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Nurses' Commitment totheIntegrated Management of Childhood Illness ProgramintheManagement of Children withAcute Respiratory Infection

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Abstract :*The Integrated Management of Childhood Illness (IMCI) program focuses on the overall health of the under-five years old children in which the occurrence of most common diseases take place particularly Acute Respiratory Infection (ARI). There a significant reduction in the mortality rate of those children after commitment to such program.* ***Objective:*** *This study aimed to assess nurses' commitment to the IMCI program in the management of children with ARI.* ***Design:*** *A descriptive research design was used.* ***Setting:*** *All health care centers and units in both urban and rural areas (36) primary health care settings in Damanhour city, Al-Behira governorate, in Egypt.* ***Subjects:*** *All pediatric IMCI trained nurses (100) who are responsible for management of children with ARI from the previously mentioned settings.* ***Tools:*** *One tool was used to collect necessary data namely; Nurses' Commitment to the IMCI Program in the Management of Children with ARI Observational Checklist.* ***Results:*** *Two thirds of nurses had "Poor" practices score in commitment to check for danger signs. The majority of nurses had "Poor" practices score in commitment to assess for main symptoms of ARI, identify treatment if no urgent referral is needed, treat sick child, and assess, identify and counsel the mothers about child's feeding problems (95%, 97%, 83% and 95% respectively).* ***Conclusion:*** *The majority of nurses had "Poor" total practices score in commitment to the IMCI program in the management of children with ARI. While, small percentage of them had "Good" and "Fair" total practices score.* ***Recommendations:*** *The recently updated IMCI program for management of different problems of the under-five years old children particularly ARI should be applied by pediatric nurses in primary health care settings.*

Keywords: *Integrated Management of Childhood Illness Program; Management of Under- Five Years Old Children; Acute Respiratory Infection; Nurses' Commitment.*

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I. Introduction

The Integrated Management of Childhood Illness (IMCI) program is an integrated approach for managing sick children from birth up to five years old at the first level of health care facilities. It addresses the major five common childhood health problems as; Acute Respiratory Infection (ARI) mostly pneumonia, diarrhea, measles, malaria, and malnutrition. This program includes both preventive and curative interventions [(1, 2)]. The main objectives of the IMCI program are to reduce mortality and morbidity rates through combined treatment of these major childhood illness as well as prevention of diseases through immunization, vitamin A supplementation and improvement of nutrition[(3)]. The case management process according to this program is presented in two different sets of charts; a set for young infantsfrom birth up to two months and a set for children from two months up to five years. These two setsare presented on a chart titled assess, classify, and treat the sick child and counsel the mother[(1)].

Acute respiratory infection is the most common illness among children[(4)]. According to World Health Organization (WHO), almost 5.9 million of the under five years old children died worldwide in 2015. Acute respiratory infection is accounted for 15% of all deaths of thosechildren[(5)]. In Egypt, ARI mostly pneumonia is the first cause of mortality and morbidity among the under five years oldchildren and the mortality rate of them was 24 per 1000 live birth in 2015[(6)]. In Al-Behira governorate, the mortality rate of those children was 14 per 1000 live birth, about 17.7% out of them died from ARI in 2016[(7)].

The United Nations International Children's Emergency Funds (UNICEF) and WHO initiated and developed a new approach to deal with these problems called IMCI program in 1995 and gave technical assistance to countries which apply it[(8)]. The Ministry of Health and Population (MOHP) in Egypt started the

application of this program in 2003 at the Primary Health Care (PHC) Settings in both urban and rural areas[9].This program was lastly updated by WHO at 2014. It includes improving health workers' case management skills through classroom work and clinical practices related to the most common childhood diseases in developing countries, particularly diarrhea and ARI especially pneumonia, sore throat, and ear problems[10].

The IMCI program for case management of children with ARI is based on a few simple clinical signs as fast breathing, chest indrawing and presence of stridor or wheezes and empirical treatment developed according to action-oriented classifications rather than exact diagnosis based on the severity of the illness that help the service provider to give the safest and most appropriate treatment available at the level of a primary health facility [1, 3]. Most ARI is limited to the upper respiratory tract but about 5% involves lower respiratory tract (LRT). Pneumonia is one of the most common infection of the LRT that occurs during the infancy period[4]. The treatment of pneumonia depends on the severity of the disease. If the child has chest indrawing, he should be referred urgently to the hospital, if the child has fast breathing with no chest indrawing, he has to receive an antibiotic and home care. While, if the child neither has chest indrawingnor fast breathing, he will receive home care[11]. In case of an ear infection, the child can be treated with an antibiotic and the ear should be kept dry by wicking. One of the most frequent symptoms of a common cold is cough. If the child has a cough, he may get better in a few days with the safe remedy and good home care[11,12]. According to WHO, there is a significant reduction in the mortality rate of the under five years old children with pneumonia from 18% in 2004 to 16% in 2015 after the supported efforts from WHO to commit to IMCIprogram[5].

Pediatric nurse has a crucial role in the management of children with ARI. She shouldaware and commit to the recently updated IMCI program for management of those children to make an appropriate clinical decision[1]. Pediatric nurse should has a talent for applying the general principles of management aschecking for general danger signs of any disease, assessment of the main symptoms of ARI for sick children and speeding up the referral of severely ill, ensuring early treatment, counseling the mothers about treatment at home and follow up careas well as strengthens the provision of preventive services as immunization and vitamin A supplementationin in the PHC settings[13]. Therefore, this study was conducted to highlight the importance of nurses'commitmentand performance according to IMCI program.

Aim ofThe Study:
This study aimed to assess nurses' commitment to the integrated management of childhood illness program in the management of children with acute respiratory infection.

Research Question
To what extent do nurses commit to the integrated management of childhood illness program in the management of children with acute respiratory infection?

II. Materials And Method

MATERIALS
Research Design:
A descriptive research design was used to accomplish this study.

Setting:
The study was conducted in all (36)health care centers and units in both urban (7) and rural (29) PHC settings that represented Damanhour City, Al-Behira governorate, in Egypt.
Subjects:
All pediatric IMCI trained nurses providing direct care for children with ARI from two months up to five yearsold from the previously mentioned settings comprised the study subjects. Their number was 100 nurses.

Tool
One tool was used to collect the necessary data.
Nurses' Commitment to the Integrated Management of Childhood Illness Program in the Management of Children with Acute Respiratory Infection Observational Checklist:-
This tool was developed by the researcher based on the recentlyupdatedIMCI program (2014)[10]to assessthe nurses' commitment to the IMCI program in the management of children with ARI. It included:

Part I:
Characteristics of nurses, such as; age, level of education, years of experience, attendance of training about IMCI program, and their place of work.

Part II:

The Integrated Management of Childhood Illness Program in the Management of Children with Acute Respiratory Infection Observational Checklist: It involved the following:

A. **Greeting the mother which consisted of (13 items)** as asking about child's age and problem, measuring physiological and anthropometric parameters.
B. **Check for danger signs of any disease which included (6 items)** as inability of the child to drink or breastfeed, if he vomits, or had convulsions.
C. **Assess the child for the main symptoms ofARI which involved (20 items)** as the presence of a cough or difficult breathing, assessing the child for a throat or an ear problem, checking for signs of malnutrition and anemia, and assessing for immunization status.
D. **Identify treatment if an urgent referral is needed which consisted of (8 items)** as giving the child pre-referral treatment(s), and referring him urgently to the hospital based on pediatrician order.
E. **If no urgent referral is needed which involved (6 items)** as identifying treatment and counseling the mothers about danger signs.
F. **Treat the sick child from two months up to five years old which included (17 items)** as giving the child the first dose of the identified treatment(s) in the clinic based on the pediatrician order andcounselingthe mothers how to treat local infection at home, soothing the throat and relieving of a cough.
G. **Counseling the mother which consisted of (23 items)** as identifying the child's feeding problems and counseling the mothers about these problems.
H. **Give a follow-up care which included (7 items)** as assessing new problems other than the specified child's problem.

Scoring system: score (1) was given for the committed item, while (0) was given for not committed item and not applicable items were subtracted from the total score.

The total score of nurses' commitment is ranging from (0-100). This score was converted into percentages and it was categorized as follows:

- Good = ≥75%.
- Fair = 60% - <75%.
- Poor = <60%.

METHOD

1- An official permission to conduct the study was obtained by the researcher from the responsible authorities of health affair in Al- Behira Governorate, in Egyptafter explaining the aim of the study to collect the necessary data.
2- The tool was developed by the researcherbased on the recently updatedIMCI program(2014)[(10)]in the management of children with ARI.
3- Content validity of the tool was done by five experts in the pediatric nursing field which was 87.0%.
4- Reliability of the tool was ascertained by using Cronbach's Coefficient Alpha Test which was 0.85.
5- A pilot study was conducted on ten nurses to test the clarity and the feasibility of the tool. Accordingly, the necessary modifications were done. Those nurses were excluded from the study subjects.
6- Every nurse was interviewed individually to identify their characteristics in nursingoffice during the break time using tool I part I.
7- Every nurse was observed three times at the morning shift while managing children with ARI using observational checklist tool part II.

Ethical Considerations:

Written informed consent for participation was obtained from the head nurse after explaining the aim of the study. Nurses were ascertained for their data confidentiality, and privacy was considered. Nurses had the right to withdraw at any time.

Statistical Analysis:

The collected data were categorized, coded, computerized, tabulated and analyzed using Statistical Package for Social Sciences (SPSS) software Version (21).

The following statistical measures were used:

1- Descriptive measures included: Count, percentage, mean and standard deviation.
2- The statistical tests included: Chi-Square and Monte Carlo.
3- The level of significance selected for this study was $P \leq 0.05$.

III. Results

Table 1 illustrates the characteristics of the studied nurses. It was obvious that 50% of nurses were 40 years and more. Eighty-nine percent of them had a diplomain nursing. Almost two-thirds (66%) of nurses had from five to less than 10 years of experience in the IMCI programand 69% of them are working in Family Health Units (FHUs).

Table 2 clarifies nurses' commitment to greet the mother. Regarding the nurses' commitment to take child's history, it was found that the highest percentages of the observations reflected that nurses committed to askthe mother about the child's age and sex (100% and 97.7% respectively). In relation to anthropometric measurements, it was apparent that the majority (84.7%) of the observations revealed that nurses committed to measure the child's weight and 60% of them revealed that nurses committed to plot the measured weight on the growth chart. Concerning physiological measurements, it was obvious that almost all (98%) observations showed that nurses committed to measure body temperature.

Table 3 shows nurses' commitment to check for general danger signs ofany disease. It was observed that more than half of the observations indicated that nurses committed to ask either about if the child able to drink or breastfeed or if he vomits (57% and 60.7% respectively).

Table 4 reveals nurses' commitment to assess the child. In respect to assess the child for a cough or difficult breathing, this table portrayed that two thirdsof the observations showed that nurses committed to both ask about if the child hasa cough or difficult breathing and listen for wheezes (65.3% and 66.7% respectively). For assessing the child for throat problem, it can be seen from this table that 81% of the observations reflected that nurses committed to assess if the child has fever $37.5C^0$or more. In relation to assess the child for an ear problem, it was found that 51.7% of the observations showed that nurses committed to ask if the child has an agonizing ear pain. As regardscheckingfor the child's malnutrition and anemia, it was noted that three fifths (60%) of the observations indicated that nurses committed to determine if the child's weight is appropriate for his age by using the growth chart. In respect to check for immunization and vitamin A supplementation, 86.3% of the observations showed that nurses committed to take the child's immunization history.

Table 5 portrays nurses' commitment to identify treatment(s) when no urgent referral is needed and counsel the mother about when to return immediately. It was surprising that all nurses did not committo give an identified treatment (s) for children as pediatrician ordered.On the other hand, appreciable percentages of the observations reflected that nurses committed to counsel the mother about when to return immediately i.e. when the child becomes sicker, develops a fever and if he not able to drink or breastfeed (75%, 66.7% and 61.7% respectively).

Table 6 represents nurses' commitment to treat the sick child and counselthe mother how to treat local infection, sooth the throat and relievethe cough. It was amazing that no nurse committed to give either the first dose of oral antibiotic or antipyretic in the treatment of pneumonia, sore throat or an ear infection. Meanwhile, approximately three quarters (73.1%) of the observations revealed that nurses committed to give an inhaled bronchodilator if wheezing presents in the treatment of pneumonia. In relation to counsel the mother about using of dry wicking, it was obvious that 67.2% of the observations reflected that nursesdid not committo demonstrate either cleaning the child's ear with a wick or replacing the wet wick with clean one until the ear becomes dry. In respect to teach the mother about soothing the throat and relieving of the cough, it was found that 65.7 % of the observations indicated that nurses committed to instruct the mothers about giving safe remedy.

Table 7explains nurses' commitment to assess, identify and counsel the mother about the child's feeding problems. It was interesting that 91.1% of the observations showed that nurses committed to assess the child's feeding. Regarding counseling the mother, 64.7% of the observations revealed that nurses did not commit to counsel the mother about giving exclusive breastfeeding as possible including the night. While, nearly three quarters (74.2%) of them revealed that nurses committed to counsel the mother about increasing fluids during illness as soup and water.

Table 8describes the nurses' practices score in the commitment to the IMCI program in the management of children with ARI. It was apparent that 79% of nurses hadpoor total practices score. Meanwhile, the minority of them had good and fair total practices score (3% and 18%respectively). Also, the nurses' practices score was 46% "Fair" and 54% "Poor" in the commitment to greet the mother. Almost two thirds (64%) of them had poor practices score in the commitment to check for danger signs. In addition, the majority of nurses had poor practices score in the commitment to assess child for the main symptoms of ARI, identify treatment if no urgent referral is needed, treat the sick child, and assess, identify and counsel the mother about the child's feeding problems (95%, 97%, 83% and 95% respectively).

Table 9 summarizes the relation between the nurses' total practices score in the commitment to the IMCI program for management of children with ARI and their characteristics. It was found that there were no statistical significant relations between the total score of nurses' practices and either their age or place of work. While, there was a statistical significant difference evident between the total score of nurses' practices and their

education (P=0.051). In which 66.7% of nurses who had a bachelor in nursing obtained (good/fair) total practices score compared to only18% of those who had a diploma in nursing. Moreover, it was found that the total practices score recorded for nearly two fifths (38.5%) of nurses who had from one to less than five years of experience was (good/fair) compared to none of those who had ten years and more of experience and the difference was statistically significant (P=0.011).

IV. Discussion

The IMCI program includes most common childhood problems, such as, pneumonia, diarrhea, measles, malaria and malnutrition[(1)]. The major aim of this program is to help countries to achieve millennium goals in decreasing both morbidity and mortality rates among the under-five children[(14)]. It requires appropriate nursing care to prevent the occurrence of potentially serious consequences[(12)]. This had created the need for high-skilled nurses trained in the application of the IMCI for management of children with ARI to achieve an optimal outcome[(4)].

Taking children's history is the first step in nurses' commitment to the IMCI program. It should include asking about the children's age, sex, and the main problems[(1,9)]. The result of the current study revealed that all nursescommitted to take history about children's age. This result could be related to nurses' awareness about the two different sets of sheets that are based on children's age as it is closely linked to the IMCI classification. These two sets are basic to assess, classify and treat sick children. In this concern, WHO (2014)[(12)]stressed that the nurse has to take a complete history about children especially their age as it is a priority for the classification of children according to IMCI program.

Obviously, measurement of body weight and height and plotting them onthe growth chart are crucial steps in evaluating the children's health and nutritional status[(15)]. The findings of the present study showed that the majority of the observations reflected that nurses committed to measure the children's weight and about two-thirds of them reflected that nurses committed to plot it on the growth chart. These findings could be due to nurses' awareness about its using in both evaluating the children's nutritional status and determining the dose of medications by the pediatrician. These findings were not in harmony with the findings of Mudau (2010)[(16)].

Generally, measurement of body temperature is the gold standard for evaluating both the health status of any child and the presence of infection[(1)]. The result of the present study illustrated that almost all observations indicated that nurses committed to measure body temperature. This result could be justified by two reasons: the first one could be due to that measuring body temperature is considered as a routine for any sick child to assess for fever. The second reason could be that fever is considered as one of the main symptoms of ARI. This result was incongruent with Mupara (2013)[(17)] who found that 62.5% of nurses not measured the body temperature of the children.

A child with any danger sign has a serious problem, need urgent referral to hospital and lifesaving treatment(s)[(2)].The finding of the current study reflected that approximately two-thirds of the nurses had poor practices score in the commitment to check for danger signs of any disease. This finding could be attributed to nurses' malpractice due to increase workload in addition to providing services for different specialties as providing a follow-up care for adult patients with chronic illness and antenatal care beside the children's care. A similarfinding was reported by Horwood et al. (2009)[(18)].

Recently, WHO (2014)[(12)] appreciated the vital role of the nurse in assessing the under-five years old children in order to identify their needs, takes accurate decision for intervention and evaluates their progress. Unfortunately, the finding of the present study reflected that the vast majority of nurses attained poor practices score regarding assess children for the main symptoms of ARI i.e. a cough or difficult breathing, throat and ear problems. This finding could be interpreted in the light of the following reasons: the increasing in the number of the children, the assessment of the main symptoms of ARI is time-consuming to be conducted for each child, shortage in the number of the IMCI trained nurses per shift, unsuitable place in the clinic equipped with specific equipment as stopwatch, nurses are dependent on doctors to complete this assessment. This finding was in concordance with the finding of Pillay (2012)[(19)].

Immunization is considered as one of the most important preventive strategies to guard against the occurrence of communicable diseases and to reduce both morbidity and mortality rates of the under-five years old children[(20)]. In this respect, the WHO (2010)[(14)] announced the updated schedule of immunization and ascertained the importance of following and completing it. The result of the current study indicated that all nurses did not commit to give immunization according to the schedule. This result could be due to that nurses follow the instructions given by the MOHP in Egypt which stated that immunization should be postponed for all sick children until cure. This result goes in line with the result of Mupara (2013)[(17)].

WHO(2014)[(12)] recommended that the IMCI trained nurses should identify treatment(s) when no urgent referral is needed. The results of the present study highlighted that all nurses did not commit to giveeither the first dose of oral antibiotics or antipyretics for the management of children with pneumonia, sore throat, and ear infection. These results could be attributed to lack of supervision and shortage of these medications in the

outpatient clinics and a high number of the children that hinder the nurse to ask the mothers to buy the unavailable medications from a pharmacy outside PHC settings then return back to instruct them about giving these medications at home. Similar results were reported by Gombe et al. (2010)[21].

The result of the current study indicated that almost three-quarters of the observations revealed that nurses committed to give an inhaled bronchodilator if wheezing is present in the treatment of pneumonia. This result could be explained by the presence of specific emergency room in the PHC settings that equipped with nebulizer devices and sufficient amount of inhaled bronchodilators. In this context, Baloyi (2015)[22] indicated that shortage of nebulizer devices and bronchodilators had a detrimental effect on children's health status and life.

Counseling is a key component of the IMCI program. It aims to provide accurate information and skills to change the caregivers' attitudes and behaviors regarding children's care. This will improve the health of their children[23]. It focuses on important aspects as children's feeding, management of illness at home, when to return immediately if children have any of the danger signs, and when to come back for a follow-up care [24].

WHO (2009)[25] recommended that 6.9% of time should be spent on counseling the caregivers. Unfortunately, the result of the current study showed that the vast majority of nurses had poor practices score regarding the commitment to counsel the mother about when to return immediately if the childhas any danger signs. This result could be justified by that certain items of assessing the children for danger signs at home as fast and difficult breathing are difficult to be explained by nurses in front of each mother because of time constraint, workload, and shortage in the number of the IMCItrained nurses per shift and lack of supervision. This result was in agreement with Malan (2015)[23] who found that 67.5% of nurses failed to counsel the mothers about the danger signs. In this respect, Fadnes et al. (2010)[24] stated that counseling is a complex element to be implemented as explaining the danger signs.

It was reported by UNICEF (2010)[26] that the under-five children's nutritional status is a mirror image of their health profile. So, it is essential that the nurse should assess, identify and counsel the mothers about their children's feeding problems. The finding of the current study portrayed that the vast majority of the observations highlighted that nurses committed to assess the children's feeding through checking their weight on growth chart. This finding could be related to that data regarding weight was already found in the children's sheet. Conversely, Mupara (2013)[17] found that the majority of nurses did not assess the children's feeding.

WHO(2014)[12] recommended that in order to provide quality care, nurses must committed to the IMCI program in the management of children with ARI. Generally, the result of the current study revealed that nurses had poor total practices score in their commitment to the IMCI program in the management of children with ARI. This score reflects deficiencies in most aspects of nursing care provided, shortage in IMCI program trained nurses, work overload, lack of skills, time, updated knowledge, supervision and on-job training and absence of materials as; posters and chart booklets that promote learning, and shortage of resources as unavailability of some medications are all reasons behind this score. This result was in agreement with Pillay (2012)[19]and Nkosiet al. (2012)[27]who found that all nurses had unsatisfactory practices score in their commitment to the IMCI program in PHC settings.

It is well known that clinical experience was found to be crucial in enhancing the quality of children's care[28]. Obviously, it was found that the nurses with short years of experience had better total practices score with astatistical significant difference. This finding may be due to the fact that nurses with short years of experience were newly nurses' graduates with fresh and updated knowledge. This finding was in consistent with Unver et al. (2012)[29].

Generally, education increases knowledge and changes the practices to the best[30]. The current finding revealed that a statistical significant difference was found between education and the total practices score of nurses. In which nurses with a bachelor in nursing demonstrated better practices than those with either technical institutecertificate or diploma in nursing. This findingcould be attributed to the fact that nurses with a bachelor in nursing were more educationally prepared than those with either technical institutecertificate or diploma in nursing. A similar finding was reported by Altmann (2011)[31].

The frame of the present study aimed at spotting some light on the reality of nurses' commitment to the IMCI program for management of children with ARI at PHC settings. The revealed findings pointed out the necessity of improving the current nurses' practices, especially in rural areas. WHO (2014)[12] ascertained that all nurses working in the PHC settings should apply the recent IMCI strategy for assessing, classifying, and treating the under-five sick children.

V. Conclusion

Based on the findings of the current study, it can be concluded that the majority of nurses had poor total practices score in their commitment to the IMCI program in the management of children with ARI from two months up to five years old. While, a small percentage of them had "good" and "fair" total practices score.

Recommendations:

The following recommendations are suggested:

1. Updated IMCI program for nurses should be developed, reviewed and approved by the MOHP.
2. Booklet about recent IMCI program for management of different problems of the under-fiveyears old children particularly ARI and diarrhea should be available. In addition, these recent guidelines should be applied by pediatric nurses in the PHC settings.
3. Continuous in-service training programs for pediatric nurses and pre-service training program for those newly recruited in the PHC settings to update their knowledge and raise their standard of care.

TABLES

Table 1: Characteristics of the Studied Nurses

Characteristics	**Studied Nurses (N♦=100)**	
	No.	**%**
Age (years)		
20 -	9	9.0
30 -	41	41.0
40 and more	50	50.0
Min-Max	20.0-58.0	
Mean ±SD	40.0±7.9	
Level of Education		
-Bachelor in Nursing	3	3.0
-Technical Institute certificate of Nursing	8	8.0
-Diploma in Nursing	89	89.0
Years of experience		
1 -	13	13.0
5 -	66	66.0
10 and more	21	21.0
Min-Max	1.0-12.0	
Mean ±SD	6.8±2.6	
Place of work		
-Maternal child health centers	10	10.0
-Family health centers	21	21.0
-Family health units	69	69.0

N♦= Number of nurses.

Table (2): Nurses' Commitment to Greet the Mother

Nurses' Practices	**Observed practices (n♦=300)**			
	Committed		**Not Committed**	
	No.	**%**	**No.**	**%**
1-Take the Child's History as Follows:				
• Ask about her child's age.	300	100.0	0	0.0
• Ask about her child's sex.	293	97.7	7	2.3
• Ask the mother what are the child's problems.	226	75.3	74	24.7
2-Measure Anthropometric Measurements as Follows:				
• The child's weight.	254	84.7	46	15.3
• The child's height.	27	9.0	273	91.0
• Plot weight on the growth chart.	180	60.0	120	40.0
• Plot height on the growth chart.	4	1.3	296	98.7
3-Measure Physiological Measurements as follows:				
• Body temperature.	294	98.0	6	2.0
• Respiratory rate.	15	5.0	285	95.0
• Record temperature in child's sheet.	264	88.0	36	12.0
• Record respiratory rate in child's sheet.	11	3.7	289	96.3
4-Determine the Type of Visit:				
• Ask the mother if it is an initial or follow-up visit?	209	69.7	91	30.3

n♦= Number of observations.

Table (3): Nurses' Commitment to Check for General Danger Signs of any Disease

Nurses' Practices	Observed practices (n♦=300)			
	Committed		Not Committed	
	No.	%	No.	%
• Ask if the child able to drink or breastfeed.	171	57.0	129	43.0
• Ask if he vomits.	182	60.7	118	39.3
• Ask if he vomits everything.	123	41.0	177	59.0
• Ask if the child had convulsions.	106	35.3	194	64.7
• Check if the child is lethargic or unconscious.	149	49.7	151	50.3
• Check if the child convulsing now.	113	37.7	187	62.3

n♦= Number of observations.

Table (4): Nurses' Commitment to Assess the Child

Nurses' Practices	Observed Practices (n♦=300)					
	Committed		Not Committed		Not Applicable	
	No.	%	No.	%	No.	%
A- Assess the Child for the Main Symptoms of Acute Respiratory Infection						
1- Assess the Child for a Cough or Difficult Breathing						
• Ask if he had a cough or difficult breathing.	196	65.3	104	34.7	0	0.0
• Assess the child for fast breathing.	5	1.7	295	98.3	0	0.0
• Assess the child for chest indrawing.	9	3.0	291	97.0	0	0.0
• Listen for stridor.	18	6.0	282	94.0	0	0.0
• Listen for wheezes.	200	66.7	100	33.3	0	0.0
2- Assess the Child for a Throat Problem						
• Does the child have fever 37.5 C^0 or more?	243	81.0	57	19.0	0	0.0
• Ask if the child had a sore throat.	154	51.3	146	48.7	0	0.0
• Palpate for enlarged lymph nodes on the front of the neck.	0	0.0	300	100	0	0.0
3- Assess the Child for an Ear Problem						
• Does the child have an agonizing ear pain?	155	51.7	145	48.3	0	0.0
• Ask if there is ear discharge?	132	44.0	168	56.0	0	0.0
• If yes, for how long? [n*=78]	78	100	0	0.0	222	74.0
• Palpate for tender swelling behind the ear.	0	0.0	300	100	0	0.0
B-Check the Child for Malnutrition and Anemia as Follows:						
• Determine if weight is appropriate for age by using growth chart.	180	60.0	120	40.0	0	0.0
• Assess for pallor in the palm and mucous membrane.	201	67.0	99	33.0	0	0.0
C-Check for Immunization and Vitamin A Supplementation Status as Follows:						
• Take child's immunization history.	259	86.3	41	13.7	0	0.0
• Give child immunization according to the schedule. [n*=115]	0	0.0	115	100	185	61.7
• Give child vitamin A according to the schedule. [n*=108]	0	0.0	108	100	192	64.0
• Instruct mother about the next date for an immunization. [n*=277]	206	74.4	71	25.6	23	7.7
D- Ask about Other Problems.	104	34.7	196	65.3	0	0.0

n*= according to a number of the children. n♦= Number of observations.

Table (5): Nurses' Commitment to Identify Treatment (s) when no Urgent Referral is Needed and Counsel the Mother about When to Return Immediately

Nurses' Practices	Observed Practices (n♦=300)			
	Committed		Not Committed	
	No.	%	No.	%
A- Give an identified treatment (s) for child as pediatrician ordered.	0	0.0	300	100
B-Counsel the Mother about When to Return Immediately If the Child has Any of the Following Danger Signs.				
• Not able to drink or breastfeed.	185	61.7	115	38.3
• Becomes sicker.	225	75.0	75	25.0
• Develops a fever.	200	66.7	100	33.3
• Fast breathing.	15	5.0	285	95.0
• Difficult breathing.	125	41.7	175	58.3

n♦= Number of observations.

Table (6): Nurses' Commitment toTreat the Sick Child and counselthe Mother How to Treat Local Infection, Sooth the Throat and Relieve the Cough.

Nurses' Practices	Observed Practices (n♦=300)					
	Committed		Not Committed		Not Applicable	
	No.	%	No.	%	No.	%
A-Treat Sick Child with Acute Respiratory Infection						
1- For Pneumonia: [n*=104]						
• Give first dose of an oral antibiotic.	0	0.0	104	100	196	65.3
• Give an inhaled bronchodilator if wheezing presents.	76	73.1	28	26.9	196	65.3
• Give antipyretic for high fever.	0	0.0	104	100	196	65.3
2- For a Sore Throat (a Cough or Common Cold) [n*=180]						
• Give first dose of an oral antibiotic.	0	0.0	180	100	120	40
• Give antipyretic for high fever and throat pain.	0	0.0	180	100	120	40
3- For an Ear Infection: [n*=64]						
• Give first dose of oral antibiotic.	0	0.0	64	100.0	236	78.7
• Give antipyretic for high fever and ear pain.	0	0.0	64	100.0	236	78.7
• Dry the ear by wicking.	34	53.1	30	46.4	236	78.7
B-Counseling the Mother How to Treat Local Infections at Home						
1- Teaching the Mother about Drying the Ear by Using Dry Wicking as Follows: [n*=64]						
• Clean the child's ear with a wick.	21	32.8	43	67.2	236	78.7
• Replace the wet wick with clean one until the ear of the child becomes dry.	21	32.8	43	67.2	236	78.7
• Instill eardrops as pediatrician ordered.	22	34.4	42	65.6	236	78.7
2- Teaching the Mother about Soothing the Throat and Relieving of the Cough as Follows:						
• Give child safe remedy as breast milk, tea with lemon and honey, tileo and chicken soup.	197	65.7	103	34.3	0	0.0

n*= according to a number of the children.n♦= Number of observations.

Table (7): Nurses' Commitment to Assess, Identify, and Counsel the Mother about the Child's Feeding Problems

Nurses' Practices	Observed Practices (n♦=300)					
	Committed		Not Committed		Not Applicable	
	No.	%	No.	%	No.	%
A- Assess the Child's Feeding						
1- Assess the child's feeding (anemia or low weight or < 2 years) [n*=292]	266	91.1	26	8.9	8	2.7
2- Ask the Mother about the Following:						
• Do you breastfeed your child? [n*=292]	216	74.0	76	26.0	8	2.7
• Do you breastfeed during the night? [n=*292]	77	26.4	215	73.6	8	2.7
• Does the child take any other food or fluids?[n*=292]	217	74.3	75	25.7	8	2.7
• What food or fluids? [n*=277]	128	46.2	149	53.8	23	7.7
• During this illness, had the child's feeding changed? [n*=292]	134	45.9	158	54.1	8	2.7
B- Identify Child's Feeding Problems as Asking about the Following:						
• Difficult breastfeeding because of blocked nose. [n*=292]	82	28	210	71.9	8	2.7
• Use of feeding bottle. [n*=292]	197	67.5	95	32.5	8	2.7
• Not feeding well during illness [n=300]	157	52.3	143	47.7	0	0.0
C- Counsel the Mother about Child's Feeding Problems:						
1- Counsel the Mother as Follows:						
• Clear blocked nose if it interferes with feeding.	87	29.0	213	71.0	0	0.0
• Give exclusive breastfeeding as possible including night. [n*=17]	6	35.3	11	64.7	283	94.3
2- Use Good Communication Skills as Follows:						
• Ask and listen to the mother.	298	99.3	2	0.7	0	0.0
• Check if the mother understands or needs further explanation.	80	26.7	220	73.3	0	0.0
3- Counsel the Mother to Increase Fluids During Illness as Follows:						
• Instruct the mother to breastfeed more frequently. [n*=292]	194	66.4	98	33.6	8	2.7
• If child taking breast –milk substitutes, increase the amount of milk given. [n*=263]	127	48.3	136	51.7	37	12.3
• Increase other fluids as soup and water. [n*=275]	204	74.2	71	25.8	25	8.3
4- Counsel the mother about her own health and family planning.	9	3.0	291	97.0	0	0.0

n*= according to the age of the child.n♦=Number of observations.

Table (8): Nurses' Practices Score in the Commitment to the IntegratedManagement of Childhood Illness Program in the Management of Children with Acute Respiratory Infection

Nurses' Practices	Score of studied nurses (N♦=100)					
	Good (≥75)		Fair (60%-<75%)		Poor (<60%)	
	NO	%	NO	%	NO	%
A- Greet the mother, measure the child's anthropometric and physiological measurements and determine the type of visit.	0	0.0	46	46.0	54	54.0
B- Check for general danger signs of any disease.	16	16.0	20	20.0	64	64.0
C- Assess child for the main symptoms of ARI and check for the child's malnutrition, anemia, immunization, and vitamin A supplementation status.	0	0.0	5	5.0	95	95.0
D- Identify treatment for ARI if an urgent referral to hospital is needed.	**NA**	**-**	**NA**	**-**	**NA**	**-**
E- Identify treatment if no urgent referral is needed and counsel mother about when to return immediately if the child has any danger signs.	1	1.0	2	2.0	97	97.0
F- Treat the sick child and counsel mothers about how to treat local infection, sooth the throat and relieve cough (for children from two months up to five years).	0	0.0	17	17.0	83	83.0
G- Assess, identify and counsel the mothers about child's feeding problems.	5	5.0	0	0.0	95	95.0
H- Give follow-up care.	**NA**	**-**	**NA**	**-**	**NA**	**-**
Total Practices Score	**3**	**3.0**	**18**	**18.0**	**79**	**79.0**

♦N= Number of nurses. NA= Not Applicable.

Table (9): Relation between theNurses' Total Practices Score in the Commitment to the IMCI Program for Management of Children with ARI and their Characteristics

Total Score of Nurses'Practices / Characteristics of Nurses	Studied nurses (N♦=100)				Test of Significance
	Fair/good practices (N=21)		Poor practices (N=79)		
	No.	%	No.	%	
Age (years)					
20-	4	44.4	5	55.6	
30-	10	24.4	31	75.6	X^2=6.608
40 and more	7	14.0	43	86.0	^{MC}P=0.082
Total	**21**	**21.0**	**79**	**79.0**	
Level of Education					
-Bachelor in Nursing			1	33.3	
-Technical Institute certificate in	2	66.7	5	62.5	X^2=5.574
Nursing	3	37.5			^{MC}P=0.051*
-Diploma in Nursing			73	82.0	
	16	18.0			
Total	**21**	**21.0**	**79**	**79.0**	
Duration of experience (years)in the application of IMCI program					
1-	5	38.5	8	61.5	
5-	16	24.2	50	75.8	X^2=8.390
10 and more	0	0.0	21	100	^{MC}P=0.011*
Total	**21**	**21.0**	**79**	**79.0**	
Place of work					
-Maternal child health centers	4	40.0	6	60.0	X^2=3.966
-Family health centers	6	28.6	15	71.4	^{MC}P=0.130
-Family health units	11	15.9	58	84.1	
Total	**21**	**21.0**	**79**	**79.0**	

X^2: Chi-Square test.^{MC}P: Monte Carlo corrected P-value.*significant at P≤0.05.N♦= Number of nurses.

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