

Report

Introducing the IMCI community component into the curriculum of the Faculty of Medicine, University of Gezira

S.H. Abdelrahman¹ and S.M. Alfadil²

إدخال المكوّن المجتمعي للتدبير المتكامل لصحة الأطفال ضمن المقرر الدراسي لكلية الطب في جامعة الجزيرة، السودان

سميرة حامد عبد الرحمن، سميرة محمد الفاضل

الخلاصة: شرّعتْ كلية الطب في جامعة الجزيرة في السودان منذ عام 2001 بإدخال استراتيجية التدبير المتكامل لصحة الأطفال في المقرر الدراسي الطبي. وقد كان التركيز حول التدريب السابق لتقديم الخدمة والذي يتصدى لتدبير الحالات المعياري ضمن المكون المجتمعي لاستراتيجية التدبير المتكامل لصحة الأطفال. ويستعرض هذا التقرير الخبرات التي اكتسبتها كلية الطب في جامعة الجزيرة في إدماج هذه الحزمة التدريبية ضمن المقرر الدراسي الطبي، ويقدم أيضاً تعليلاً لإدخال المكوّن المجتمعي للتدبير المتكامل لصحة الأطفال والمبادئ التوجيهية لتنفيذها، كما يصف الدورات الدراسية المجتمعية المرتكز والتي أدخل فيها المكون المجتمعي، وتنفيذها، وأثرها على البرنامج والعراقيل التي صادفتها.

ABSTRACT In 2001 the Faculty of Medicine of the University of Gezira (FMUG) started to introduce the Integrated Management of Childhood Illness (IMCI) strategy into its medical curriculum. The emphasis was on pre-service training that addresses standard case management and the IMCI community component. This report presents the experience of FMUG in integrating such a training package into the medical curriculum. It explains the rationale for introducing the IMCI community component and the guiding principles for doing so. It describes the community-based courses into which the community component was integrated, the implementation and impact of the programme and the constraints faced.

Intégration de la composante communautaire de la PCIME dans le programme d'études de la Faculté de Médecine de l'Université de Gezira

RÉSUMÉ En 2001, la Faculté de Médecine de l'Université de Gezira a inscrit la stratégie PCIME (Prise en charge intégrée des maladies de l'enfant) à son programme d'études de médecine. L'accent était mis sur la formation avant l'emploi, qui porte sur la prise en charge standard des cas ainsi que sur la composante communautaire de la PCIME. Ce rapport montre comment la Faculté de Médecine a intégré ce module de formation dans son programme d'études. Il explique ce qui justifie l'introduction de la composante communautaire de la PCIME et les principes directeurs pour y parvenir. Il décrit ensuite les cours en communauté dans lesquels la composante communautaire a été intégrée, la mise en œuvre et les effets du programme, ainsi que les contraintes rencontrées.

¹Department of Community Medicine, Faculty of Medicine, University of Gezira, Wad Medani, Sudan (Correspondence to S.H. Abdelrahman: samhamid2002@yahoo.co.uk).

²World Health Organization Regional Office for the Eastern Mediterranean, WR Office, Khartoum, Sudan. Received: 18/10/05; accepted: 20/03/06

Introduction

The Integrated Management of Childhood Illness (IMCI) strategy encompasses a range of interventions for the prevention and management of major childhood illnesses in health facilities, in the home and within the community [1]. It also empowers families and communities to acquire skills necessary for the survival of their children and to have an active role in taking care of the health of their children.

IMCI implementation involves 3 components [1].

- Improvement of the case management skills of health workers at primary health care (PHC) facilities.
- Improvement of the health systems to ensure effective management of childhood illnesses both by health workers and families.
- Improvement of family and community practices to support child health and development.

Successful implementation of IMCI in countries requires and facilitates active and sustained collaboration between the health sector and institutes involved in the education of health professionals. Such collaboration exists in countries which are currently working to include IMCI into the curricula of medical, nursing and other health professionals at educational institutes [2]. This is thus expected to increase the number of IMCI-trained health workers working within the health systems in a cost-effective and sustainable manner [2].

The Faculty of Medicine of the University of Gezira (FMUG) is one of 6 Sudanese universities that started in 2001 the process of introducing IMCI into their medical curricula. From the outset, as proposed and later developed by the first author, the plan of the FMUG emphasized the importance of

pre-service training that addresses standard case management together with the IMCI community component.

The aim of this paper is to describe the experience of integrating a training package addressing the IMCI community component into the medical faculty curriculum of FMUG.

Background

FMUG is the second oldest medical school in Sudan. It follows an innovative community-oriented, problem-based, integrated curriculum, the first of its kind in Sudan, and students are trained in families, rural communities, health centres and rural hospitals.

In order to introduce the IMCI community component into the curriculum the following steps were undertaken.

- Identifying a rationale for the process.
- Establishing principles to ensure that the process would contribute to the achievement of both FMUG philosophy of community orientation and IMCI objectives.
- Defining specific learning objectives and content areas that cover what students should learn regarding the role of IMCI in improving health systems' performance and improving family and community practices affecting child health.
- Identifying suitable educational methods to assist students in achieving the defined learning objectives.
- Identifying courses and modules that could accommodate the content of the IMCI community component.
- Determining methods and tools necessary for students and programme assessment.

- Identifying the necessary resources (both human and material).
- Assessing the outcomes and short-term impact of students' activities (such as the improvement in family and community practices).

Rationale for introducing the community component into the curriculum

According to Fulop, the quality and quantity of health personnel has to be planned in response to the specific needs of national health systems and through this to the health needs and demands of the population [3].

FMUG is one of the founders of community-oriented medical education in Sudan and the Eastern Mediterranean Region. It uses educational strategies such as community-based education, integration of basic, clinical, social and behavioural sciences and problem-based learning. So, introducing IMCI into the curriculum reflects its philosophy, assists in fulfilling its objectives and ensures efficient use of its educational strategies and existing resources.

Educational institutions for health professionals do not only train health care workers to work in health facilities. In fact, part of their role is to equip students with managerial skills, including health financing skills, which are necessary for future policy-makers and health planners who are capable and ready to work at different levels of the health system [4].

Medical students need to understand IMCI and that all 3 components of IMCI are integrated and inter-related and the effective implementation of each component supports the achievement of the set objectives of the other 2 components. Learning how to plan interventions related to the 3

main components of the IMCI strategy is of vital importance [5].

The focus of IMCI standard case management should be outpatient clinics and health facilities providing primary health care.

Success in reducing childhood mortality and morbidity and improving child health requires more than the availability of adequate health services staffed with IMCI-trained health workers. As families have a major responsibility to care for their children, such success requires a partnership between health service providers, families and community organizations that influence family practices related to child health [6].

Guiding principles for the planning and implementation of the proposed curriculum

Based on the stated rationale to introduce the IMCI community component into pre-service training, the following principles were followed for structuring the training package.

- The proposed curriculum should be based on publications and reference material produced by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) that cover issues related to different IMCI components including pre-service training.
- In order to achieve the goals and objectives of both the IMCI programme and FMUG, students must understand the inter-relation and integration of the 3 IMCI components. So, in addition to giving training in the IMCI standard case management skills, the learning objectives should include basic concepts and skills related to the role of IMCI in

improving health systems' performance, promoting child health services and improving family and community practices that affect child health and survival.

- The teaching of IMCI standard case management should not be limited to inpatient sessions conducted in Wad Medani Paediatrics Hospital. As part of the faculty programme, students must be trained in health centres and rural hospitals all over Gezira state that implement IMCI.
- Students should understand and appreciate the responsibility of families to care for their children both in health and during illness. Family attachment and field training in villages should be used to reinforce concepts of "partnership" and "unity for health" to students, as these community-based education activities provide a suitable environment for students to practise and consolidate communication and counselling skills. It also helps them to acquire other necessary competencies that enable them to initiate and support partnerships with families and communities in their future career.
- IMCI-related content should use educational activities (such as field activities) and resources to the maximum to assist students to understand that linking IMCI to strategies that improve the health system's performance ensures effective and sustainable implementation of all IMCI components.

Based on these principles and on relevant WHO and UNICEF reference material, a training package was developed by the first author. The objectives and content areas of all community-based courses were revised to identify areas into which the content of the IMCI community component could be integrated. The following learning objec-

tives were proposed to ensure coverage of the necessary content areas.

Students should be able to:

1. Discuss the epidemiology of the major causes of mortality and morbidity of under-5s in Sudan (diarrhoeal diseases, pneumonia, malaria, measles and malnutrition).
2. Discuss the rationale, objectives, benefits and components of IMCI strategy.
3. Describe IMCI programme in Sudan: objectives, strategies, activities, problems of implementation and strategies to improve performance.
4. Explain the role of IMCI in ensuring the effectiveness, efficiency, equity, quality of care and sustainability of essential child health services.
5. Correctly perform the IMCI standard case management skills in outpatient settings.
6. Conduct needs assessment at primary health care facilities to identify IMCI service delivery problems in order to assist programme managers ensure the availability of essential supplies, equipment and training needs.
7. Plan interventions at first-level health facilities (based on needs assessment) to improve IMCI service delivery. The proposed plans should include: setting of objectives, strategies, plan of action (including health education to community members, training of health workers, monitoring, supervision, evaluation) and budgeting.
8. Identify, propose and (when feasible) implement interventions needed at different levels to support the improvement of family and community practices related to child health and development. Such interventions may include:

- a. The provision of referral facilities that make it easier for families in rural areas to take their severely ill children to the referral facilities;
 - b. Improvements at first-level health facilities, e.g. provision of IMCI guidelines, equipment and supplies necessary to perform the standard case management;
 - c. Health education and counselling to mothers of children under 5 years, and other family and community members.
9. List and explain nationally adapted key family and community practices of IMCI to protect and promote child health.
 10. Identify, plan and (when feasible) implement necessary actions within the family and community to support the improvement of key family and community practices.
 11. Communicate to families and communities the necessary practices to protect and promote their children's health.
 12. Use locally adapted counselling aids (e.g. mother cards) to counsel family and community members

Community-based courses into which the proposed content of the IMCI community component was integrated (Table 1)

Introduction to medicine

The first module in the whole programme of FMUG emphasizes to students the multi-disciplinary and multisectoral nature of health. Students conduct field visits to a variety of health-related governmental and nongovernmental institutions with the objective of collecting data on their role(s) in community health. Students are required to present that information in a seminar and poster session. Among student groups that work in the Ministry of Health, one group is assigned to work in the IMCI programme. Such early exposure to IMCI is meant to orient students about the importance of comprehensive approaches to promote child health (objective 2)

Integrated programme of field training, research and rural development

The objective of this course is to provide practical field training to students in rural communities. Each group of 15–18 students

Table 1 Modules in which community-based education is emphasised and into which the IMCI community component was integrated

Module	Semester(s)	No. of weeks	Credit hours
Introduction to medicine	1	2	2
Integrated programme of field training, research and rural development	2, 4, 6	4, 5, 4	5, 4, 4
Doctor and society	3	3	3
Primary health care centre practice and family medicine	4, 5, 6, 7	Continuous	3, 3, 3, 3
Primary health care clerkship	7, 8, 9, 10	4	5
Rural residency	7	4	8

is posted in a village (population of a few hundred to a few thousand) where they conduct their field activities supervised by faculty staff. The course consists of the following 3 phases.

1. Community diagnosis, through field surveys in which students use different data collection tools to identify priority health and related problems and associated factors. These include a pre-tested questionnaire that addresses the knowledge, attitudes and key practices of families regarding different dimensions of child health, according to the guidelines set by the Federal Ministry of Health.
2. Implementation of interventions addressing identified problems and their determinants.
3. Evaluation of the outcomes and impacts of interventions.

During all phases of the course, students conduct health education sessions targeting mothers and other carers of children under 5 years regarding key family and community practices affecting child health (objectives 7, 8, 9, 10, 11, 12).

Doctor and society

This module focuses on the teaching of: socioeconomic and demographic determinants of health and illness, communication methods and skills, health care services and providers, patient–doctor relationship, professional ethics and medicolegal aspects of the medical practice. Training on IMCI counselling skills (including role play) was introduced to the module content. IMCI literature was used to enrich the teaching of evidence-based determinants of child health (objective 12).

Primary health care centre practice and family medicine

A longitudinal programme is offered in 4 phases (semester 4, 5, 6 and 7), each with 3 credit hours. It consists of:

- A theoretical component in the form of lectures, group discussions and discussion of family problems. It covers: primary health care, general epidemiology, epidemiology of major diseases in Sudan, primary health care programmes and community-based initiatives involved in child health development (objectives 1, 2, 3, 8, 9, 10, 11).
- Primary health care centre training. Each group of 12–15 students are trained in 1 of 15 health centres in Wad Medani town where they perform all primary health care activities routinely delivered at the health centre, including growth monitoring, vaccination of children and IMCI standard case management (objectives 3, 10).
- Family attachment. Each student is assigned a family in the catchment area served by the health centre in which he/she receives primary health care training. A total of 500–600 families are covered by this programme annually. The student conducts scheduled visits to the family (4 times/semester) where he/she conducts assessment of health and related needs of the family and provides health education and counselling according to the family needs. In case a family has 1 or more child under 5 years, the student should provide necessary support to assist the family adopt correct practices. Students use the IMCI mother card as an educational tool for family members (objectives 9, 10, 11).

Primary health care clerkship

This is offered as a block (5 credit hours) in semester 7. It comprises:

- A theoretical component (lectures/discussion) covering different aspects of the health system, principles and functions of health service management and

different health programmes in Sudan (objectives 2, 4, 5, 12).

- **Field training.** Each group of 12–15 students conducts needs assessment of a certain health issue/problem using different methods of data collection, such as observation (using a checklist), review of the records, interview with health workers, focus group discussion with attendants in the health centre, and knowledge, attitude and practice surveys of families in the catchment area of the centre. One group of students assesses IMCI service delivery in one centre to identify factors related to IMCI service problems and the determinants of the existing practices of families in the catchment area (objectives 6, 7, 8).
- **Exercises.** Students construct a comprehensive plan to solve the identified problems. The plan should include objectives, strategies, timetable of activities, training programme, health education programme for families, supervision, monitoring, budgeting and evaluation.
- **Seminars.** Students present their work to the rest of the class and staff in a seminar and they write a comprehensive report of their work.

Rural residency

Students are distributed in groups of 5–10 to receive training in 25–30 rural hospital in Gezira state. The course objective is to expose students to real life situations of working in rural areas. Students are supposed to observe, assist and participate in all activities of the doctor(s) in charge and other medical staff, including supervision of primary health care units in the health district. Students should receive training in the IMCI standard case management (objective 4). Students are also required to conduct a small scale research project on a priority

problem in the local communities. Many students study the issues of service delivery and the knowledge, attitudes and practices of community members regarding child health and development including care during illness (objectives 5, 6, 7, 8, 10, 12).

Implementation of the curriculum

Implementation of the described curriculum started on June 2001. All student batches (Table 2), to whom the above-mentioned courses were offered, received the new content areas and implemented the newly introduced activities. Implementation of the training package developed was facilitated by a committee that coordinated the role of the Gezira State Ministry of Health in the implementation of community-based courses of the FMUG. The Committee is headed by the dean of the faculty and includes in its membership staff from the Department of Community Medicine of FMUG, managers of IMCI and other primary health care programmes, and directors of the preventive medicine and pharmacy directorates of the Gezira State Ministry of Health. The role of Gezira State Ministry of Health included the provision of information, education and communication (IEC) material (e.g. mother cards), IMCI wall charts and chart booklet. Also, student training in primary health care facilities and rural hospitals is exclusively provided by staff of the Gezira State Ministry of Health.

Impact of student interventions on family practices

A study conducted in Wad Medani town (2001–2002) compared the performance of certain IMCI key family practices between

Table 2 Numbers of students for whom the IMCI community component was integrated in pre-service training and the number of community settings in which they were trained

Name of module	Number of student batches (students/batch = 250–270)	Total number of families/villages/health centres in which students were trained
Introduction to medicine	6	NA
Interdisciplinary field training research and rural development programme	4	63 villages
Doctor and society	3	NA
Primary health care centre practice and family medicine	6	1200–1320 families
Rural residency	3	24–28 rural hospitals
Primary health care clerkship	6	15–18 health centres

NA = not applicable.

families visited by students from FMUG (cases) as part of their training in primary health care centre practice and family medicine and families that were not visited by students (controls); 240 students were involved in the study [7]. Each student usually collects baseline sociodemographic data to identify the health and related problems and analyses associated factors with family members with the objective of identifying and planning necessary actions. During the regular planned family visits, the student should provide follow-up, reinforcement and support to family members to enable them to acquire recommended behaviours. Results of the study are presented in Table 3 and clearly indicate the significant improvement in family practices in families visited by students compared with those families who were not visited.

Discussion

Since all 3 components of IMCI are inter-related and integrated, this concept should

be understood and accepted by medical students who are future policy-makers and planners of health development. This approach is expected to produce graduates who are committed to the implementation of all IMCI components together in support of each other. It is also expected to influence the attitudes and performance of future health professionals at different levels of the health system in support of the improvement of child health care services and the protection and promotion of child health and development.

The innovative curriculum of FMUG provided a suitable environment to implement the IMCI community component in pre-service training because of the following factors.

- Specific learning objectives of the whole FMUG programme (including community-based education) are well written and documented. The objectives are flexible and thus can accommodate new health concepts and initiatives, such as IMCI.

Table 3 Practices of families visited by students compared with those of families not visited by students

Indicator	Families visited by students (cases) (%)	Families not visited by students (controls) (%)	P-value
Families in which children under 5 years and pregnant women sleep under an insecticide-treated bed net	58.0	26.3	0.002
Mothers practising exclusive breastfeeding	54.2	35.7	0.0129
Families following correct nutritional practices for their children under 5 years	69.1	40.2	< 0.0001
Children under 5 years who completed their immunization (according to age)	87.0	68.3	0.0027
Children under 5 years who received timely vitamin A supplementation	69.1	27.6	< 0.0001

- Community-based courses already included educational activities in families, communities and primary health care facilities in both urban and rural areas.
 - Existing community-based education activities were well planned, organized and supervised by faculty staff and field supervisors.
 - The early exposure of students to the community (see Table 1) facilitated their acquisition of communication, leadership, teamwork and competencies in community mobilization. Before going into the family attachment, students are trained in communication skills in semester 3 in the module *Doctor and society*. Training in counselling has been added recently to this module, including role plays from the IMCI module *Counsel the mother*.
 - Training in standard case management skills in the health centres (semesters 6 and 7) in the module *Primary health care centre practice and family medicine* precedes the consolidation of this process in the paediatric clerkship (semesters 8,9 and 10).
- The curriculum implemented has the following characteristics.
- It reflects the flavour and essence of IMCI: the integration of case management, improvement of the health systems and primary health care facilities, and improvement of family and community practices.
 - Specific learning objectives cover the 3 main cognitive, affective and psychomotor domains of learning objectives.
 - Maximum use was ensured of different educational activities such as health centre training, family attachment, residence in villages and rural hospitals, problem-based learning and lectures.
 - The long duration of contact between students and families (a minimum of 16 family visits, 2 hours each and 3 residencies in rural communities, 7, 5 and 4 days each) greatly facilitated the students' learning and impact on families and communities.
 - Incorporation of the new package did not result in an extra academic load on the students, nor did it create additional

educational activities in the already congested faculty programme.

- The teaching of currently existing objectives (e.g. objective 1), regarding the epidemiology of the major causes of mortality and morbidity in under-5s in Sudan, which already existed in the curriculum, was strengthened by giving the students examples of evidence from IMCI literature.
- Assessment of the students on the content related to the IMCI community component made use of the same methods and tools that are routinely used in all the courses.

The National and Gezira State IMCI programmes provided support in the form of: mother cards and case management wall charts in all health centres where students receive training. Another aspect of partnership between FMUG and the health authorities is that students are trained and supervised in the health centres by Ministry of Health staff. As part of their health centre training, students perform vaccination, vitamin A supplementation and growth monitoring of under-5s which are all core activities in IMCI standard case management.

Constraints

Although no extra human resources were needed through all stages of the implementation of this programme, the training in the IMCI case management skills in the health centres and rural hospitals was handicapped by the fact that some doctors and medical assistants working in those facilities did not routinely implement the IMCI algorithm even if they were trained in IMCI standard case management. This greatly affected students' achievement in that important issue in spite of the fact that students work in smaller groups in the health centres (3–4)

and rural hospitals (5–12), and therefore have better opportunities to practise the clinical skills of the standard case management. Such training, if well implemented, could provide a strong foundation of clinical competence for the students, which would be reinforced later during the paediatric clerkship where students are trained in bigger groups (15–20).

Rapid turnover of trained staff is another major impediment to both service delivery and pre-service training. Furthermore, for those still in service the increased demand on their time related to training students on the IMCI approach is a constraint, especially in maintaining quality.

Training materials were always available on time because of the assistance of the federal and Gezira state ministries of health, but FMUG faced a considerable financial burden for the repeated photocopying of mother cards and other IEC material which students used to give to families and community members during their family attachment and village posts. FMUG have used IMCI-trained part-time staff from the Ministry of Health which added more costs. These financial outlays may have an impact on the sustainability of the programme.

A final constraint was the number of students. Due to the large numbers in the different batches, it was difficult to provide enough opportunities for the students for practical training in counselling skills.

Conclusion

Students within the community-based education programme made an effective contribution to the target of improving IMCI family and community practices. Moreover, this programme provided the students with both theoretical and practical field training in different aspects of the management of

IMCI services, which is necessary for future policy-makers and programme managers. Ensuring the availability of learning mate-

rials and overcoming a shortage of IMCI-trained instructors and tutors are the main challenges to sustaining this programme.

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