

Invited paper

Regional overview of maternal and child malnutrition: trends, interventions and outcomes

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SUMMARY The proportions of underweight, wasted, and stunted children, as well as the infant and under-5 mortality rates, have all exhibited downward trends in the Region over the past 2 decades. This is in part attributable to maternal and child nutrition intervention programmes, especially those in which women were actively involved. Programmes which support and promote breastfeeding, such as the Baby Friendly Hospital Initiative, have also contributed to this trend, although the number of baby friendly hospitals varies considerably between countries. Available information also shows that anemia is quite common among women, many of whom also have a low weight and stature and seem to suffer from osteoporosis. In several countries of the Region a number of micronutrient deficiency control programmes are in progress, such as iron supplementation for pregnant women, fortification of flour and iodization of salt. Iodine deficiency disorders are under control in 2 countries of the Region and legislation for salt iodization is in place in 17 countries. Prevalence of severe malnutrition in children is much lower than that of milder levels, thus, promotion of the nutrition status of mildly to moderately malnourished children could lead to a sizeable reduction in child mortality.

Introduction

The Eastern Mediterranean Region of the World Health Organization comprises 22 countries extending from Pakistan in southern Asia to Morocco in North Africa. These countries are ecologically, economically, and socially very different and at various stages of development. Per capita GNP ranges from US\$ 130 to US\$ 18 270. They also vary considerably with regard to the health and nutrition situation and achievements in combating malnutrition and promoting health and nutrition of the people. Many of them can be said to be food-secure on an average basis [1], although significant intra-population differences exist. In this review, an overview of the nutrition status of mothers, children

under 5 years old, trends and relevant intervention projects and programmes is presented.

Malnutrition

Trends

Growth faltering and malnutrition usually start at around the age of 6 months, mainly because complementary feeding is either begun late or is not done properly. Table 1 shows the trend of child malnutrition and mortality in the Region in the past 1–2 decades.

The proportions of underweight, wasted and stunted children, as well as the infant and under-5 mortality rates have all exhibited downward trends in the Region

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Table 1 **Child mortality and malnutrition in the Eastern Mediterranean Region over the past 2 decades (sources [3–5])**

Variable	Mortality rate per 1000 live births		Moderate & severe malnutrition in children under 5 years		
	Infants	< 5 years	Underweight %	Wasting %	Stunting %
Initial	57	78	17	8	31
Year	1992	1992	1980–92	1980–92	1980–92
Final	46	58	14	6	22
Year	2002	2002	1995–2002	1995–2002	1995–2002
Change (%)	-19.3	-25.6	-17.6	-25.0	-29.0
Trend	↓	↓	↓	↓	↓

as a whole, although considerable inter-country variation exists. According to de Onis, Frongillo and Blössner, stunting rates in the Region ranged between 7.8% (Jordan) and 36.3% (Pakistan) in the mid- to late 1990s [2]. The downward trends can at least partly be attributed to implementation of programmes such as breastfeeding promotion, mother and child nutritional interventions, community-based projects and better health service coverage (some of these programmes will be discussed briefly).

With regard to low birth weight, the picture is different; the prevalence of low birth weight increased from around 10% in 1990 [3] to around 11% in 1997 [4], stayed constant until 2000, and increased again to around 14% at the turn of the century [5]. Since birth weight is an indication of the mother's nutrition during pregnancy, an upward trend for the prevalence of low birth weight in a community would indicate, at least indirectly, a worsening of women's nutrition and feeding behaviour during pregnancy.

Anaemia, mainly due to iron deficiency, is a widespread nutrition and public health problem in all countries of the Region, irre-

spective of family economic status and income level. The prevalence of moderate plus severe forms among women and young children is 25%–60% [6]. According to Aoyama, the overall prevalence among women ranges between 6% (Libyan Arab Jamahiriya) and 17%–79% (Egypt) [7]. The major causes and contributing factors are low dietary iron bioavailability, intestinal parasite infestation and short birth spacing. In addition, general observations and limited data indicate that sizeable proportions of women also suffer from osteoporosis and have a low body weight and small stature.

Although mild and moderate forms do exist, clinical vitamin A deficiency does not appear to be a major problem in the Region as a whole owing to high consumption of green leafy vegetables, a rich source of pro-vitamin A (β -carotene). Deficiencies of folic acid, zinc, and vitamin D have also been observed [7], however, not much detailed information is available on them.

Nutrition transition

Nutrition transition is occurring in many countries of the Region. In addition to undernutrition, overnutrition (chronic nutri-

tional conditions and diseases such as overweight, obesity, cardiovascular disease, diabetes, hypertension and cancer) is widespread as a result of socioeconomic and lifestyle changes such as low level of physical activity, imbalanced diet, stress, etc. Obesity, a disease in itself and a risk factor for several other chronic diseases, afflicting up to 40% of the population as a whole, seems to be more prevalent among women than men. In many countries for which data are available, overweight and obesity (based on weight for height) are also prevalent among children and adolescents and are on the increase. According to de Onis and Blössner, the proportion of overweight, based on the National Center for Health Statistics standards, in children under 5 in 12 of the countries of the Region ranged between 0.9% (Oman) and 8.6% (Egypt) in the mid- to late 1990s [8].

Intervention projects and programmes

Not much published information is available on the maternal and child nutrition intervention projects and programmes in the Region. Allen and Gillespie, in an excellent publication, reviewed thoroughly and critically the nutrition intervention programmes conducted in many countries, including some of the countries of the Eastern Mediterranean Region [9]. They showed that, for example in Pakistan, those pilot projects aiming at improvement of maternal and child nutrition in which women were actively involved had greater chances of success. In these projects, both macro-level (poverty alleviation, food fortification, etc.) and micro-level (nutrition and nutrition-related services, professional training, etc.) approaches were used, and the public sector, the community as a whole, nongovernmental organizations, hospitals, univer-

sities and international organizations were involved. Some of the pilot projects have been reasonably successful. Large-scale projects at the national level should now be designed, implemented and evaluated.

On the other hand, in Oman, despite striking success in child survival and development, a community-based nutrition intervention project using the Triple-A approach (assessment, analysis, action) could not bring about an equally striking improvement in the nutrition status of children under 5 years old [10], although it did considerably reduce the number of underweight children [11].

Another example is from the Islamic Republic of Iran. Following a successful community-based project in Sibak village [12], another project using the Triple A approach was conducted in 3 geographically, ecologically and socioeconomically different rural regions in 3 provinces between 1996–1999, aiming at reducing malnutrition in 6–35-month-old children [13]. Nutritional and non-nutritional strategies included growth monitoring, demonstration of complementary food preparation, home gardening, and income-generation. By the end of the period prevalence of underweight had decreased from 21%–38% to 10%–15% ($P < 0.0001$) and stunting prevalence had decreased from 25%–41% to 12%–15% ($P < 0.0001$). Further analysis of the data showed the main factors in the success of the project to be political commitment at the highest level in the respective provinces, applied health and nutrition education, intersectoral collaboration and community involvement. The project is now being expanded to other provinces.

Finally, assessment of maternal and child nutrition status in a health care programme in Saudi Arabia showed the nutrition status of the mothers and 0–2-year-old

children to be relatively satisfactory, 90% of the children having a normal weight and height [14]. No initial assessment, i.e. at the start of the programme, had, however, been made, therefore no final conclusion could be drawn about its effectiveness and impact.

The Baby Friendly Hospital Initiative, launched jointly by the United Nations Children's Fund and the World Health Organization in 1991–92, with the aim of supporting and promoting breastfeeding in different countries, has been successful in its goals and objectives in the Region [15]. The national breastfeeding authorities control the relevant measures and programmes using global criteria. As a result of these efforts, more mothers now breastfeed their infants in the Region as a whole. The proportion of children exclusively breastfed for 3 months is over 40%. The proportion breastfed for 6–9 months with complementary feeding increased from 38% in the period 1990–1996 to 45% in the period 1995–2002, and about one third are now breastfed for 20–23 months.

Two points are worth mentioning here. First, the number of baby friendly hospitals varies considerably in the countries of the Region. While a few countries still have none, the number generally ranges between 1 (Afghanistan) and 376 (Islamic Republic of Iran). Second, the breastfeeding duration and rate are actually declining in some countries of the Region, particularly in the rural areas, e.g. in Kuwait [16] and Libyan Arab Jamahiriya [17]. Serious efforts will be needed to reverse the trend.

Micronutrient deficiency control programmes

Anaemia control projects and programmes, e.g. iron supplementation and fortification, have been and are being conducted in several countries of the Region. These are in

many cases components of other programmes such as primary health care. For example, iron supplements are distributed routinely to pregnant women. In several countries iron and vitamin drops are also given to infants.

Currently, Egypt, the Islamic Republic of Iran and Saudi Arabia have started fortifying wheat flour with iron (30 ppm) [18]. Other countries are in the process of planning this strategy; some are also considering the feasibility of fortifying oil or flour with vitamin A and flour with folic acid [18]. It is probably too early to judge the efficacy and efficiency of this. Anaemia is a true “multi-dimensional” phenomenon; to control it several strategies other than increasing iron intake are absolutely essential, including public health education, promotion of breastfeeding, promotion of sound dietary practices, birth-spacing, improved environmental health and sanitation. Another problem is that the major source of iron is foods of plant origin, whose iron bioavailability is very low.

With regard to vitamin A, some small-scale projects have been conducted in the Region to control deficiency. Although, as already mentioned, clinical vitamin A deficiency is not widespread, it would be justifiable to have programmes aiming at increasing the average intake of this vitamin by women and children since it strengthens the immune system and thus helps prevent and control infections, which are a public health problem in the Region. In 2000, about 70% of the children 6–59 months old were in vitamin A supplementation programmes [19].

Control programmes for iodine deficiency disorders (IDD) are not usually targeted to specific age or sex groups, e.g. women or children, but rather to whole populations. Successful IDD control pro-

grammes would result in the promotion of iodine status in, along with other groups, women, adolescent girls and children. Consequently, improvements in their physical and mental health will occur. The Region has been very active in this area over the past 2 decades, with support from the World Health Organization, the United Nations Children's Fund and the International Council for the Control of Iodine Deficiency Disorders [20]. Not all countries in the Region, however, have national control programmes. In 2 countries, the Islamic Republic of Iran and Tunisia, IDD has been officially declared by the World Health Organization to be under control [19], and in Jordan, Lebanon, the Syrian Arab Republic and Yemen it is said to be almost under control. Seventeen of the remaining countries have ongoing programmes for universal salt iodization and 16 have appropriate legislation for this. In the Region as a whole, about 51% of households currently consume iodized salt [5].

General comments and recommendations

In developing countries in general, 50% of child deaths are associated with malnutrition [21]. On the other hand, the prevalence

of severe malnutrition is usually much lower than that of mild and moderate forms; for example, only 4% (less than one-third) of the final underweight cases (total = 14%) shown in Table 1 are severely underweight and the other 10% are moderately so. Therefore, in addition to combating severe protein-energy malnutrition, promotion of the nutrition status of mildly to moderately malnourished children is also quite justifiable since it will lead to a reduction in child mortality.

In many cases, child malnutrition is related more to poor child care practices and infections, e.g. intestinal parasites, than to a low food intake as such [22]. This should be borne in mind when designing intervention programmes.

Special attention should be paid to the following when designing strategies and policies: intersectoral and intrasectoral collaboration, nutrition surveillance, monitoring and evaluation, inter-country collaboration, political commitment, technical and technological capacity and development of competence, community involvement, and proper legislation (e.g. for food fortification). In many areas, applied research is essential so that more effective intervention programmes can be designed and implemented.

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