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Review

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Abstract

This situation analysis for the World Health Organization Eastern Mediterranean Region focuses on specific nutrition indicators, namely low birth weight, exclusive breastfeeding, under- and overnutrition (anthropometric indicators) and anaemia. The regional average prevalence of low birth weight and exclusive breastfeeding was estimated at 19.31% and 29.3%, respectively. Stunting, wasting and underweight had an average prevalence of 28%, 8.69% and 18%, respectively. Afghanistan, Djibouti, Pakistan, Sudan and Yemen had the highest burden of stunting (> 30%). Prevalence of anaemia ranged from 7.4% to 88% in children aged

Keywords: Breastfeeding; malnutrition; anaemia; obesity; stunting

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Introduction

Malnutrition represents the number one risk factor in the global burden of disease (1). Despite increasing attention to the alleviation of hunger worldwide (1), undernutrition remains a devastating multifaceted problem affecting infants, young children, adolescent girls and women (2). Children who suffer from chronic undernutrition in the early stages of life fail to grow and develop to their full potential, both mentally and physically (3), and are at increased risk for noncommunicable diseases (NCDs) (4). Acute undernutrition, indicated by wasting in children aged

Overcoming malnutrition in all of its forms – caloric undernourishment and obesity – necessitates a combination of evidence-based interventions in various areas, to guarantee the availability of and access to healthy diets (14,15). These interventions should be guided by a thorough analysis of the nutrition situation and accurate data on nutritional indicators in the Region. These data are crucial, not only for the development of appropriate policies and interventions, but also for measuring progress. It is in this context that we have undertaken this review of nutritional indicators in the Region, including low birth weight (LBW), exclusive breastfeeding (EB), anaemia, and under- and overnutrition based on anthropometric indicators, among children aged

Methodology

For this narrative review, data pertinent to the six WHO core nutrition indicators were reviewed, including: (1) prevalence of EB (defined as no other food or drink, not even water, except breast milk for the first 6 months of life) (17); (2) LBW (defined as the percentage of infants weighing

Results

Prevalence of LBW

The weighted average prevalence of LBW in the Eastern Mediterranean Region was estimated at 19.31%. LBW prevalence was > 30% in Sudan (28) and Pakistan (28) and reached 45% in Yemen (29) (Figure 1). The lowest rates of LBW were reported from Morocco (30), the United Arab Emirates (UAE), the Islamic Republic of Iran, Tunisia, Kuwait and Libya (28). Over time, an increasing trend in LBW prevalence was noticed in Yemen (28,29), Pakistan (28), Lebanon (28), Oman (31,32), Somalia (33,34) and the Syrian Arab Republic (28). The remaining countries have mostly witnessed a stabilization or a decrease in LBW rates. This decrease was particularly noticeable in the UAE (28), Morocco (17,28) and Djibouti (28).

Prevalence of EB

The regional average for EB was estimated at 29.3%, with the lowest rates being observed in Somalia (35), Tunisia (36), Yemen (28,37), Kuwait (28), Oman (28), Lebanon (28,38), Qatar

(39,40), Iraq (41), Jordan (42) and Morocco (43) (Figure 2). The highest rates were reported from Afghanistan (44), the Islamic Republic of Iran (45) and Djibouti (46). The prevalence of EB decreased with infant age. In Egypt, for example, the prevalence of EB decreased from 45.7% among infants aged 0–4 months to 30.3% among those aged 0–6 months (17,47). Similarly, a 2006 study conducted in Lebanon (48) showed that the proportion of exclusively breastfed infants declined from 52.4% at age 1 month to 23.4% at 4 months and 10.1% at 6 months. Furthermore, a decreasing trend in the prevalence of EB has been noticed over time in some countries of the Region. This is particularly true for Morocco (51% in 1992 and 27.8% in 2011) (43), Lebanon (26.6% in 2000 and 14.8% in 2009)(17,28,38,49), Oman (31.3% in 2005 and 14.4% in 2013), Sudan (74.6% in 1992–1993 and 41% in 2010)(17,28,41,50,51), Somalia (21% in 1999 and 5.3% in 2009) (17,35,41,52), Yemen (17.8% in 1997 and 11.5% in 2003) (28,37,53), and Jordan (27% in 2002 and 23% in 2012) (38,41–43,49,50). In contrast, an increasing trend was observed in the Islamic Republic of Iran (44% in 2002 and 53.1% in 2010) (41,45), Egypt (30.3% in 2003 and 39.7% in 2014) (17,47,54), Iraq (12.4% in 2000 and 19.6% in 2011) (41,55), Pakistan (22.8% in 1990–1991 and 38% in 2012) (41,56) and occupied Palestinian territory (26.6% in 2010 and 38.6% in 2014) (57,58).

Prevalence of stunting, wasting and underweight in children aged

The estimated weighted regional averages for stunting, wasting and underweight were 28%, 8.69% and 18%, respectively. The prevalence of wasting was highest in Djibouti (46), Sudan (51), Yemen (59) and Somalia (60,61), while the prevalence of underweight was highest in Afghanistan (44) and Yemen (59) (Figure 3). Countries such as Iraq (55,61–63), Libya (61,64,65), Egypt (54,66) and Sudan (51,61,67), which are experiencing political unrest, have witnessed an increase in the prevalence of wasting over time. Similarly, an increasing trend in the prevalence of underweight was observed in Djibouti (61, 68,69), Sudan (51,61,67), Iraq (61–63), Libya (61,64,65) and the Syrian Arab Republic (61,70). The highest rates of stunting were noted in Yemen (59), Pakistan (61,71), Afghanistan (44), Sudan (51) and Djibouti (46), ranging between 29.7% and 46.5%. The average annual rate of change in the prevalence of stunting in the Region was estimated at -2.8%. Of concern is the increasing prevalence of stunting that has been observed in Djibouti (61,68,69,72) and Pakistan (61,71,73,74).

Prevalence of anaemia

The prevalence of anaemia ranged from 7.4% to 88% in children aged Prevalence of overweight and obesity

Adults

The estimated weighted average prevalence of adult overweight and obesity in the Region was 27% and 24%, respectively. A higher prevalence of obesity was noted among women compared to men (78–83). The highest level of obesity was reported from Kuwait (42.5% in men and 47.1% in women)2, Qatar (39.5% in men and 43.2% in women) (83), Bahrain (32.3% in men and 40.3% in women) (79), the UAE (33%) (84), Egypt (31.3%) (80)

and Libya (30.5%) (85). The prevalence of obesity was lowest in Somalia (6.7% in women) (35), Afghanistan (8.3% in women) (44) and Yemen (8.8%) (86). Available data suggest an increasing secular trend in the prevalence of adult obesity in most countries of the Region. This trend was more pronounced in countries such as the UAE (88,89), Tunisia (90,91), Afghanistan (44), Kuwait (92), Bahrain (78,93) and Lebanon (93).

Women of reproductive age

Data on the prevalence of obesity in women of reproductive age (15–49 years) were available for Afghanistan (44), Egypt (66), Jordan (42), Libya (94) and Somalia (35) (Figure 4). Furthermore, in a study conducted in 2012 in the occupied Palestinian territory, the prevalence of obesity was estimated at 15.6% among mothers aged 18–28 years, 35.8% among those aged 29–39 years and 56.8% among those aged 40–50 years (95).

School-age children

The estimated weighted average prevalence of overweight and obesity among school-age children (13–15 years) was 16.46% and 4.83%, respectively. The highest prevalence of obesity was observed in Kuwait (29.6%), Bahrain (21.7%) and the UAE (14.4%) (96), while the lowest rates were reported from Pakistan (1%) (97), Morocco (2.5%) (98), Afghanistan (2.7% in girls) (44), Sudan (3.6%) (99), Yemen (4.4%) (100) and Djibouti (4.6%) (101). Available data suggested an increase in the prevalence of overweight and obesity amongst school-age children. This was particularly true for the Islamic Republic of Iran (102, 103), Lebanon (93), Qatar (104, 105), Saudi Arabia (106–108), Tunisia (109, 110) and Bahrain (111, 112).

Children aged

The estimated weighted average prevalence of overweight and obesity in children aged

Energy and macronutrient supply

Food availability data (23) highlight a gradual secular increase in dietary energy supply (DES) in the Region between 1969–1971 and 2011, except for Afghanistan and Somalia, where DES decreased. The average increase in DES for the Region was 583.8 kcal/day, with the highest increases observed in Egypt (1290 kcal/day) and Saudi Arabia (1238 kcal/day), followed by the Islamic Republic of Iran (995 kcal/day), Tunisia (978 kcal/day), Morocco (962 kcal/day), Jordan (960 kcal/day), Libya (958 kcal/day) and Kuwait (926 kcal/day). The rise in DES was coupled with an increase in average dietary fat supply, which has increased from 51.8 g/day in 1969 to 77.7 g/day in 2011. During this period, fat supply has almost doubled in the Islamic Republic of Iran, Iraq, Jordan, Kuwait, Lebanon, the Syrian Arab Republic and Saudi Arabia. The data also showed that the contribution of dietary fat to DES has increased in most countries of the Region, with the average increase being estimated at 4% of DES between 1969–1971 and 2011. The highest increases were noted in Pakistan (13.05%), Saudi Arabia (12.2%), the Syrian Arab Republic (8.62%), Jordan (8.04%), the Islamic Republic of Iran (6.12%), Kuwait (5.86%) and Lebanon (5.81%). Parallel to the increase in fat supply, a relative decrease in the contribution of carbohydrates to DES was noted in most countries,

with an average of 4%. In contrast, the contribution of protein to DES was found to be stable over the past 4 decades, except for Somalia, which has witnessed a 2% decrease.

Discussion

This review highlighted the double burden of malnutrition in the Eastern Mediterranean Region, with undernutrition coexisting with overnutrition in most countries. The regional prevalence of LBW (19.31%) was higher than the global average of 16% (excluding China) (18) and higher than estimates reported from the United States of America (USA) and Europe (8.1% and 7.1%, respectively) (121). When examining the annual rates of change, only Djibouti (-3.1%), Egypt (-3.5%), Morocco (-4.6%) and the UAE (-4.9%) appeared to be on track towards meeting the global nutrition targets (-2.74% for LBW) (122). This is of concern given that LBW children tend to have higher rates of subnormal growth, illnesses, neurodevelopmental problems and cognitive defects (123,124). In the Region, LBW may be linked, in many instances, to poor maternal health and prenatal conditions, such as poverty, crowded home environments, unfavourable work conditions (125), infections, short interpregnancy intervals, maternal obesity, smoking and poorer nutrition including anaemia (126,127), and rural residence (127).

This review also documents a low regional average of EB (29.3%), indicating poor adherence to the WHO's infant feeding recommendations. Of more concern is the observed decreasing trend in EB in several countries of the Region. The low prevalence of EB may have negative repercussions for the burden of disease in the Region. There is evidence that proper early infant nutrition may play an important role in the prevention of NCDs throughout life (128). EB in the first 6 months of life ensures adequate mental development and optimal physical growth, metabolic regulation and immunity (129). Several studies have also shown that breastfeeding lowers the risk of obesity in childhood and ensures a more linear pattern of growth in infancy (129).

The findings of this review show that several countries in the Region are still plagued with a high burden of undernutrition in young children. As per the WHO cutoffs (130), the levels of wasting were acceptable (

Anaemia, another hallmark of undernutrition among children and women of reproductive age, appears to be a persistent challenge in the Region, although some countries have witnessed progress in this indicator. For instance, in Morocco, a country that has implemented iron fortification of flour, the prevalence of anaemia among children aged 2–5 years decreased by 37.4% between 2006 and 2008 (136). Similarly, in Jordan, after the implementation of wheat flour fortification with multiple micronutrients, including iron, anaemia prevalence decreased from 40.4% in 2007 to 33.9% in 2009 among children aged 6–59 months (137).

The persistent burden of undernutrition in the Region may be linked to various environmental, economic and political factors. Food security is threatened by scarce freshwater resources, arid climate, high dependence on imports, limited productive economic diversification, high unemployment rates and income inequalities (138). The political unrest in many countries of the Region has contributed to further destabilization of the food security safety nets, livelihood and agricultural production. In fact, countries experiencing political turmoil have witnessed an increase in the prevalence of undernutrition over time. Moreover, food security appears as an economic challenge in the Region; the World Bank estimates that 5% of the Region's population is below the US$1.25-a-day poverty line and suffers from numerous forms of deprivation, including malnutrition, and that the number of people afflicted with poverty had increased by 2.6 million by 2011 (139). The burden of undernutrition in the Region calls for action by all countries to end all forms of food insecurity, build economic growth and alleviate poverty, as highlighted by the Sustainable

Development Agenda (140). This may be particularly challenging to several countries that are currently facing armed conflict and political instability, while harbouring significant numbers of displaced people and forced population movements. These sociopolitical dimensions magnify the threat of food insecurity and nutritional inadequacies, particularly among the vulnerable and poorer segments of the population (8). In conformity with international law and the Sustainable Development Agenda, further effective measures and actions are needed to "remove obstacles and constraints, strengthen support and meet the special needs of people living in areas affected by complex humanitarian emergencies", political turmoil and armed conflict (141).

This review also shows that, in all countries of the Region, undernutrition coexists with overnutrition, as assessed by obesity and overweight. The results highlight a high prevalence and increasing trend of adult obesity in many countries (44,87–90). The regional average of adult obesity (24%) exceeds the worldwide average (9.8% in men and 13.8% in women) (142), as well as estimates reported from South Asia (1.2–2.9%), but it is lower than the average prevalence of adult obesity in North America (29.2%) (142). Possible determinants of adult obesity in the Region include higher energy intakes, higher intakes of sugar-sweetened beverages, larger food portion sizes, low intakes of fruits and vegetables, physical inactivity and sedentary lifestyle, cultural norms and food subsidy policy (112,143,144). The escalating burden of adult obesity may have serious public health implications, given the positive associations between weight gain and NCDs (93,145), and that the Region already suffers from a high NCD burden, which accounts for > 50% of annual deaths (146). According to the WHO, deaths from NCDs were projected to increase by 25% between 2008 and 2018 in the Region, reflecting the second highest projected increase amongst the 6 WHO regions (147,148).

This review underlines the high burden and alarming increase in the prevalence of paediatric obesity in the Region. Among school-age children and adolescents, the annual rate of change in obesity prevalence exceeded in some countries, such as Bahrain (14.8% in girls), Tunisia (13.5%) and Qatar (13% in boys and 12.7% in girls), the predictions made by Wang and Lobstein for the Region (5.6%) (149). The prevalence of obesity among school-age children in Kuwait (29.6%), Bahrain (21.7%) and the UAE (14.4%) exceeds estimates reported from Europe (6.8–7.3%) (150) and the USA (18.7%) (151). Among children aged

Most countries in the Region are witnessing fast rates of development and modernization, with concurrent shifts in diet and food consumption (162). These shifts are the basis of the nutritional transition, which is characterized by increased intake of energy, fat, added sugars and salty foods (162,163). Through these particular changes in dietary intake, the nutritional transition may explain the escalating burden of obesity and NCDs in the Region (162–164). Food availability data highlight a shift towards an increasingly energy-dense diet and higher intake of fat in the Region, with a parallel decreasing trend in carbohydrate availability. This trend is confirmed by dietary assessment surveys, which also document high intake of fat, and a shift towards a westernized diet (159,162,165–168). Nearly half of the countries in the Region had fat supply levels at or above the reported global average of 81.8 g/person/day (169). The observed increasing trend in fat supply is worrying, given that available evidence highlights probable associations between fat intake, obesity and various NCDs (170).

While this review provides valuable insight into the nutritional situation of the Region, its findings should be viewed in light of the following limitations. The available data on nutritional indicators were, in many instances, limited by the scarcity of recent and nationally representative studies examining the nutritional status of the population in many countries of the Region, and the scarcity of studies examining secular trends in nutritional indicators. Limited research funding, political instability and conflict are a few of the challenges that some countries are facing and that may contribute to the paucity of data.

Recommendations

This review responds to the increasing demand to conduct research on research, to understand better what is already known, and to guide and inform better the development of policies and interventions (171). As such, the work undertaken in this review calls for immediate action to address the double burden of malnutrition in countries of the Region. Priority interventions should aim at improving the nutritional status of the population, particularly among vulnerable population groups, including children and women of reproductive age. The persistence of LBW and child undernutrition highlight the need for government-led interventions that apply a food systems approach in tackling malnutrition to meet the global nutrition targets by 2025. Similarly, given the observed low rates of EB, there is a need to protect, promote and support breastfeeding through the implementation of multisectoral interventions in the Region, including the development of effective culture-specific education and communication strategies. National legislation should implement the International Code of Marketing of Breast-Milk Substitutes and relevant World Health Assembly resolutions, with effective monitoring and enforcement. The shifts in diet witnessed by most countries of the Region, coupled with the increase in the prevalence of obesity in all age groups, highlight the urgent need to instigate government-led reformulation programmes to reduce the levels of fat and sugars in foods and drinks, implement the WHO's recommendations to restrict marketing of foods high in fat or sugar to children, and develop relevant food taxation policies (172–174). The high rates of maternal obesity and anaemia highlight the need for interventions aimed at improving maternal nutrition, given the accumulating evidence linking maternal nutritional status to increased risk of NCDs in the offspring (175). In a region that is plagued by one of the highest burdens of NCDs worldwide, nutritional, impact-driven interventions should be placed at the forefront of national agendas, not only to address all forms of malnutrition, but also to contribute towards the achievement of many Sustainable Development Goals targets, including ending poverty, ensuring healthy lives, promoting lifelong learning, improving economic growth, building inclusive societies and ensuring sustainable consumption (176).

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Examen de la situation nutritionnelle dans la Région de la Méditerranée orientale

Résumé

L'analyse de la situation de la Région OMS de la Méditerranée orientale se concentre sur des indicateurs spécifiques relatifs à la nutrition, à savoir l'insuffisance pondérale à la naissance, l'allaitement au sein exclusif, la dénutrition et la suralimentation (indicateurs anthropométriques) et l'anémie. La prévalence régionale moyenne de l'insuffisance pondérale à la naissance et de l'allaitement au sein exclusif a été estimée à 19,31 % et 29,3 % respectivement. Le retard de croissance, l'émaciation, le déficit pondéral avaient une prévalence de 28 %, 8,69 % et 18 % respectivement. L'Afghanistan, Djibouti, le Pakistan, le Soudan et le Yémen avaient la charge la plus lourde pour le retard de croissance (plus de 30 %). La prévalence de l'anémie était comprise entre 7,4 % et 88 % chez les enfants de moins de cinq ans, et entre 19,9 % et 63 % pour les femmes en âge de procréer. L'augmentation de la tendance à la surcharge pondérale et à l'obésité chez l'adulte et l'enfant est préoccupante. La prévalence moyenne de la surcharge pondérale et de l'obésité était de 27 % et de 24 % chez les adultes, et de 16,5 % et 4,8 % chez les enfants scolarisés respectivement. Les taux d'obésité les plus élevés ont été signalés à Bahreïn, aux Émirats arabes unis, au Koweït et au Qatar. Cette analyse souligne la double charge de la malnutrition dans les pays de la Région, et appelle à donner la priorité aux politiques visant à améliorer la situation nutritionnelle des populations.

WHO EMRO | Review of the nutrition situation in the Eastern Mediterranean Region

استعراض حالة التغذية في إقليم شرق المتوسط

لارا نصر الدين، جنيفر أيوب، أيوب الجوالده

الخلاصة

يركّز تحليل الحالة لإقليم منظمة الصحة العالمية لشرق المتوسط الوارد في هذه الدراسة على مؤشرات تغذوية
محددة، وهي انخفاض الوزن عند الولادة، والرضاعة الطبيعية حصراً، ونقص التغذية وزيادة التغذية (مؤشرات
أنثروبومترية) وفقر الدم . وتم تقدير المتوسط الإقليمي لانتشار انخفاض الوزن عند الولادة والرضاعة
الطبيعية حصراً بنسبة 19.31% و29.3% على التوالي . وبلغ متوسط انتشار التقزم والهزال ونقص الوزن 28%
و8.69% و18% على التوالي . وسُجِّل أعلى عب ء للتقزم في أفغانستان وجيبوتي وباكستان والسودان واليمن
(30%

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