were screened for hypothyroidism, received written schedule for child periodic examination and vaccination and vaccines availability in due dates. This is lower than that of Rashmi et al. [16] who reported 100% in Karnataka, India.

Nearly two thirds (60.3%) of mothers reported that the center is far from their home. This differs from that reported by Gadallah et al. [20] in Belbis, and Abu Korkas, Egypt where 74.7% of patients reach the center on foot. 41% reported taking more than 30 minutes to reach SFHC. This is higher than that reported in Bangladesh where 30.9% spent > 30 minute to reach the center [15].

More than two thirds of studied mothers were satisfied with cleanness, ventilation and illumination of the center. Lower rates were reported in India by Sodani et al. [17].

In this study, 60.3% of studied mothers reported availability of enough clean toilets which is lower than that reported in Bangladesh 77% [15], while Sodani et al. [17] in India mentioned only 34%. These figures emphasize the importance of continuous monitoring of the place environment and hygienic measures.

Setting chairs and physical examination rooms satisfied 54.4% and 68.3% of interviewed mothers in SFHC. These figures are similar to that of Sodani et al. [17] in India. While Gadallah et al. [20] reported > 90% satisfaction rate in Belbis and Abu Korkas Egypt. Availability of medical equipment is the responsibility of the Ministry of Health; in this study more than half of mothers reported adequate availability of the medical equipments in SFHC. This contrasts with 25.7% reported in Bangladesh [15].

Laboratory tests availability and cost satisfied more than two thirds of studied mothers. These conformed with that of Gadallah et al. [20] in Belbis and Abu Korkas Egypt, while, in North India, Galhotra et al. [21] reported only 28.5%.

Assessing the communication skills and ethics of health services providers, almost three fourths of

mothers mentioned that doctor showed respect to them and their children and spent enough time with them. This is lower than that in Dhaka, Bangladesh [15], but higher than that reported by Sodani et al. [17], Galhotra et al. [21] India (69% and 58.5% respectively). Also, high percentage of mothers (70.4%) stated that nurses valued them and their children and 64.2% believed that the nurse had explained the treatment clearly. However, this is lower than that in Dhaka (Bangladesh) where 89.7% of mothers were satisfied with nurses' behavior [15], and lower than that of Das, et al. [19] who reported that 78.7% of mothers in rural Bengal, India were satisfied with nurse services. Similar findings were reported as regarding the pharmacist.

In this study, only half of interviewed mothers were satisfied with the outpatient services as a whole. This is in agreement with that of Sodani, et al. [17] in Jaipur, India but lowers than that of Rashmi et al. [16] in Karnataka, India. This variation most probably can be attributed to different sociodemographic characters of the studied mothers.

5. CONCLUSION

SFHC fulfilled most services recommended for under 5 age group. However, there were weak points in some aspects e.g. low antenatal care coverage rate, no conduction of delivery and neonatal resuscitation services, reluctance in application of IMCI program, no documentation of health education activities, inadequacy of places for examination and receiving medication with shortage in sitting chairs and lack of sanitary environment inside the center.

6. RECOMMENDATION

First: Efforts and well designed health education program are needed to improve utilization of antenatal care service and conduction of normal labor and neonatal resuscitation in SFHC and all other FHCs especially with the presence of well trained family physicians. Second: Ministry of health must provide all rural FHCs with adequate and good quality equipments. Third: Blood transfusion service and ambulance must be available in all centers with comprehensive referral system for urgent cases. Fourth: Clear policies to enforce trained family physician to apply IMCI protocol. Also, continuous on the job training programs to improve communication skills and medical ethics of service providers. Lastly, provision of cheap public transportation to

the center is crucial. It can be achieved by NGOs in the community.

CONSENT

Both authors declare that a verbal informed consent was obtained from the participants

ETHICAL APPROVAL

The research proposal was accepted by Mansoura Faculty of Medicine.

ACKNOWLEDGMENTS

The authors are thankful to all members of SFHC who helped us in conducting the research. Also we are thankful to participating mothers.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:

The peer review history for this paper can be accessed here:
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