

Effect of Integrated Management of Childhood Illness Training on Medical Student's Knowledge and Clinical Skills

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Background: Child health improvement is one of the most important indexes in health programs among all countries. One of the eight millennium development goals for 2015 is reduction of child mortality. Based on WHO recommendation Integrated Management of Childhood Illness (IMCI) is one of the most effective strategies to reduce under five mortality rates. In this study, we tried to compare knowledge and clinical skills about most common childhood illnesses among medical students after IMCI training with control group.

Methods: We performed a control trial on two medical intern student groups who were training in pediatric department. Our study was done in Zahedan University of Medical sciences in 2014. We evaluated 18 students in first group (control) and 19 students in second group (intervention). Control group was trained based on routine program education and intervention group educated both routine program and IMCI guideline.

Results: We observed significant differences in knowledge score between control and intervention group ($P < 0.001$). Also skill score about management of danger signs in intervention group was significantly higher than control group ($P < 0.001$).

Conclusions: IMCI training can be a logical way to improve education quality in pediatric department. Medical students can improve their knowledge and skills effectively through this training.

Keywords: Childhood Illness; Knowledge; Clinical Skill; Medical Student

تأثیر آموزش دستورالعمل مراقبتهای ادغام یافته نا خوشی های اطفال بر آگاهی و مهارت دانشجویان پزشکی

مقدمه: ارتقاء شاخصهای سلامت کودکان از مهمترین نشانههای وضعیت سلامت و از بارزترین نشانههای کیفیت ارائه خدمات بهداشتی درمانی در یک جامعه می باشد همانطور که یکی از اهداف توسعه هزاره سوم کاهش مرگ و میر کودکان است. یکی از راهکارهای موثر توصیه شده توسط سازمان جهانی بهداشت به منظور کاهش مرگ و میر کودکان زیر ۵ سال طرح مراقبتهای ادغام یافته ناخوشی های اطفال (مانا) است. ما در این تحقیق سعی کردیم تا دانش و مهارتهای کلیدی دانشجویان پزشکی مقطع اینترنتی را در ارتباط با شایعترین شکایات کودکان بعد از آموزشهای مانا در مقایسه با گروه کنترل بررسی کنیم.

روش ها: مطالعه ما یک کارآزمایی کنترل دار می باشد. افراد مورد مطالعه عبارت بودند از دو گروه ۱۸ و ۱۹ نفره از کارورزان بخش اطفال که در طی دو دوره سه ماهه متوالی مورد مطالعه قرار گرفتند. این مطالعه در دانشگاه علوم پزشکی زاهدان و در سال ۱۳۹۳ انجام گردید. گروه اول طی سه ماه بخش اطفال مورد آموزشهای روتین بخش اطفال قرار گرفتند. اما گروه دوم علاوه بر آموزشهای روتین، دستورالعمل مانا را نیز آموزش دیدند.

نتایج: تفاوت آماری معنی داری بین نمره آگاهی دانشجویان درمورد نحوه طبقه بندی، تشخیص بیماری، دستور دارویی، پایش رشد و توصیه های تغذیه ای در دو گروه شاهد و مداخله مشاهده شد ($P < 0.001$). همچنین نمره مهارت دانشجویان در مدیریت نشانه های خطر کودکان بطور معنی داری در گروه مداخله بالاتر از گروه شاهد بوده است ($P < 0.001$).

نتیجه گیری: ادغام آموزشهای مانا در دوره بالینی اطفال روشی منطقی برای بهبود کیفیت برنامه های آموزشی و هم جهت با نیازهای آموزشی واقعی پزشکان عمومی می تواند باشد.

واژه های کلیدی: بیماریهای کودکان، دانش، مهارت بالینی، دانشجویان پزشکی

مستوى تأثير تعليم دستور المراقبه الصحيه للاطفال على مستوى المهاره عند طلاب الطب

المقدمه: إن ارتفاع ملاكات السلامة عند الاطفال من اهم معايير مستوى السلامة و من ابرز معايير مستوى الخدمات الصحيه فى المجتمع. كما أن من اهم الاهداف اللغويه الثالثه هو انخفاض مستوى سن الموت عند الاطفال. احد الاساليب الموتره فى هذا المجال هو برنامج (مانا) المعروف من قبل منظمه الصحه العالميه المخصص لخفض مستوى الموت لدى الاطفال دون الخامسة من اعمارهم. تسعى هذه الدراره الى تبين و مقايسه مستوى اثر تعليم (مانا) لطلاب المرحلة الاخيره من الطب مع مجموعه الكنترول.

الأساليب: تمثرت هذه الدراره من الدراسات التى يوجد فيها فريق كنترول و المجموعات التى تمت الدراره عليهم هم عباره عن مجموعتين مؤلفين من ۱۸ و ۱۹ من طلبة المرحلة الاخيره من الطب و فى قسم الاطفال فى فتره ثلاثه اشهر على التوالى. تمت هذه الدراره فى جامعه زاهدان للعلوم الطبيه فى عام ۱۳۹۳ هـ.ش.

تم تدريس الفريق الاول خلال ثلاثه اشهر على النمط المتداول فى قسم الاطفال لكن تم تدريس الفريق الثانى (مانا) اضافه الى النمط المتداول.

النتائج: كان هناك تفاوت احصائى واضح فى معرفه الطلاب فى المجالات التاليه: ۱- التفكيك، ۲- تشخيص الالامراض، ۳- الادويه، ۴- متابعه النمو، ۵- التوصيات الغذائيه. بين الفريقين و ايضا كان هناك فرق واضح من جهه احصائيه بمستوى اعلى عند الفريق الثانى فى مجال علامت الخطر عند الاطفال بالنسبه الى الفريق الاول ($P < 0.001$).

الاستنتاج: إن دمج برنامج (مانا) مع البرنامج التعليمى المتداول يحسن مستوى التعليم و يسد الاحتياجات التعليميه الواقعيه لغريجي الطب العام. **الكلمات الرئيسية:** امراض الاطفال، العلم، الممارات السريري، طلاب الطب.

میڈیکل طلباء کی مہارت اور آگہی پر بچوں کی صحت کے بارے میں جامع دستور العمل کی تعلیم کی تاثیر

بیگ گراؤنڈ: بچوں کی صحت میں بہتری لانا کسی بھی ملک کے حفظان صحت کے اہم ترین پروگرام نیز طبی اور حفظان صحت کے معیارات کی نشاندہی کرتا ہے۔ تیسرے پزارے میں ایک اہم ہدف بچوں کی شرح اموات میں کمی لانا ہے۔ عالمی ادارہ صحت نے پانچ برس سے کم عمر کے بچوں کی اموات کی شرح میں کمی لانے کے لئے بچوں کے علاج کی غرض سے جامع طبی پروگرام پیش کیا ہے جسے آئی ایم سی آئی کا نام دیا گیا ہے۔ اس پروگرام کی ٹریننگ دینے کے بعد ہم نے بچوں کا علاج کرنے والے میڈیکل طلباء کی صلاحیتوں کا جائزہ لیا۔

روش: اس تحقیق کے لئے ہم نے پیڈیاٹریک شعبے کے طلباء کو دو گروہوں میں تقسیم کر دیا۔ پہلے گروہ کو صرف روایتی تعلیم دی گئی جبکہ دوسرے گروہ کو آئی ایم سی آئی پروگرام کی ٹریننگ بھی دی گئی تھی۔ یہ تحقیقات زاهدان یونیورسٹی آف میڈیکل سائنس میں دوپزار چودہ میں انجام دی گئی تھی۔

نتیجے: جن طلباء کو آئی ایم سی آئی پروگرام کی ٹریننگ دی گئی تھی ان کے علم اور روایتی تعلیم حاصل کرنے والے طلباء کی آگہی میں خاصہ فرق دکھائی دیا۔

سفرش: آئی ایم سی آئی پروگرام کی افادیت کو دیکھتے ہوئے یہ سفارش کی جاتی ہے کہ اسے بچوں کے علاج کے لئے ضروری قرار دیا جائے اور عام ڈاکٹروں کو بھی اس سے فائدہ ہوسکتا ہے لہذا اس پر توجہ دی جائے۔

کلیدی الفاظ: پیڈیاٹریک، علم و آگہی، کلینیکل مہارت۔

INTRODUCTION

The most important purpose of medical sciences universities is educating efficient and expert manpower and providing health services relevant to society needs regarding the facilities and conditions for promoting health. Medical education policy makers believe that medical education system should proceed and develop in a way that it can utilize the latest universal scientific achievements which are compatible with society needs.

Improving children health and promoting children health indicators are of the most important society health status indicators and of the most prominent quality indicators of providing medical services in community. As one of the development purposes of the third millennium is declining children mortality (1-3).

One of the effective solutions recommended by WHO to decline mortality of children under 5 is integrated managements of childhood illness (IMCI) which its intervention efficacy on promoting children health has been proved in many populations (4). The overall purpose of IMCI is to decline mortality of children under 5 due to prevalent childhood illnesses.

Evaluation, classification, treatment, follow-up and counseling of ill children is done in two groups of under 2 month old and 2 months to 5 years old in IMCI strategy based on the inserted information in two booklets, IMCI strategy is being carried out in all Iranian rural health centers now.

The most part of general practitioner's clients are children and also, in the first level of health network system in deprived and remote regions like rural areas, patients only have access to general practitioners (GP). Then enough expertise in management of the most common children complaints for GPs especially in conditions with lack of diagnostic and therapeutic equipments is of great significance. We tried in this study to compare knowledge and clinical skills of medical students related to the most common children complaints after IMCI education with control group.

METHODS

This study is a control trial. Participants were two groups of 18 and 19 interns of pediatric course that were evaluated during two periods of three months during 2014. We selected this student by convenience sampling. Inclusion criteria were every intern medical student who started pediatric course for first time and exclusion criteria contained; students who failed internship pediatric course before.

Students allocation in two groups was randomly because we didn't have any selection criteria for each group and total grade point average in two groups were not statistically different. First group from 21 march to 21 Jun 2014) selected as control group and second group (22 Jun to 22 September 2014) selected as intervention group. Also because pediatric course conditions have been the same during two periods regarding pediatricians, students' shifts and ordinary educational programs.

This study was single-blind; examiners were blind because they didn't know about coarse education details and exam

method was same in the two groups.

The first group have been trained routine pediatric training and were evaluated at the end of the period but the second group were trained IMCI in addition to routine trainings. From the beginning of the second month of the course their training included workshops in clinical skills laboratory; theoretical and practical training in clinics based on IMCI instructions and were evaluated at the end of the course.

At the end of every course we evaluated students as below:

At first students' skills were evaluated by Observed Structured Clinical Examination (OSCE) in clinical skills laboratory and designing six clinical stations. 6 items of the most common and crucial children complaints were proposed in those 6 stations and students' skill was assessed as a score. Content validity of OSCE was confirmed by pediatric and community medicine departments based on IMCI booklets.

Then a questionnaire was used to examine students' knowledge. This questionnaire was designed based on common children complaints and management stages. It includes 5 open ended questions which assess knowledge in cases of classification, illness diagnosis, drug prescription, growth monitoring and nutritional recommendations. One positive score was allocated to key points which students have to mention, totally 18 key points related to classification and diagnosis of illnesses should have been mentioned. Proper treatment selection included 9 total correct responses, 7 scores were considered for nutritional recommendation and key points of growth monitoring.

Finally total scores of the questionnaire were calculated and its mean was analyzed by Mann Whitney statistical test. (Three pediatricians and one community medicine specialist confirmed the content validity of the questionnaires based on IMCI booklet and its reliability was evaluated by piloting on 15 medical students before intervention and we calculated Cronbach alpha as 0.81.)

We analyzed data by Mann Whitney test and significance level considered as 0.05.

RESULTS

This study was done on 38 medical students who were passing internship course during 2014. The first group included 19 students (7 males and 12 females) second group included 18 students (3 males and 15 females). The mean rank of total grade point average (GPA) of these students has been summarized separately for two groups in table 1. Based on Mann Whitney test we did not observe any significant statistical difference between them.

Scores of students knowledge has been summarized in three domains of 1. Proper classification and illness diagnosis 2. Proper treatment choice and 3. Nutritional recommendations and growth monitoring in table 2. As it shows, there was significant statistical difference between students scores in control and intervention groups based on mann whitney test ($P < 0.001$).

As we see in table 3, mean rank of students skills scores of managing children dangerous signs was significantly higher in intervention group than control group (based on mann whitney test) ($P < 0.001$).

Table1. Comparison of grade point average between control and intervention group

Group	Number Percent	Male/Female	Age Mean Range	Mean Rank of Total Grade Point Average	
Control	19 100%	12/7	24.3 23-27	17.63	P Value:0.429
Intervention	18 100%	15/3	24.6 23-28	20.11	

Based on Mann Whitney test we did not observe any significant statistical difference between mean rank of total grade point average between two groups

Table2. Comparison of knowledge means rank of score in 3 parts about the most common childhood illness between control and intervention group

	Group	Number Percent	Mean Rank of Score	P value
Diagnosis and Classification	Control	19 100%	12.24	<0.001
	Intervention	18 100%	26.14	
Treatment Choice	Control	19 100%	11.95	<0.001
	Intervention	18 100%	26.14	
Nutritional Recommendation and Growth Monitoring	Control	19 100%	13.16	<0.001
	Intervention	18 100%	25.17	

Based on Mann Whitney test there was significant statistical difference between students mean rank scores in control and intervention groups

Table 3. Comparison of Skill means rank of score in management of the most common childhood illness between control and intervention group

Group	Number Percent	Mean Rank of Score	P value
Control	19 100%	10.63	<0.001
Intervention	18 100%	27.83	

Based on Mann Whitney test mean rank of students skills scores of managing children dangerous signs was significantly higher in intervention group than control group

Students were asked at the end to state their viewpoints about the appropriateness of pediatric course trainings for achieving necessary skills of managing patients outside the hospital. The most important viewpoints in control group were: 1. Inappropriateness of trainings with educational needs (100% of students) and 2. Unnecessary specialized trainings (70% of students). Intervention group were asked the same questions, 16 students (89%) mentioned that specialized training were not necessary, they obviously considered IMCI useful and practical, they also wanted increased training workshops and clinical trainings based on IMCI strategy.

DISCUSSION

As it was recognized in the results, IMCI strategy training has significantly increased pediatric interns knowledge and

expertise scores about the management of the most common children illness. Several studies have shown insufficient clinical skills in general practitioners in Iran, for example Jolaei et al carried out a study on clinical skills of family general practitioners in Fars province in 2009. They concluded that general practitioners skills level for provision of health services have been low and needs various interventions for their promotion of skills (5).

Another study carried out by Mahram et al on general practitioners in health centers of Qazvin province in 2008 and showed that general practitioners lacked enough skills of 16 skills, out of 33 under investigation skills. They have recommended developing consistent training programs of general practitioners skills by creating workshops (6). These results are compatible with our finding as in our study inappropriateness of trainings with educational needs were reported in 100% of control group.

Kebreyaei et al have investigated training services defects from the viewpoints of students of medical, health, midwifery, nursing, paramedical and dentistry colleges in 5 dimensions of accountability, commitment, empathy, concretely, and reliability in Zahedan, they concluded that most defect of training is related to training accountability dimensions (6). In another study that was conducted in hospitals affiliated with Kerman University of Medical Sciences on 303 externship, internship and residency students, it was reported that maximum quality gap of clinical educational services both in view of internship students and residents was in responsiveness dimension (7).

Another study on graduated medical students in Kerman university of medical sciences in 2013 has shown according to, self assessment, confidence for some important capabilities like radiography request and interpreting was undesirable and toward achievement expected competencies; it is necessary to modify educational methods (8).

In a similar study Aghamolaei in university of Hormozgan between 2006-2007 assessed training service quality of medical, midwifery, nursing, health and paramedical colleges students, it was recognized that most defect of training quality was also related to accountability dimension for them(9). Results of these four recent studies corresponded to the results of our study poll. As we found most of students both in control and intervention groups mentioned that specialized training were not necessary and emphasized on more practical education according to real educational needs.

Shirazy et al carried out a study at university of Tehran in 2009-2011 and evaluated needs and training methods of general practitioners from their viewpoints. Training needs based on ten priorities of questionnaire had demonstrated clinical pharmacology, pediatric and internal emergency, skin diseases, poisonings, surgical emergencies, trauma, burn, CPR, medical laws, forensic medicine, myocardial infarction, first aids and child psychiatry, respectively(10). This study also obviously emphasizes pediatric emergency importance.

54.3% of general practitioners stated in the study of Karimi et al in Yazd province in 2011, that there is a great gap between theoretical learning of students and what they are expected to do in family general practitioner plan, they also considered revision of general practitioners training subjects a must (11). This study is compatible with our results.

Efficacy of IMCI education on improvement of clinical skills in health services and also on reduction of under five mortality rate have been showed in different studies; Armstrong Schellenberg et al examined implementation of IMCI on improvement of health services to children under 5 years old in Tanzania. They recommended that this strategy is executable in countries with limited resources easily, it improves provision of health services for children and its result can distinguished very fast by increasing in survival and improvement children health (12). The same researcher during 1992-2002 concluded that executing IMCI causes mortality decrease of children (13%); they also introduced IMCI as an affordable method which has the capacity to be used for health facilities (13).

Furthermore, El Afreen et al in Bangladesh in 2004 compared results of implementing IMCI with a group receiving standard cares in a randomized study, after 2 years of evaluation they concluded that the mean index of proper treatment of children was 54 in IMCI group contrasted to 9

in group receiving standard services (0-100 range). They also showed that executing IMCI improves provision of health services and increases using health facilities(14).

It was recognized in the study of Joao Amaral et al that executing IMCI for children who are 2 months to 5 years old to increase the skill of medical and health services providers for diagnosis, classification and proper treatment of children illnesses more than untrained ones significantly (15). Also M Chopra et al examined the implementation of IMCI on children cares quality in north Africa between 2001 and 2002, they showed that health care workers skills at assessing dangerous signs of ill children, proper classification of illnesses, proper treatment selection and medical counseling has improved significantly compared to pre-intervention (16).

Regardless some differences in details of several above studies in Iran, almost all of them concluded that we should find a solution to fill the gap between ordinary educational methods and real medical needs for general practitioners. Importance of accountability of medical education have emphasized in most of above studies in Iran.

Effectiveness of education and implementation of IMCI in child health improvement have been approved in many studies as mentioned above. IMCI strategy have recommended strongly by World Health Organization, especially in developing countries⁽⁴⁾

Our study result emphasized the revision need of training plans in pediatric course and showed IMCI training can be a good intervention in clinical skill improvement for medical students.

Small sample size in our study was a limitation and study on more students and even in different universities can give us more reliable results.

Integration of IMCI education in pediatric course can be logical method for improvement of training programs quality of this ward. It aims to promote knowledge and awareness of general practitioners related to managing the most common complaints of children. It seems also necessary to carry out more studies to find more effective training strategies either in pediatric wards or other clinical wards for medical students.

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