Primary Care Physicians' Adherence To IMCI Guidelines, Ismailia, Egypt

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ABSTRACT—
Introduction: ***The health of children under five remains worrying in developing countries. Between 1990 and 2015, WHO and UNIC EF, have designed a strategy known as Integrated Management of Childhood Illness (IMCI). It includes a set of clinical guidelines designed for use in resource-limited countries by health care workers. The factors involved in a physician's adherence to guidelines include, lack of familiarity, characteristics of the health care practice setting, physician perception of guidelines' usefulness, and incentives. Aim: is To improve physician adherence to IMCI guidelines. Methodology: a direct observation checklist was used to assess physician adherence to IMCI guidelines at child encounter, while another questionnaire was used to assess physician perception of IMCI at Primary care setting. Results: physicians' performance and adherence to IMCI protocol was; 100% of physicians achieved accepted performance in both classification & treatment, 86.1% had accepted performance in evaluation of cases but 0% achieved accepted performance in communication; and so the total performance (overall adherence) accepted in only 41.7% of physicians. Conclusion:*** *family physicians* ***should be required to undergo frequent IMCI training with special attention to communication tips, Post training follow up conducted to determine the gap in training, providing practice manual of IMCI protocol as well as ensuring available equipments of IMCI guidelines in the PHCU.***

Keywords--- IMCI, physician adherence, guidelines, factors affecting adherence

1. INTRODUCTION

According to the 1999 World Health Organization (WHO) Report, children in low- to middle-income countries are 10 times more likely to die before reaching the age of five than children living in the industrialized world. In 1998, more than 50 countries still had childhood mortality rates of over 100 per 1,000 live births. Infectious diseases cause 85% of deaths in children under age five. Pneumonia is the largest single cause of death in under-fives [1].

Providing quality care to sick children in these conditions is a serious challenge. To address this problem and reach the fourth Millennium Development Goal to reduce by two thirds the mortality of children less than five years between 1990 and 2015, WHO and UNICEF developed a strategy known as Integrated Management of Childhood Illness (IMCI). Although the major stimulus for IMCI came from the needs of curative care, the strategy combines improved management of childhood illness with aspects of nutrition, immunization, and other important disease prevention and health promotion activities [2].

In addition to comprehensive assessment and management of common childhood illnesses, the IMCI guidelines include methods for: Checking a child's immunization and nutrition status; Teaching parents how to give treatments at home; Assessing a child's feeding and counseling to solve feeding problems; and Advising parents about when to return to a health facility(3).

In EGYPT, the under 5 mortality rate have been decreased from 91/1000 life birth in 1990 to 22/1000 life birth in 2010 in coincidence with IMCI implementation(3).

The movement to develop and disseminate clinical practice guidelines is rooted somewhat in the need to curtail or restrict practice variation in the health care system and linked to the evidence-based medicine movement [4, 5-9].

Moreover, physicians' self -reports may overestimate their degree of adherence with the guidelines [10].

In 1997-98, McColl et al. addressed these questions in a survey of 452 general practitioners in the Wessex region of south England. Respondents mainly welcomed evidence based medicine and agreed that its practice improves patient care. The major perceived barrier to practicing evidence-based medicine was lack of personal time [11].
Low self-efficacy due to a lack of confidence in ability or a lack of preparation may lead to poor adherence to guidelines (12).
Dahlberg stresses that the most important barrier to following clinical practice guidelines is that most are simply not concise enough [13].

Assessment and feedback defined as any summary of clinical performance of health care over a specified period, with or without recommendations for clinical action. The information, obtained from medical records, computerized databases, patients, or by observation [14].
In Kenya (1998), the USAID and the local government conducted an assessment on the health workers' performance of IMCI compliance. The study employed an observation checklist, a knowledge and competence questionnaire, and a facility inventory checklist. All the health facilities in the districts of Kenya, wherein at least one IMCI-trained health worker assigned, selected as respondents. Results have shown that there were serious deficiencies in the health workers' performance on the IMCI strategy. Assessment and recording of danger signs were inadequate. There was also incomplete assessment by health workers [15].
In a study done by Parimi, Pereira, and Prabhakar conducted in 1999, the caregivers' practices, knowledge, and beliefs on antibiotic treatment, for pediatric patients with ARI in Trinidad and Tobago assessed. It was discovered that a large proportion of caregivers have misconceptions that could contribute to inappropriate antibiotic use [16].

Accordingly, this study conducted to assess the adherence of primary care physicians to IMCI strategy in ARI at Ismailia city, Egypt.

2. METHODOLOGY

Type of Study: This study was a descriptive cross sectional study.
Site of Study: This study carried out in four urban primary health care centers in Ismailia city providing integrated management of childhood illness (IMCI) program of care.
Sample Size:- Two sampling methods were taken for the study.
For physician adherence assessment, convenience sampling utilized. All the physicians working in PHC centers in Ismailia city invited to participate. The number of physicians was 36.
For direct observation of quality of care provided to children at the clinic a sample size calculated.
Sample calculation: The prevalence of physician adherence to IMCI according to previous studies was 47.22 % (17, 18).
Sample size of direct observation = 385 cases, distributed equally between physicians.
Inclusion criteria: For the physicians: Family physicians, males & females, who accept participating in the study, trained to IMCI program.
Exclusion criteria for the physicians: The newly graduated general practitioners, family physicians who refused participation in the study, and those not trained on IMCI.
Inclusion criteria for the IMCI cases: Patients, males, & females, whose age from 2 months to 5 years, suffered from ARI problems.
Exclusion criteria for IMCI cases: children whose age below 2 months, suffering from problems other than respiratory problems.
Sampling method:
All physicians who fulfill the inclusion criteria recruited from the chosen family practice centers.
Children: simple random sample taken from the children attending the primary health care center complaining of acute respiratory problems.
Tools of the study:
Step 1: A personal interview conducted using a modified semi structured questionnaire, which included Socio – demographic characteristics. Adherence questionnaire (Annex A) modified from: Adherence by Physicians with Clinical Practice Guidelines [19].
Step 2: Assessment of quality of care provided to children by direct observation using a structured checklist (Annex B) modified from Evaluation report of the Integrated Management of Childhood Illness (IMCI) strategy in the District of Kirehe, in Rwanda [20].
Direct observation: 10 children for each physician & (Score a $\geq$ 70%) considered accepted performance;
Pilot study: The questionnaire was pre-tested on 5 physicians before the beginning of data collection to: test the relevance of the questionnaire to the aim of the work, Determine understanding of respondents, perform modification, determine needed time to complete questionnaire.
Data management: Data analyzed using the Statistical Package of Social Science (SPSS). Version 15.
Ethical considerations: Written consent taken from the physicians who participate in the study, after clarifying the aim of the study, Confidentiality of data ensured, Permission from local health authorities in the primary health care units was

obtained. Physicians were free to share in the research; the physician had the right to withdraw from the study at any time. Physician informed about results of study to improve accordingly. Data collected not used for any purpose other than research, the research steps explained to the PHC team, and oral consent taken from the manager. In addition, study results feedback given to the health team to improve as appropriate.

3. RESULTS

Most of the trained physicians (69.4%) in the studied sample were below 30 years, with a mean age of 29.1. The majority of physicians (about 83%) were females, compared to (about 17%) were males. Most of them (about 61%) had no postgraduate certification. Moreover, about 64% had less than 5 years of experience. And about 61.1% of physicians thought they were adherent to guidelines, while 38.9% thought they were not.

Table 1 shows factors affecting physicians' adherence to guidelines, the most cited by physicians were as follows: 91.7% received training courses in IMCI, 72.2% mention presence of IMCI copies in PHCU, while 66.7% admit presence of available equipments of IMCI guidelines in PHCU, and 61.1% clarify that IMCI medications were available at PHCU, and 55.6% said that patient non-compliance was a factor affecting physician adherence to IMCI guidelines negatively.

Table 1. Factors affecting physicians' adherence to IMCI protocol (N = 36)

	No.	%
Sufficient **knowledge** about IMCI	21	58.3
Receiving **training** courses in IMCI	33	91.7
Enough hard or soft copies of IMCI protocol in the PHCU	26	72.2
Enough time to follow the IMCI protocol in the PHCU	8	22.2
Enough physicians to implement IMCI protocol in the PHCU	19	52.8
The **program covers health problems** of patients	10	27.8
Available medications of IMCI guidelines in the PHCU	22	61.1
Available equipments of IMCI guidelines in the PHCU	24	66.7
Patients' satisfaction with treatment according to IMCI	9	25.0
Patients' non-compliance to IMCI	20	55.6
Patients spend a lot of time than they expect when you follow IMCI	18	50.0

Table 2. Distribution of cases regarding adherence to performance indicator assessed by direct observation (N = 360)

Indicators	Adherence to indicator (N=360)		
	No.	%	S.E
Child Weighed	348	96.7	0.94
Temperature (measured)	313	86.9	1.78
Child complaint (reported)	360	100.0	0.00
Dangerous signs (reported)	266	73.9	2.31
Consciousness (evaluated)	301	83.6	1.95
Feeding (evaluated)	301	83.6	1.95
Respiratory symptoms & signs (reported)	115	31.9	2.46
Classification (correctly classified)	336	93.3	1.32
Treatment (adherent to TTT guidelines)	336	93.3	1.32
explaining how to administer an oral antibiotic	139	38.6	2.57
showing how to administer an oral antibiotic	116	32.2	2.46
insuring that the person who accompanied the child has understood how to administer Antibiotic	126	35.0	2.51
insuring that the mother gave the first dose of drug at the health center	45	12.5	1.74
writing the date of follow up visit	312	86.7	1.79

insuring on returning back for follow up after adequate time	291	80.8	2.08
explaining the importance of liquid & continuing home breastfeeding	336	93.3	1.32
insuring the importance of liquid & continuing home breastfeeding even if child is sick	301	83.6	1.95
providing appropriate advice on child's feeding	290	80.6	2.08
correctly explaining when to bring back the child immediately at HC	267	74.2	2.31
providing advice to parents on birth spacing	152	42.2	2.60
using the booklet tables along the consultation	151	41.9	2.60
SE = standard error = √[p(1 - p)/n]			

Table 2 reveals that; reporting child complain was the best indicator done for 100% of patients, while (insuring that the mother gave the first dose of drug at the health center) was the worst indicator done only in 12.5% of children.

Table 3. Evaluation of physicians' performance (N=36)

Indicators	**Accepted performance** (Score [a] ≥ 70%) **(N=36)**		
	No.	**%**	**S.E**
Evaluation	31	86.1	5.77
Classification	36	100.0	0
Treatment	36	100.0	0
Communication	0	0	0
Total Performance	15	41.7	8.22

[a] Score = [Sum of items' score/ (sum of maximal items' score)]*100

This table shows that 100% of physicians achieved accepted performance in both classification & treatment, but no physician achieved accepted performance in communication; so the total performance accepted in only 41.7% of physicians.

Table 4. Relation between direct observation and self assessment of **physicians' performance (N = 36)**

		Total performance (direct observation)				**Total**	**X^2**	***p*-value**
		Not accepted (*n* = 21)		**Accepted** (*n* = 15)				
		No.	**%**	**No.**	**%**			
Adherence to IMCI protocol (self assessment)	Adherent	13	59.1	9	40.9	22	0.013	0.908
	Not	8	57.1	6	42.9	14		

Self-assessment revealed that majority of physicians 61.1% thought that they were adherent IMCI protocol and guidelines, while direct observation revealed that the overall adherence wasn't accepted in the majority of cases (about 61.4%), and Only 40.9% of physicians who thought to be adherent to IMCI protocols were actually adherent. The relationship is statistically insignificant (P value = 0.908).

4. DISCUSSION

This study aimed to assess the adherence of family physicians to the IMCI protocols and guidelines in their daily practice in primary health care centers in Ismailia city.

In the present study, most of the studied physicians, mention the following factors affecting their performance according to IMCI guidelines, 91.7% said that receiving training courses in IMCI is the most important factor , followed by enough hard or soft copies of IMCI protocol in the PHCU which was voted for by 72.2% of physicians then available equipments of IMCI guidelines in the PHCU which was important factor for 66.7% of physicians, 61.1% admit that availability of medications is an important factor, and 55.6% clarify that patients' non-compliance affects physician adherence negatively, this disagreed with a study, done to assess Health Worker Performance of IMCI in Kenya 2000 which stated that the top five difficulties on physicians` performance of IMCI protocols were: availability of medications, heavy work load, no enough time, absence of supervision and finally mothers usually need injections defined as "Patients' non-compliance to guidelines " [15]. The difference could be due to that, in the present study we used a wider range of indicators. While in another multi country evaluation study of IMCI effectiveness carried out in 5 countries (Bangladesh, Brazil, Peru, Tanzania and Uganda) from 1998 – 2004 suggested that increased workload and presence of other duties in workplace could explain physician non-adherence to the guidelines [21].

In the present study ,reporting child complain was the best indicator done in 100% of all patients followed by measuring child weight which was done for 96.7% of children & 93.3% of them correctly classified and correctly treated according to IMCI protocol & guidelines, feeding practices were evaluated in 83.6% and finally danger signs were evaluated in 73.9% of cases. While insuring that the mother, gave the first dose of drug at the health center was the worst indicator in 12.5% of children.

Regard explaining how to administer an oral antibiotic was done in 32.2% of cases in our study, which was not in agreement with a study done in Asiut at 2012, which showed that explaining how to administer an oral treatment was 93.2% [22]. The difference could be due to fewer sample size (n=12) in comparison to (n= 36) in our study.

In our study, correct explanation when to bring back the child immediately at PHC in our study was in 74.2% of mothers which wasn't in agreement with Asuit study, where the physician describe signs or symptoms in the child which the caretaker should immediately bring the child back to the facility in 31% of cases only [22]. This difference may be due to fewer sample size (=12).

While it was, 100% in Kirehe - Rwanda 2008 [20]. Both studies used direct observation as a methodology tool; but in our study, there was only one observer while in Rwanda study there were numerous observers

Similar results were obtained in report of IMCI evaluation in the District of Kirehe in Rwanda - July 2008 in which child weight was done in 98% of cases, 91% of patients were correctly classified & 90% of them received correct treatment [20].

Different results obtained in a study of quality of care for under-fives in first-level health facilities in one district in Bangladesh; in which child weight, feeding practices & danger signs evaluated in 0% of cases [23]. This difference may be due to that the present study included only the physicians as health care providers.

Nevertheless, regard performance in **communication** with mothers, the overall performance was 15.8%, which was not accepted. Unlike a study in Kirehe -Rwanda 2008 in which 4 indicators of communication were used "rules of home treatment," "how to administer the treatment at home, "when to immediately reconsider the HC and "nutrition/feeding advice" and none of these four indicators exceeded the proportion of 70% which showed acceptable level of performance in terms of communication [20]. The difference explained by the use of 11 indicators of communication in the present study, lack of training or lack of feedback by supervisors.

The over all physicians` performance (adherence to IMCI protocols) was accepted in 41.7% of physicians in the present study. Similar results confirming deficiencies in the health workers' performance and adherence to IMCI protocols and guidelines, like a study done in Kenya (1998) by the USAID and the local government in which Less than 10 percent of the children received a complete assessment [15]. In addition, this in agreement with a study done to assess the adherence of public health doctors, nurses, and midwives to the IMCI-ARI protocol in Zamboanga city, showed that the overall adherence of the public health doctors was 47.22% [17,18]. This is in agreement with the present study in which the overall physicians` adherence was 41.7%.

But in 2003, a study conducted on assessing implementation of IMCI Strategy in the Philippines showed that although physicians follow the protocol, there were incompleteness in their assessment (classifying if the child is sick or not), Ninety percent of the patients were not appropriately managed because of failure to assess signs and symptom exhibited by respondents [24].

In the present study, self-assessment revealed that majority of physicians 61.1% thought they were adherent to IMCI guidelines. Direct observation revealed that the over-all adherence was accepted only in (about 38.6%) of cases. Relationship between self-assessment and direct observation is statistically insignificant. In a study done to assess the quality of primary health care in Guatemala; Direct observation as a quality assessment method demonstrated the best overall balance of sensitivity and specificity specially when achieved by one observer [25].

5. LIMITATION OF THE STUDY

Samples of physicians included were not representative of the whole province as our study conducted in urban area omitting the rural areas where there is lack of physicians and high turnover of physician staff.

Parents' perspectives regard physician performance; add holistic approach to quality of care.

6. FURTHER RESEARCH NEEDED

- Comparison between adherence of physicians to IMCI guidelines at urban versus rural setting
- Comparison between, adherences in hospital setting versus primary care setting
- Intervention programs offered to physicians or parents
- The impact of IMCI, on child health mortality and morbidity

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