

## PEDIATRIC THEME

# Nurses: the “front gate” to provide effective pediatric preventive care

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## Abstract

The objective of this paper is to analyze the importance of nurses as key providers of preventive services for Mexican children and adolescents. Nurses represent a long-standing tradition as public health providers and are very close to the individual, the family and the community. Their contribution to the preventive care of patients of these age groups is explicit and tangible.

Health needs for this segment of the population and the current conditions of the Mexican health care system call for further actions. Preventive care should be accessible, high quality and comprehensive. To accomplish these goals it is necessary to invest in the public health workforce. Also, the need to increase its efficiency and effectiveness of preventive services should prompt the Mexican health care system to support the skill mix and promote the presence of nurse practitioners in primary care facilities.

**Key words:** nurses, key providers, pediatric preventive care.

## Introduction

The demographic characteristics and current health status of Mexican children are the main drivers for the provision of preventive services. Children and adolescents represent ~30% of the total population of Mexico. They account for 30 million persons.<sup>1</sup> Regarding their health status, the most urgent need is the pervasive health disparities that exist among them.<sup>2</sup> The prevalence of neonatal mortality, neural tube defects, infectious diseases and nutritional deficiencies such as anemia, vitamin A deficiency and malnutrition are still high. In addition, chronic conditions such as obesity are on the rise.

Adolescents have a number of unmet health needs in different areas, among which we mention violence, reproductive health and nutritional problems such as anorexia, overweight and obesity. The high proportion of unplanned pregnancies among adolescents is an appropriate indicator of this situation. Preventive services are essential to tackle the above-mentioned problems. To be effective, services should be easily accessible, high quality and comprehensive.

Preventive care aims to avoid or delay the occurrence of diseases, to timely detect a disease, to avoid or delay complications when the condition is already present, to avoid premature deaths and to improve efficiency.<sup>3</sup> Prevention is a cornerstone of primary health care. When it is provided comprehensively, it increases the access and uptake of preventive services, which in turn results in better health and improved quality of care.

Nurses are the point of entry for pediatric preventive services. Their knowledge and skills

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enable them to provide effective public health services to individuals, families and the community. In Mexico, nurses are part of the public health workforce. They have a long tradition, particularly in primary care settings, and their duties are increasingly extended. Nurses provide preventive services that comprise health promotion, disease prevention and screening of prevalent diseases. In addition, they provide curative care under specific circumstances<sup>4</sup> such as health care services for academic settings or in clinical field trials.<sup>5,6</sup> This progress will contribute to Mexican nurses achieving standards similar to nurse practitioners in developed countries.

The objective of this paper is to analyze in-depth the growing importance of nurses as key providers of preventive services. It supports the notion that Mexico's health care sector should enter into the trend of skill mix<sup>7</sup> that is happening in developed countries to improve the efficiency and performance of health care systems.

## Pediatric preventive care in Mexico

Preventive services in Mexico for children and adolescents are evolving rapidly and becoming complex. These services are focused on several areas such as health promotion, nutrition, prevention and control of vaccine-preventable diseases, prevention and control of prevalent diseases and reproductive health. Tables 1 and 2 show the main areas, components and interventions of preventive services for these age groups. These services have been designed in congruence with the current epidemiological scenario and recognizing that children and adolescent health needs are continuously changing.

The Mexican Institute of Social Security (IMSS) recently reorganized the provision of preventive services for its 48 million members. The last nationwide survey<sup>8</sup> showed that coverage of specific interventions for children reaches >58% of its target population: iron supplementation for infants 65.5%; prevention of childhood caries 58.1%;

screening for congenital metabolic disorders (phenylketonuria, congenital adrenal hyperplasia, biotinidase deficiency) 81.6%. The coverage of preventive services for adolescents has similar figures-vaccines: measles-rubella 71.4%; tetanus toxoid-diphtheria 80%; hepatitis 46.2%; use of condoms 59.9%; and visual acuity testing 61.2%. Only nurses provide preventive services to IMSS members, demonstrating that they have made a significant and explicit contribution to attain these coverage figures.

## The role of nurses to provide preventive care

To understand better the role of nurses to provide preventive services we used the perspective of The Alberta Association of Registered Nurses. This perspective is a useful framework based on the Alma Ata Declaration and is endorsed by the International Council of Nurses.<sup>9</sup> The framework comprises five elements that are grounded in the definition of primary care.

1. Access to health services
2. Use of appropriate technology
3. Individual and community participation
4. Increased health promotion and disease prevention
5. Intersectoral cooperation and collaboration

### 1. Access to health services

Access is "the ability of a person to receive health care services, which is a function of a) availability of personnel and supplies and b) ability to pay for those services."<sup>10</sup>

- a) The availability of personnel means to maintain a health workforce capable of meeting the health needs of the population for safe, high-quality medical services.<sup>11</sup> In this sense, Mexico's health care system should work to

increase the number of nurses in the workforce to be able to significantly increase access. According to the Organization for the Economic Development (OECD), Mexico has 2.4 nurses/1 000 inhabitants (Table 3). This figure is well below the OECD average (9.2 nurses/1 000 inhabitants).<sup>12</sup> This situation is a serious call to policymakers because the availability of personnel to satisfy the demand of

health care is critical to accomplish the goal of universal coverage of preventive care services. It is relevant to clarify that this average does not differentiate nurses who work in hospitals from those who work in primary care facilities.

b) Ability to pay for services: this is almost negligible in the case of preventive services. The policy of Mexico’s health care systems is to provide free preventive services to the total

**Table 1. Preventive services for children 0-10 years**

Prevention areas	Interventions	Components	
Health promotion	Enrollment in the preventive health program Maternal education about preventive actions	<ul style="list-style-type: none"> <li>• Newborn home care</li> <li>• Breast feeding</li> <li>• Growth and feeding practices</li> <li>• Development and early stimulation</li> <li>• Alarm signs</li> <li>• Personnel</li> <li>• Oral health</li> </ul>	<ul style="list-style-type: none"> <li>• Prevention of addictions</li> <li>• Prevention of family violence</li> <li>• Accident prevention</li> <li>• Physical activity</li> <li>• Health-friendly environment</li> <li>• Responsible pet owners</li> <li>• Self-care groups</li> </ul>
Nutrition	Nutritional advice  Growth surveillance and nutritional status Vitamin A administration Iron supplementation  Intestinal parasites  Inclusion of the mother to a self-care group	<ul style="list-style-type: none"> <li>• Exclusive breast feeding</li> <li>• Malnutrition, overweight and obesity</li> <li>• 0-4 years (every 6 months)</li> <li>• 5-9 years (every year)</li> </ul> <p>At delivery and during the National Weeks of Health</p> <ul style="list-style-type: none"> <li>• Prematurity or low birth weight</li> <li>• Normal birth weight (starting at age 4)</li> <li>• Children 2-9 years in risk areas (twice a year during the National Weeks of Health)</li> </ul> <p>1. Malnutrition 2. Overweight and obesity</p>	
Prevention and control of diseases	Vaccines          Preventive care	<ul style="list-style-type: none"> <li>• BCG</li> <li>• Diphtheria + tetanus + pertussis, + inactivated polio (IPV)</li> <li>• + Haemophilus influenza type B(Hib)</li> <li>• Diphtheria, pertussis, tetanus</li> <li>• Measles, mumps and rubella</li> <li>• Preventive care for the newborn (ophthalmic prophylaxis and vitamin K administration)</li> <li>• Chemoprophylaxis for lung tuberculosis*</li> <li>• Dental care</li> </ul>	<ul style="list-style-type: none"> <li>• SABIN SR</li> <li>• Hepatitis B</li> <li>• Rotavirus</li> <li>• Pneumococcal conjugate</li> <li>• Influenza</li> </ul>
Screening of diseases		<ul style="list-style-type: none"> <li>• Congenital hypothyroidism</li> <li>• Adrenal hyperplasia</li> <li>• Phenylketonuria (between days 3 and 5 of life)</li> <li>• Congenital dislocation of the hip</li> <li>• Screening of visual acuity, hearing defects and postural screening</li> </ul>	

\*Indicated if the child has daily contact with patients suffering from active lung TB.  
Source: Ministry of Health, National Card of Health.

**Table 2. Preventive services for adolescents 10-19 years**

Prevention areas	Interventions	Components
Health promotion	Enrollment in the preventive care program Health education	<ul style="list-style-type: none"> <li>• Personal hygiene</li> <li>• Appropriate dietary habits</li> <li>• Physical activity</li> <li>• Oral health</li> <li>• Mental health</li> <li>• Prevention of drug addiction</li> <li>• Prevention of domestic violence</li> <li>• Prevention of accidents</li> <li>• Health-friendly environment</li> <li>• Responsible pet owners</li> <li>• Enrollment in self-care groups</li> </ul>
Nutrition	Nutritional status and dietary advice Intestinal parasites Folic acid supplementation Iron supplementation	Screening and care of overweight and obesity  Children 10-14 years in risk areas (twice a year during the National Weeks of Health) <ul style="list-style-type: none"> <li>• Preconceptional period (3-month period)</li> <li>• First trimester of each pregnancy</li> <li>• Since the diagnosis of pregnancy</li> <li>• Anemia</li> </ul>
Prevention and control of vaccine-preventable diseases	Vaccines	Hepatitis B, tetanus diphtheria, measles-rubella
Prevention and control of prevalent diseases		<ul style="list-style-type: none"> <li>• Oral health</li> <li>• Chemoprophylaxis and/or treatment of lung TB</li> <li>• Screening of visual acuity</li> </ul>
Reproductive and sexual health		<ul style="list-style-type: none"> <li>• Counselling about sexual and reproductive rights</li> <li>• Family planning methods</li> <li>• Antenatal and postnatal care in each pregnancy</li> </ul>

Source: Ministry of Health, National Card of Health

population. The goal is to reach universal coverage. This policy aims to narrow the gap of the asymmetries that exist in the health status of children and adolescents throughout the country.

## 2. Use of appropriate technology

Technology refers to 'the structure and delivery of health services, human resources, medical equipment, pharmaceutical agents, or new interventions or techniques.' As mentioned earlier, the provision of preventive services is becoming complex, indicating that nurses should be updated and knowledgeable about the safety and efficacy of pharmaceutical agents (i.e., vaccines, iron and hormones for family plan-

**Table 3. Physicians and nurses per 1 000 inhabitants**

	Physicians	Nurses
Total	184 587	223 461
Public sector	180 235	190 225
Private sector	4 352	33 206
Total per 1 000 inhabitants	1.8	2.2

Source: OECD Studies on Health Systems. Mexico, OECD; 2004.

ning), the risks of interventions (i.e., family planning methods) and the new components of the programs (i.e., new vaccines, neonatal screening for hypothyroidism and congenital adrenal hyperplasia). Nurses should also participate actively in health technology assessment. This represents their involvement in testing new

public health interventions, procedures or drugs that eventually will be implemented in preventive services.

### 3. Individual and community participation

Community participation means that "people participate actively in the process of planning and implementation of health programs."<sup>13</sup> The idea of community participation began during the 1970s. WHO suggests two ways of promoting community participation: a) through awareness and understanding about the health needs of the community and b) through access to information and knowledge about health service programs and projects.<sup>14</sup> Mexico has various community participation programs. IMSS supports the program "Health Promotion" that is focused on community participation and has been in effect since 1985. The evaluation of this program in the Mexican state of Jalisco showed community awareness about self-care and that there is full involvement in health promotion activities.<sup>15</sup>

### 4. Health promotion and disease prevention

The Ottawa charter defines health promotion as "the process of enabling people to increase control over, and to improve, their health through five key strategies: building healthy public policy, creating supportive environments, strengthening community action, developing personal skills and reorienting health services."<sup>16</sup> The different evaluations of nurse practitioners regarding health promotion and disease prevention have reported favorable results in two areas: a) increased user satisfaction due to the emphasis that nurses put on providing orientation and information regarding self-care and prevention<sup>17-19</sup> and b) improvement in the processes of care.<sup>20,21</sup> Most of these studies have been conducted in primary care settings and have included comparison of the performance of nurses

and physicians. Nurses can provide preventive services more comprehensively than physicians because they carry out in-hospital and outreach activities and are trained to address the family and the community. In a real sense, nurses are seen as active members of the community.

International comparisons among industrialized countries have shown that despite the existing differences in their respective health care systems, they share the essential features to provide preventive services, and nurses provide most of such services.<sup>22</sup>

### 5. Intersectoral cooperation and collaboration

Intersectoral collaboration and cooperation is a cross-cutting concept. This refers to the collective actions involving more than one specialized agency, performing different roles for a common purpose.<sup>23</sup> The principles of equity, use of technology, participation and health promotion are within this concept that also includes "sustainable partnerships that combine inter-organizational cooperative working alliances and activities by parts of the health sector with other sectors that involve joint planning on a health-related issue."<sup>9</sup>

The perspective of intersectoral collaboration should be strengthened in Mexico to provide preventive services. Health and well-being depend on different factors. Different sectors are key to maintaining or improving the health of the population such as education, housing, industry and agriculture. In Mexico, different programs are focused on intersectoral collaboration. "Oportunidades" is a cash transfer program that is comprised of different components: health, nutrition, and education for its members. Oportunidades has shown positive effect on the utilization of health services and improvement in health indicators.<sup>24</sup> However, little work has been carried out to create partnerships between nurses and other sectors to provide preventive services, and the potential of collaborative work is important.

## New core competencies of nurses to provide pediatric preventive care and skill mix changes

Preventive care evolves continuously to keep the pace of the epidemiology of the population. Thus, nurses must acquire new competencies that, in turn, imply their involvement to identify and tackle emergent problems in addition to the existing ones. An appropriate example is the well-child program. The natural activity of this program is the provision of preventive services. It allows identifying prevalent diseases, monitoring child growth and development and provision of health education to the child and parents.<sup>25</sup> This program is becoming increasingly complex. For example, in Mexico the vaccination scheme includes 10 vaccines for children <5 years old. This means that nurses need to be updated with the clinical information about the vaccines and spend more time with parents explaining the benefits and potential secondary effects of the newly introduced vaccines. Also, because they are the "front line" of preventive services, they should be trained to identify the side effects of the vaccines and contribute in generating the pharmacoepidemiological information.

## Prevention of emerging diseases

### Overweight and obesity

Overweight and obesity among children is on the rise. Currently, preventive care for these children is mostly focused on screening of these conditions. This is a limited perspective. Further training and involvement of nurses to care for this problem are needed. Nurses need to be updated about the nutritional aspects of overweight and obesity and learn motivational techniques for parent and children counseling.<sup>26</sup> In addition, they should become actively involved in the coordination with other health providers for treating children experiencing these conditions

Skill mix is a term "which can refer to the mix of staff in the workforce or the demarcation of roles and activities among different categories of staff." This means that nurses are included in advanced practice roles. This is motivated by several

reasons such as the need to improve efficiency and performance of health services or shortages of physicians, among others. The most common situation is that nurses substitute for physicians in the provision of health care. Different studies have proven that nurse practitioners are proficient in providing health care. The definition of nurse practitioner is as follows: "A Nurse Practitioner/Advanced Practice Nurse is a registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice."<sup>27</sup>

Current conditions of the Mexican health sector are appropriate to encourage the development of nurse practitioners. The curriculum of the nurses should evolve to better train them in public health. Nurses are responsible for providing preventive services, but they should be able to identify health needs, collaborate in the design and evaluation of public health programs and learn how to ascertain whether the interventions are fulfilling the health needs of the community. Little is known about the participation of nurses in the development of public health policies.

From a clinical perspective, nurses are also being increasingly involved in the provision of primary care services. They can substitute for primary care physicians to treat common diseases or work collaboratively with physicians to complement the management of chronic diseases.<sup>28</sup> There are also initiatives to allow nurses to prescribe medications in primary care clinics. This should be accompanied by changes in the Mexican General Health Law and in the curricula of nursing schools that should include pharmacology and other related topics.

## Are services prepared to evolve or are they really behind?

Further work should be done regarding the provision of preventive care for children and adolescents. The public health policy is focused on



increasing coverage for various preventive actions. This is only the first step. As previously mentioned, the need to increase the workforce in public health is urgent. Also, evaluations of quality of care and effective coverage of preventive services remain to be carried out. These aspects are necessary to guarantee that preventive services for children and adolescents are successfully improving the health and well-being of these age groups. Innovative and complex models of preventive care for children have been tested in other countries. These models of care are implemented beyond the physician's office and seek to integrate health, education and social services.<sup>29,30</sup>

We can conclude with a remark from Dr. H. Mahler (Former WHO General Secretary, 1985):

“Nurses will become resources to people rather than resources to physicians; they will become more active in educating people on health matters.”<sup>31</sup>

This paper is an overview of the participation of nurses in the evolving field of preventive care services for children and adolescents. It is clear that the health needs of this age group will require nurses capable of providing support, care and education.

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