**ORIGINAL ARTICLE**

# EFFECTIVENESS OF AN INTERNATIONAL CHILD AND ADOLESCENT MENTAL HEALTH (ICAMH) TRAINING ON PEDIATRIC RESIDENTS' KNOWLEDGE, ATTITUDES AND IDENTIFICATION SKILLS OF COMMON CHILD MENTAL HEALTH PROBLEMS

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## ABSTRACT

***Introduction :*** *Child and adolescent mental health problems are important public health concerns. In low-income and middle-income countries (LMIC), where there is very few trained specialists, training of non-specialist health workers gives a wider entry point for early identification of mental health problems and timely intervention.*

***Objective:*** *To assess the effectiveness of International Child and Adolescent Mental Health (iCAMH) training on residents' knowledge about common child psychiatric disorders, their attitude towards the importance of child mental health issues for their profession, and clinical skills in identifying mental health problems.*

***Methods:*** *A before-after study with the intervention of a clinical course on child and adolescent mental health (CAMH) given to final year pediatrics residents at Addis Ababa University. Wilcoxon Signed Rank test was used to detect pre and post training differences.*

***Results:*** *Eleven out of 17 (64.7%) of the final years pediatric residents were trained. Their post-training attitude (median=79.6) and clinical skill score (median=83.3) were significantly higher than their respective pre-training scores (median=74.1), (median=50.0) respectively, p = 003. However, the post-training knowledge score (median=60.0) was not statistically different from the pre-training score (median=55.0), p = 092.*

***Conclusion:*** *We found that there was a significant change in attitude, and clinical skills of pediatric residents in case detection after short in-service training. Short course training on child and adolescent mental health should be included in training pediatric residents in LMIC where there are very few child psychiatrists and other trained health professionals in the field to address CAMH problems.*

***Keywords*****:** *Child and adolescent mental health, Pediatric resident, Intervention, Training, Mental health, Low-income and middle-income countriess.*

## INTRODUCTION

According to UNICEF data, Children and adolescents constitute almost a third of the world's population, which is around 2.2 billion individuals, and almost 90% of them live in low-income and middle-income countries (LMIC), where they form up to 50% of the

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population (1). Globally, 20 % of children and adolescents suffer from a disabling mental illness including suicide, and up to 50 % of adult mental disorders have their origin in childhood. For young people, neuropsychiatric disorders are a leading cause of health-related burden, accounting for 15–30% of the disability-adjusted life-years (DALYs) lost during the first three decades of life (2). Child and adolescent mental health (CAMH) problems are serious but treatable. Even though CAMH problems are one of the leading causes of health-related disability in this age group with long-lasting adverse effects throughout life, the mental health needs of children and adolescents are neglected, especially in LMIC (3, 4).

According to studies from LMICs, the prevalence of CAMH problems can be as high as 20%, comparable with findings from high-income countries (HIC) (5). Studies from diverse rural and urban settings in Ethiopia reported prevalence in the range of 3.5-23.2%. The use of different diagnostic instrumens in the studies could be the reason for the wide range (6, 7, 8, 9).

Common childhood psychiatric problems including behavioral disorders, attention deficit hyperactivity disorder (ADHD), anxiety and depression have been linked to school failure, criminality, drug and alcohol dependence, accidents, self-harm, (sexual) risk-taking behavior and serious dysfunction in adult life, thus placing a burden on children, families and community (10, 11, 12). Unrecognized, however, affected children often experience harsh physical punishment, abuse, stigmatization, exclusion from education, and in some parts of the world, not uncommonly, long-lasting physical restraint through locking or chaining them. In addition, because many adult mental health problems begin in youngsters, reducing the duration of untreated serious mental illness by allocating resources on childhood and adolescence could revolutionize treatment and outcome of these disorders (13).

Most CAMH research in high-income countries (HIC) in the past decades has focused on developing and evaluating interventions, as there was no robust evidence for effective treatments for most child psychiatric problems (14). But, resources and research are scarce in low-income and middle-income countries (LMIC) and the gap between need and actual provision in CAMH service is even higher than in general psychiatry (15).

The major gap in LMIC is shortage of health workers including mental health task force, which includes specialist workers such as psychiatrists, neurologists, psychiatric nurses, psychologists, mental health social workers, and occupational therapists, and another group of non-specialist health workers such as doctors, nurses and lay health workers (16, 17, 18).

In LMIC, where there are very few trained specialist workers, training of non-specialist

health workers gives a wider entry point for early identification of mental health problems and for timely intervention. Consequently, pediatricians are the physicians who encounter all types of health issues of children and adolescents including mental health issues. Unfortunately, due to inadequate training that is included in the residency training programs of pediatricians, CAMH problems are frequently missed.

Although different studies have shown that the desire of primary care physicians for psychiatric education has increased, how to do it best has not been well articulated. In addition to the absence of comprehensive review, there is relatively little consensus regarding methods, and also a few empirical studies exist on the effectiveness of either undergraduate or postgraduate education. Recently, the number of research outputs concerning continuing medical education in psychiatry for primary care health providers has risen (14, 16,19).

CAMH problems seen in the LMICs is also a problem of Ethiopia, a country which has only 90 practicing psychiatrists of whom only one is a specialized child psychiatrist, who serves a total population of over 100 million together with around 500 psychiatric nurses, 10 clinical psychologists, and no psychiatric social workers or occupational therapists.. And there are only two specialized child mental health clinics (both located in Addis Ababa) (20), which all indicate the huge gap in CAMH services, and the need for urgent intervention. In this study, we assessed the effect of the iCAMH training on residents' knowledge, tttitude and clinical skills in identifying the common child and adolescent mental health (CAMH) problems. The findings are expected to inform innovative approaches to fill a critical gap in CAMH services in Ethiopia and other similar settings.

## METHODS

### Setting

The study was conducted in the largest teaching hospital called Tikur Anbessa Specialized Hospital (TASH) found in Addis Ababa, Ethiopia. The hospital is providing undergraduate as well as postgraduate teaching and service. The pediatric residency program was launched in 1964, and at the time of the study it was training over 45 residents: 17 residents in year I, 11 residents in year II and 17 residents year III. The study was conducted in 2015.

### Study design

A before-after study was conducted with the intervention of a clinical course on child and adolescent mental health (CAMH) to compare before and after scores of residents' knowledge, skills and attitudes in identifying child mental health problems.

### Study population

All final year pediatrics residents who attended the training course were included. Residents who attended the training with less than 75% attendance were excluded.

**Interventions**

An experienced consultant child and adolescent psychiatrist gave the training to third year resident from 23/02/2015 to 06/03/2015 for a total of 24 contact hours at the department of pediatrics at Addis Ababa University. For the teaching, different methodologies were used including lecture, role-play (demonstration), clinical exercises (e.g. problem-solving skills), interactive didactive teaching, whole group discussions, videos, group work, and presentations by participants. The sessions were held in the afternoon after residents finished their daily activity.

**Data collection procedures**

Data on attitude testing was collected from an attitude questionnaire filled by residents before and after the training. Data on knowledge of pediatric residents was collected from the test result of residents, with a standard test/exam of child psychiatry given before and after the course. Clinical skills as measured by Objective Structured Clinical Assessments (OSCEs) before and after the course were recorded from the OSCE assessment forms. Data on clinical skills of identifying CAMH problems was assessed from charts seen at OPD level by residents for one month period before and after the training and findings were entered on a standardized and pretested questionnaire.

**Data analysis**

Data collected was checked for completeness, cleaned, coded and entered into a computer, and SPSS 24$^{th}$ version was used for analysis. Descriptive data analysis was performed using measures of central tendency like mean, median, mode, and percentages. We have used the Wilcoxon Signed-Rank Test to compare Pre and Post training scores among 11 pediatrics residents who completed the training, to determine whether there was a statistically significant mean difference between the pre-training scores and post-training scores.

**RESULTS**

Of the total 17 final year pediatric residents 15 of them had participated in the training, but only 13 (76.5%) of them fulfilled the inclusion criteria of attendance > 75%. Four residents couldn't complete the training due to other responsibilities. On the attitude assessment, the mean pre-training and post-training scores were 70.4% (57-83%) and 79.9% (65-93%) respectively. According to Wilcoxon Signed-Ranks Test, residents' post-training attitudes towards CAMH problems was higher (median=79.6) than their pre-training attitude (median=74.1),p= 003. When comparing the pre-and post-training knowledge assessment score, the lowest pre-training knowledge assessment score was 48% and the highest was 61% making the mean 54.2%. After the training, the minimum score was 49 % and the maximum score was 71.5 %, and the mean was 58.9%.

The Wilcoxon Signed-Ranks Test indicated that the residents' post-training (median=60.0) and pre-training (median= 55.0) knowledge of CAMH problems did not differ significantly (p = 092). The detail is presented on Table 1.

On the OSCE test, the mean scores for pre-training and post-training were 49.7% (37-60%), and 82.4% (73-87%) respectively. After the training, the Wilcoxon Signed-Ranks Test showed that the post-training clinical skills scores (median= 83.3) was significantly higher than the pre-training clinical skills scores (median =50.0), p = 003. The detail is presented on Table 1

Table 1. Pre-and post-training scores of pediatric residents on knowledge, attitude and skill test in Addis Ababa, Ethiopia

| **Code of Resident** | **Knowledge Score** | | | **Attitude Score** | | | **OSCE Score** | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Pre** | **Post** | **P-value** | **Pre** | **Post** | **P-value** | **Pre** | **Post** | **P-value** |
| 15 | 47.5 | 57 | **0.092** | 77.8 | 81.5 | **0.003** | 43.3 | 83.3 | **0.003** |
| 01 | 49.5 | 71.5 | | 61.1 | 77.8 | | 53.3 | 86.7 | |
| 10 | 50.5 | 60 | | 74.1 | 79.6 | | 50 | 86.7 | |
| 09 | 53.5 | 49 | | 63 | 79.6 | | 36.7 | 83.3 | |
| 11 | 54 | 51.5 | | 83.3 | 92.6 | | 53.3 | 76.7 | |
| 07 | 55 | 51 | | 59.3 | 64.8 | | 60 | 80 | |
| 12 | 55 | 55 | | 83.3 | 92.6 | | 46.7 | 83.3 | |
| 13 | 55 | 64 | | 75.9 | 77.8 | | 56.7 | 73.3 | |
| 03 | 58 | 61 | | 79.6 | 88.9 | | 50 | 86.7 | |
| 02 | 58 | 67 | | 59.3 | 64.8 | | 46.7 | 83.3 | |
| 05 | 60.5 | 61.5 | | 57.4 | 79.6 | | 50 | 83.3 | |

In addition to the OSCE, the principal investigator reviewed charts of patients seen at OPD level for one month before and after the training for assessing clinical skills of residents on identifying CAMH problems.

During the two-month period pre and post intervention, a total of 979 patients were seen at OPD of TASH, pediatrics department: 416 during the month prior to the training and 563 patients during the month after the training.

Of these, 35 (3.5%) were identified as cases with CAMH problems. Of the 35 cases, 11 (31.4%) were identified during the month prior to the training, and 24 (68.5%) were after the training.

The identified CAMH problems were epilepsy 6 cases (54.5%), Intellectual Disability (ID) 2

cases (18.2%), Autistic Spectrum Disorder (ASD) 2 cases (18.2%) and anxiety disorder 1 case (9.1%). All the 6 epilepsy cases were started on medication; cognitive behavior therapy (CBT) was planned for 3 of the patients and 2 patients were referred to the psychiatry clinic.

During the month after the training, 24 cases of children with CAMH problems were identified. The CAMH problems identified were epilepsy 12 (50%), ID 4 (16.7%), depression 4 (16.7%), Attention Deficit Hyper Activity Disorder (ADHD) 2 (8.3%), ASD 1 (4.2%) and anxiety disorder 1 (4.2%). For these patients, pharmacologic treatment was planned for 14 (58.3%), CBT was planned for 1 patient (4.2%) and 9 patients (37.5%) were referred to the psychiatry clinic at TASH.

**DISCUSSION**

After the iCAMH training, there was a significant improvement of attitude towards CAMH problems. Clinical skills of residents to carry out basic child mental health assessment, to identify, diagnose and provide evidence-based treatment for common child and adolescent mental health problems and referral of complex cases to specialists also showed significant improvement. Integration of the identification of CAMH problems into the daily practice was feasible. Despite this, there was no statistically significant improvement on the knowledge of residents on CAMH by the training.

The lack of impact of the 24 contact-hours training on knowledge of the participant might be well explained by the "know-do" gap which is the gap between what they know and what they do in practice (21- 23). The training's main contribution seems to be increasing their motivation to utilize the already existing knowledge instead of adding more knowledge.The 24 contact-hours duration of the training lies within the range of other similar trainings, which were conducted for few sessions to 6-month period (14).

The case identification of mental health problems at OPD had increased during the one month after the training, which was comparable to multiple quasi-experimental kinds of researches identified by a literature review (19). From chart review, there were increments of case detection by the first-year residents although the training was provided for the 3$^{rd}$year residents, although a seminar on CAMH problems was given to the whole group of pediatrics residents and interns at that time. This interesting observation of increment of case detection of CAMH problems at the OPD by the first year residents could be due to 'knowledge diffusion', which was described by the literature as the spread and uptake or adoption of new ideas, which is critical for institutions to adapt the knowledge over time (24). Apparently, in addition to knowledge transfer, a wide range of employee characteristics and circumstances are associated with knowledge diffusion behavior (25).Therefore, the knowledge from the trained few third-year residents may have diffused to the larger group clinical practitioners,

mainly to the first- year residents in the OPD.

## CONCLUSION

In this study, we observed a significant change in attitude and clinical skills of pediatric residents with increment in CAMH case detection after they attended the iCAMH training for 24 contact hours. A blocked comprehensive training using different teaching modalities, covering most common CAMH problems and incorporating practical sessions at OPD should be included in training pediatrics residents in LMICs where there are very few child psychiatrists and other trained health professionals in the field to address CAMH problems.

**Ethics approval and consent to participate:** The scientific committee of the Department of Pediatrics and Child Health, School of Medicine, Addis Ababa University approved the study. Written informed consent was obtained from all participants. Confidentiality and anonymity of the participants were assured.

**Consent for publication:** Not applicable

**Competing interests:** The authors declare that they have no competing interests.

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**Authors' contributions**

All authors conceived and designed the study. NM and HK involved in the data collection and interpretation of the findings. NM drafted the manuscript. WA and ST were actively involved in the data interpretation and critically reviewed the manuscript. NM, ST and WA read and approve the final manuscript. HK (1963-2017) sadly passed away in 2017 and couldn't review and approve the final manuscript.

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