

Implementation of Integrated Management of Childhood Illness Strategy's in Al Hadbaa Primary Health Care Center in Mosul City

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ABSTRACT

Background: The World Health Organization (WHO) build up guidelines for the integrated management of childhood illnesses (IMCI) in the health facilities to improve the recognition and the individual management of the common reasons of death among children under the age of five. The approach used in outpatient clinical settings with restricted diagnostic and therapeutic tools.

Aim of study: To assess the impact of implementation of IMCI strategy, in reducing an inappropriate prescription of antibiotics and raising vaccination coverage.

Patients and methods: A cross-sectional study design was arranged, where 395 child with age from two months up to below 5 years old attending Al Hadbaa PHCC from 1st of January to 31st of March 2014 suffering from one or more of the following respiratory infection, diarrheal diseases, throat infections, ear infections and fever. The children assessed separately by two clinics, "A" non-adopting IMCI and "B" adopting IMCI guidelines, the Mc-Nemar test was applied and differences were evaluated.

Results: The attendant children are 239 males and 156 females complaining from fever (39.1%), throat problems (21.4%), ear problems (12.6%), cough (11.6%), diarrhea (11.1%) and pneumonia (4.2%). The overall use of antibiotics is 66.1% in clinic "A" and 21.0% in clinic "B" with p-value 0.000. Regarding the immunization, the outcomes appear to have very high significant difference 54.1% in "A" and 75.7% in "B".

Conclusion: The classification-approach to the sick child using IMCI guidelines has clear effect on decreasing an inappropriate use of antibiotics and raising number of vaccinated children, which justifying the adaptation of this strategy.

Keywords: IMCI, inappropriate use of antibiotics, vaccinations.

تطبيق إستراتيجية التدبير المتكامل لأمراض الطفولة في مركز الحدباء للرعاية الصحية الأولية في الموصل

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الخلاصة

الخلفية: تقوم منظمة الصحة العالمية (WHO) ببناء المبادئ التوجيهية للتدبير المتكامل لأمراض الطفولة (IMCI) في المرافق الصحية من أجل تحسين التعرف على الأسباب الشائعة للوفاة بين الأطفال دون سن الخامسة. النهج يستخدم في المرافق السريرية للمرضى الخارجيين ذات الأدوات التشخيصية والعلاجية المحدودة.

هدف الدراسة: لتقييم تأثير تنفيذ إستراتيجية التدبير المتكامل لأمراض الطفولة، في الحد من وصف الطبي غير المناسب للمضادات الحيوية وزيادة تغطية اللقاحات.

المرضى وطرق العمل: تم ترتيب تصميم دراسة المقطع العرضي، حيث حضر 395 طفلاً تتراوح أعمارهم من شهرين إلى أقل من 5 سنوات في مركز الحدباء التدريبي للرعاية الصحية الأولية من الأول من كانون الثاني إلى 31 آذار 2014 ويعانون من واحد أو أكثر من الأمراض التالية، أمراض الإسهال، التهابات الحلق والتهابات الأذن والحمى. تم تقييم الأطفال بشكل منفصل من قبل عيادتين، "A" لا تتبنى إستراتيجية التدبير المتكامل لأمراض الطفولة و"B" تتبناها، تم تطبيق اختبار ماكنيمار وتم تقييم الاختلافات.

النتائج: الأطفال المراجعون وهم 239 من الذكور و 156 من الإناث، يشكون من الحمى (39.1 ٪)، ومشاكل الحلق (21.4 ٪)، ومشاكل الأذن (12.6 ٪)، والسعال (11.6 ٪)، والإسهال (11.1 ٪) والالتهاب الرئوي (4.2 ٪). الاستخدام الكلي للمضادات الحيوية هو 66.1 ٪ في العيادة "A" و 21.0 ٪ في العيادة "B" مع قيمة $P=0.000$. فيما يتعلق بالتحصين، يبدو أن النتائج لها فارق كبير للغاية 54.1 ٪ في "A" و 75.7 ٪ في "B".

الاستنتاجات: إن نهج التصنيف تجاه الطفل المريض باستخدام إرشادات إستراتيجية التدبير المتكامل لأمراض الطفولة له تأثير واضح على تقليل الاستخدام غير المناسب للمضادات الحيوية وزيادة عدد الأطفال الذين تم تلقيحهم، والذي يبرر اعتماد هذه الإستراتيجية.

الكلمات المفتاحية: التدبير المتكامل لأمراض الطفولة، الاستخدام غير المبرر للمضادات الحيوية، اللقاحات.

INTRODUCTION

Almost 11 million of children below the age of five years living in the developing countries die every year, the death occurs in 7 from every 10 of those result from the common illnesses affecting children as acute respiratory infections (ARI), diarrhea, dehydration, measles, and malaria. All these illnesses are both preventable and easily treatable. Malnutrition complicates half of these cases.¹⁻³

World Health Organization (WHO) developed the Integrated Management for Childhood Illnesses (IMCI) which is an integrated guidelines to assess child complain that focuses on the well-being status of the child. IMCI aims to relieve illness and/or disability with effort to minimize death, and to enhance growth and development among children below the age of five years. IMCI has preventive and curative fundamentals that are realized by families, communities and also by health facilities. The strategy of IMCI includes three core elements⁴:

- Improving case management attitudes and skills of medical and paramedical staff
- Advancing the health systems
- Progressing the family and community health performance.

In the health facilities, the precise identification of illnesses affecting children in outpatient settings has been promoted by IMCI strategy to ensure an appropriate combined treatment of all major illnesses, build up the counseling of caretakers,

and accelerate the referral to the hospital of the severely sick attendant children. While when the setting was home, the suitable care inquire behaviors, enhanced nutrition and preventative care, and the accurate achievement of prescribed care, these were the targets of IMCI.³

IMCI case management training provide the health workers with skills to deal with and manage children presented with a combination of illnesses, identify those requiring urgent referral, administer appropriate treatments (especially the antibiotics mainly amoxicillin, co-trimoxazole, erythromycin or i.m. penicillin or ceftriaxone vials), and provide relevant information to child care providers. IMCI implementation has been revealed the advancement in the quality of management of sick children.⁵⁻⁷

Case management strategy usually depends on the clinical presentation of diseases (syndromes) rather than on the etiologies. The IMCI checklist, should be filled during the interview with children and parents, all symptoms and signs were recorded systematically, then the classification(s) were outlined using series of algorithms and written according to IMCI chart booklets, next step was the identification of treatments.⁸

The main reason physicians overprescribe antibiotics for an example RTIs relates to diagnostic uncertainty. Faced with an ill-appearing, febrile child and anxious parents, physicians are reluctant to offer only symptomatic therapy. If the

physician were more certain that the infection was of a viral etiology, then a greater comfort level might exist in avoiding antibiotic therapy.^{9,10}

Conclusively, the vaccines are a cost-effective interference in the health system. Despite the little costs of vaccines, it provides enormous benefits for the health of populations. According to WHO records, the annual death among children below the age of 5 years reach 10.6 million; while an estimated 1.4 million of those are due to diseases that might prevented by vaccines.¹¹

Despite the huge benefit of the vaccinations, some people still not interested with vaccinations in terms of either not vaccinating at all, or not completing their vaccination programs.¹²

In IMCI, vaccinations status been checked for every attending child. Any missed vaccines are given for children who do not have severe classifications.¹³ Moreover, IMCI trained health workers communicate better with the parents.⁵ Because being unaware of need for immunization, uninformed about the need to return for subsequent second or third dose, unknown place and/or time of immunization, the probable side effect, the incorrect thoughts about contraindications, lack of reliance in immunization, inconvenient time of vaccination, absence of well trained health worker and vaccine, and long waiting time at health facility were reasons for not fully immunizing the children.¹⁴

Aim of study: To assess the impact of implementation of IMCI strategy in reducing inappropriate prescription of antibiotics and raising vaccination coverage.

PATIENTS AND METHODS

Three hundred and ninety five child age from two months up to below five years old attending Al-Hadbaa Training Center for Family Medicine in Mosul, were enrolled in this cross-sectional study. After obtaining the administrative agreement from the Directorate of Health of Nineveh and the informed oral consent was taken from all parents, the sample collected according to the inclusion criteria listed as follows :

- children between two months and up to five years old.
- Those children should presented with one or more of the following respiratory infection

(including throat infections and ear infections), diarrheal diseases, and fever.

- First visit for the present complaint.
- The attendant child must have no severe sickness that call for a referral.

The sample were interviewed by researchers for assessment and consent taken. Every child has been reviewed separately by 2 clinics; clinic "A" not adopting IMCI guidelines and clinic "B" implementing the strategy of IMCI guidelines, in which, IMCI's checklist paper filled for every child and the assessment started systematically including general danger sign, respiratory complaints, diarrhea, throat problems, ear problems, fever, state of growth and malnutrition, checking vaccination, assess feeding and finally to found out other problems. The collection of characteristic signs and symptoms for each illness leads to one classification or more, rather than to a specific diagnosis. Then guidelines include schemes and algorithms for identifying treatment. The data obtained from both clinics along the period from January to end of March 2014. The data were managed by using SPSS version 18. this software installed in a personal mini laptop. The Percentages, Mac-Nemar and p-value were measured.

RESULTS

Figure 1 illustrates the distribution of study population according to sex and reveals that 239 of them are males and 156 are females representing 60.5% and 39.5% respectively.

Figure 2 displays the distribution of study population according to specific age intervals. Where 39% of them were between the age of 4 years to less than 5, while the interval 1-2 years was the lowest frequencies of 12%.

Figure 1: Distribution of study population according to sex.

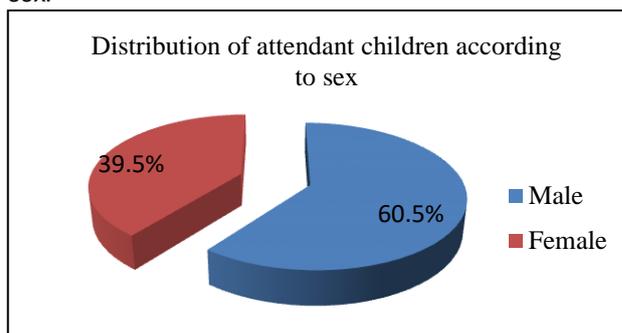


Figure 2: Distribution of study population according to age groups.

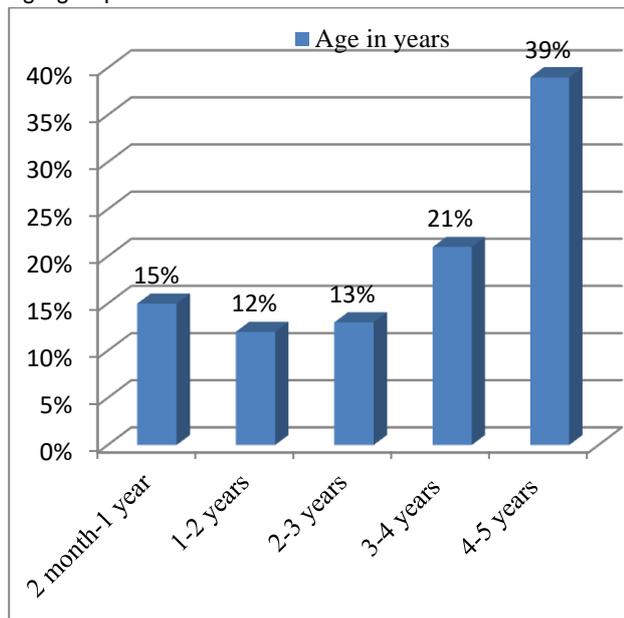


Figure 3 shows the main complaints of children attending Al-Hadbaa Training Center in this study were shown in a descending manner starting from fever, throat problems, ear problems, cough, diarrhea and pneumonia representing 39.1%, 21.4%, 12.6%, 11.6%, 11.1% and 4.2% respectively.

Table 1 portrays highly significant differences between clinic "A" and clinic "B" in all complaints with p-values=0.0000 in the all specific classifications which are 524 since that the child may presented with more than one complaint and classification.

Table 2 shows a highly significant difference between the clinic "A" and clinic "B" in overall antibiotics prescription with p-value of 0.000, while the difference between the oral and injectable antibiotics in both clinics in ratios of 80.1%, 92.8%, 19.9% and 7.2% is just significant (p-value 0.017).

The difference in asking about the vaccination status between both clinics is very highly significant with p-value=0.000 and ranging from 51.9% in clinic "A" to 100% in clinic "B", moreover a very highly significant difference is allocated between those who send to be vaccinated in each clinic 54.1% in clinic "A" and 75.7% in clinic "B" at p-value= 0.000, as shown in **Table 3**.

Figure 3: Distribution of study population according to complaints.

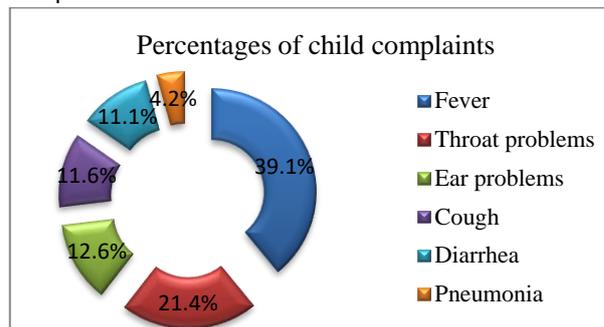


Table 1: The difference between clinic "A" and clinic "B" regarding the chief complaints.

| Chief complaints | Clinic "A" | Clinic "B" | P-value |
|------------------|-------------|-------------|---------|
| Fever | 205 (39.1%) | 205 (39.1%) | 0.000 |
| Throat problems | 112 (21.4%) | 74 (14.1%) | 0.000 |
| Diarrhea | 58 (11.1%) | 58 (11.1%) | 0.000 |
| Ear problems | 66 (12.6%) | 84 (16.0%) | 0.000 |
| Cough | 61 (11.6%) | 95 (18.1%) | 0.000 |
| Pneumonia | 22 (4.2%) | 8 (1.6%) | 0.000 |

Table 2: The difference between clinic "A" and clinic "B" regarding the antibiotics prescription.

| Antibiotics prescription | Clinic "A" | Clinic "B" | p-value |
|--------------------------|-------------|------------|---------|
| Overall antibiotics | 261 (66.1%) | 83 (21.0%) | 0.000 |
| Oral antibiotics | 209 (80.1%) | 77 (92.8%) | 0.017 |
| Injectable antibiotics | 52 (19.9%) | 6 (7.2%) | |

Table 3: The difference between clinic "A" and clinic "B" regarding vaccination.

| Vaccination related action | Clinic A | Clinic B | p-value |
|---------------------------------|-------------|-------------|---------|
| Those who ask about vaccines | 205 (51.9%) | 395 (100%) | 0.000 |
| Those who send to be vaccinated | 111 (54.1%) | 299 (75.7%) | 0.000 |

DISCUSSION

This work shows that 60.5% from the attendant children were males and 39.5% females, most of them 39% were in the age 4-5 years, this may due to that the children in this older age interval start to skill the surroundings and being more predisposed and expose to pathogens. Fever presented as the most frequent symptom 39.1%, followed by throat problems, ear problems, cough, diarrhea and the least frequent one was pneumonia 4.2%. Similar results found in a study done in Syria, which involve 112 sick child, were found that 32% were in the 4-5 years age group and 10% within 1-2 years interval, moreover the major complains were: 73 fever, 37 pharyngitis, 35 diarrhea, 19 otitis media and 15 cough.¹⁵

According to a recent survey on healthcare associated infections in Europe, 35.0% of children referred to hospital in 2011 were receiving antibiotics for their illness.¹⁶ Also in US, it was found that the health care workers prescribed 258.0 million course of antibiotics (833 prescriptions per 1000 persons) in 2010; Penicillins (23%) and macrolides (22%) were on the top of frequent categories prescribed.¹⁷

In this current study, a significant difference in favor of adopting IMCI was clear regarding the antibiotics uses, were 6.1% of clinic "A" and 21.0% of clinic "B" out of 395 attending children receiving antibiotics as overall. In the same manner, an increasing rate of antibiotic prescription was observed in the cohort study involving children at out-patient settings in Papua New Guinean, with 54% of cases treated (including mild and severe cases) when a maximum of 36% should have received antibiotics according to IMCI criteria⁸. In Egypt 2011 with frequencies of 89.3%, 87.3%, 91.3%, and 91.3%, respectively than in the clinic not adopting¹⁶, and the injectable drugs were decided to be used in only 0.7% of cases in clinic "A" adopting IMCI, this may be a benefit of adopting IMCI because the cost of injection therapy is always higher than that of oral therapy, in the present work, the ratio of the injectable antibiotics from the total antibiotic prescription was also low in clinic "B" in comparison with clinic "A", this is run in a very high significant difference (p-value=0.034), this can be explained by the fact that the injectable antibiotics prescription in IMCI, has been conserved to the child with sever

classifications who need urgent referral to hospital. The orally prescribed antibiotics to child in a study done in Egypt steering up from (10.3%) in non IMCI to (81.3%) in IMCI adapting unit.¹⁷

Contrarily in several studies¹⁸⁻²⁰, the results showed low specificity of IMCI algorithms, especially to identify bacterial infections that require antibiotics this limitations in IMCI could be explained by the defect in the available diagnostic tools or lack the concerning about the local epidemiology. Therefore, many children might be given antibiotics that is not required.

According to IMCI guideline, checking the immunization status is very important. If a child should be immunized, the health worker gives immunizations even if child was sick under condition that the referral was rolled out, so every sick child can receive vaccination if the decision was to be treated at home.²¹ So in this study 17.5% of children attending clinic "A" checked about their vaccinations in comparison with 100% in clinic "B", with a significant very high difference (p-value=0.000).

Of those who checked in this work, 54.1% and 75.7% were sent to be vaccinated from clinic "A" and "B" respectively. The very highly significant difference could be due to the adherence and compliance to IMCI checklist, in which the care provider ticks in front the vaccines that previously taken by the child in previous visit and encircles the vaccines that the child should be taken at the current visit.

A retrospective work in Egypt assessing the data from the years 2000 to 2006 compared the annual mortality rates under-five in 254 districts before starting the IMCI approach and after, the post-IMCI correctly checked child for immunization status was 94.3% against 18.6% pre-IMCI.¹⁷

CONCLUSION

The classification-approach to the sick child using IMCI guidelines has clear effect on decreasing an inappropriate use of antibiotics and raising number of vaccinated children, which justifying the adaptation of this strategy.

RECOMMENDATIONS

To the best of our awareness, this the first study in Mosul to report the benefits of IMCI on the child health. The need for further studies to evaluate the

other aspects of the IMCI is imperious and how will health workers comply with IMCI guidelines in routine practice must be tested and on the effect of IMCI recommendations on health outcomes.

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