

# Integrated Management of Childhood Illness in Oman: 16 Years of Pre-service Initiatives for Education and Training

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## ARTICLE INFO

### Article history:

Received: 27 May 2023

Accepted: 22 August 2023

### Online:

DOI: 10.5001/omj.2023.127

### Keywords:

Child; Education; Training; Nursing; Oman.

## ABSTRACT

Each year, approximately 10 million children worldwide die before reaching the age of five, yet two-thirds of these deaths could be prevented with effective, low-cost interventions. The Integrated Management of Childhood Illness (IMCI) strategy was adopted in 1996 by the World Health Organization and the United Nations Children's Fund to address the holistic well-being of children. The ultimate goals of IMCI are to develop a healthcare system that adheres to best practices and to improve the knowledge, attitudes, and skills of healthcare professionals. This paper describes the IMCI in pre-service education and training and the steps involved in integrating it into the nursing course on child health at Oman College of Health Sciences. The program aims to reduce the morbidity and mortality rate of children under five years of age, as well as the severity of their diseases. The Oman College of Health Sciences was the first healthcare academic institution in Oman to implement IMCI in nursing education to strengthen the nursing students' knowledge, skills, and clinical practice.

Since 1990, there has been significant progress in reducing global child mortality. Under-five deaths have decreased by 59% from 12.8 million (93 deaths per 1000 live births) in 1990 to five million (38 deaths per 1000 live births) in 2021. Most of these deaths are attributed to acute respiratory infections, acute diarrheal disease, measles, malaria, malnutrition, and preterm delivery.<sup>1,2</sup>

The Management of Childhood Illness (IMCI) was introduced by the World Health Organization and the United Nations Children's Fund as the main strategy to improve and enhance the health of children under five years of age.<sup>3,4</sup>

The IMCI strategy strives to build the capacity of healthcare professionals, the system, and the family and community practices. The goal is to promote healthy growth and development of children, improving the prevention and treatment of common childhood illnesses, especially during the neonatal period.<sup>3</sup> The IMCI strategy also aimed to reduce child mortality by two-thirds by 2015 as part of the Millennium Development Goal 4. In 2015, with the expiration of the Millennium Development Goals, a new set of Sustainable Development Goals (SDGs)

was adopted, the target year being 2030. The new SDG includes the expanded goal 3, focused on 'good health and well-being', which includes several targets related to reducing child mortality, improving maternal health, and controlling communicable diseases. Under this goal, target 3.2 aims to end preventable deaths of newborns and children under five by the year 2030.<sup>5</sup>

### IMCI strategy in Oman

IMCI strategy was officially launched by the Ministry of Health as part of Oman's Sixth Health Development Plan (2001–2005).<sup>6–8</sup> The strategy focused on caring for young children under five years of age, reducing preventable mortality, minimizing illness and disability, and promoting their healthy growth and development. Over the years, the IMCI strategy has helped minimize missed opportunities for early detection and treatment of diseases that might have escaped detection by parents and healthcare providers.

As an inherent aspect of childcare, IMCI also educates the health providers and the parents on the prevention of disease and promoting health in children. Currently, the healthcare sector, the community, and the family are all involved in IMCI

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implementation. This is being accomplished in three ways: (1) improving the skills and performance of healthcare workers in preventing and treating childhood illnesses; (2) improving the organization and operation of health services to provide high-quality care; and (3) improving the quality of childcare in the family and community. The strategy includes ways to monitor treatment progress to determine if preventive measures are needed, and how to inform and educate parents about pediatric disease prevention through various means including timely immunization, as well as improving the health of children.<sup>3</sup>

Based on the local epidemiological patterns, IMCI provides knowledge and skills to analyze and integrate the child's health status sequentially and, therefore, detect the potential diseases or problems that may affect the child. Based on this assessment, IMCI provides detailed instructions on the disease classification, difficulties encountered, and treatment recommendations for each child.

### ***IMCI impact in Oman***

Over the years, Oman reached the key goals of IMCI. First, the implementation of the IMCI strategy has contributed to reducing the under-five mortality rate in Oman from 11% in 2007 to 10.1% in 2021. Second, the initiative has helped cover 96.7% of children under the Essential Program on Immunization.<sup>9,10</sup> Third, the rates of acute respiratory infections per 1000 children under five years were more than halved from 262 in 2007 to 116 in 2021, much lower than the global prevalence.<sup>11</sup> Third, Oman provides free universal healthcare to all Omani nationals, and has attained the SDG 3 benchmarks for maternal, neonatal, and child health.<sup>12</sup>

Our review concurs with research conducted in other countries such as Uganda,<sup>13</sup> Tanzania,<sup>14</sup> and South Africa.<sup>15</sup>

### ***IMCI integration within child health nursing curriculum<sup>16</sup>***

In 2007, the Oman College of Health Sciences (OCHS) was established in the government sector with eight branches in different parts of Oman, each having nursing programs in addition to other health sciences programs. The very next year, the child health working group of the Muscat nursing program decided to add IMCI to the undergraduate nursing syllabus to improve the nursing students'

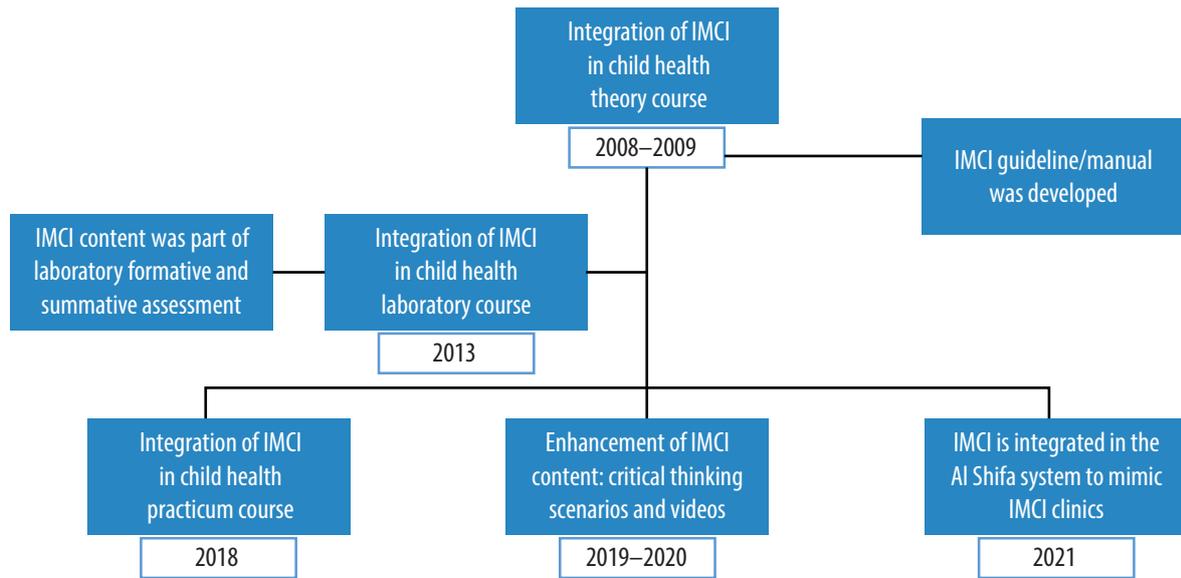
awareness and clinical skills in assessing childhood cases encountered in primary healthcare settings. In 2009, the IMCI program was integrated into the child health nursing curriculum and was introduced in Oman's higher health education institution for third-year nursing students. At the time the IMCI guideline/manual was being developed, members of the IMCI committee at the institute evaluated the manual for local needs. Thus, the OCHS Child Health Department has been the pioneer in integrating IMCI into pre-service education in Oman.<sup>17</sup>

Initially, the program was only taught in theory. In 2013, the Child Health Task Force decided to include it in the laboratory practice sessions to enrich the students' clinical practice. IMCI is now part of the formative and summative evaluation of the students' theoretical and practical knowledge. Our learning and teaching methodology seeks to sharpen the nursing students' abilities to analyze, think critically, and apply the IMCI algorithm (using the IMCI checklist) to assess, classify, and identify the appropriate treatments for children under five years of age.

OCHS nursing students also receive IMCI videos that demonstrate how to manage different pediatric cases such as diarrhea, pneumonia, malnutrition, and anemia. They also learn how to assess and manage children with different signs and symptoms including danger signs, coughing, difficulty breathing, and fever. They learn to use the IMCI guideline/manual to practice and apply the program's algorithm for assessing and managing these illnesses. The IMCI is included in the continuous graded lab assessment. In 2018, the IMCI program was integrated into the child health practicum and students were assigned to primary health centers to practice IMCI on children under five years of age.

During clinical practice, students are assigned to primary healthcare clinics to apply the knowledge and skills gained about IMCI in clinical practice. Nursing students must select a child under the age of five and complete forms A and B. Students follow the child from triage to the physician's room to their destination. During triage, students must check the vital signs of the child and assess for danger signs such as inability to drink or breastfeed, persistent vomiting, lethargy, and seizures.

Other routine assessments were also performed including measuring head circumference, examining



**Figure 1:** Milestones of Integrated Management of Childhood Illness (IMCI) in child health nursing courses at Oman College of Health Sciences.

the eyes, heart rate, and hip circumference, in addition to feeding and psychosocial aspects. The child is also checked for malnutrition, anemia, and immunization history. Furthermore, the students assess the child's growth and development, and finally, a report is created by each student and submitted for grading to the clinical faculty. A faculty member is assigned to the health centers to assist students with IMCI skills for 15 weeks, two days per week. Students are rotated to gain full clinical exposure and achieve the IMCI goal.

By 2021, the IMCI program was integrated into the 'Al Shifa System,' Ministry of Health's health portal for recording and documenting patient data. Computers simulate the reality of IMCI application in primary healthcare settings.

The lab is organized into three different stations: (1) the triage, where students assess danger signs and document the results, (2) the physicians' room, where students are required to observe the comprehensive assessment performed by physicians to identify health problems and plan the management of the child, and (3) the treatment room, where the individualized management plan is implemented.

In general, the students are exposed to different IMCI case scenarios that illustrate common danger signs that children may present in the primary care setting. Students are asked to analyze

the critical thinking scenarios and list the danger signs, management plan, consultation, and health education points. Students are guided to report and document the analyzed data in the Al Shifa System under the IMCI icon. To our knowledge, our experience has been unique and no similar example has been found in the academic setting to serve as a reference for our practice. The history of implementation of IMCI in our institution is graphically presented in Figure 1.

#### *Future directions*

The College plans to introduce and integrate the IMCI program into the community nursing practicum course and reach out to the Omani communities where students can practice more assessments and make appropriate referrals for the identified cases. This will give nursing students more opportunity to teach caregivers about danger signs and how to intervene, thereby reducing the consequences and complications their children may experience due to late assessments and interventions.

In addition, we are looking to become a hub for collaboration with the World Health Organization office. We plan to disseminate IMCI practices in countries that need it and to collaborate with the neighboring countries to develop policies and train nurses in IMCI.

## CONCLUSION

This review has described the evolution of IMCI implementation in Oman since its inception. IMCI is one of the most effective programs in Oman impacting the children's health and the community. It helped reduce the infant mortality rate in Oman and the prevalence of vaccine-preventable diseases. IMCI has taught us that pre-service training reaches the largest number of healthcare workers and should be the primary focus of training.

### Disclosure

The authors declare no conflicts of interest. No funding was received for this study.

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