



RESEARCH ARTICLE

BURDEN OF NON-COMMUNICABLE DISEASES AMONG CHILDREN IN MOROCCO

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Abstract

Non-communicable diseases remain important public health problems worldwide, accounting for significant mortality and morbidity. Noncommunicable diseases (NCDs) are the leading causes of death and disability worldwide. According to WHO (2018), non-communicable diseases (NCDs) kill 41 million people each year, accounting for 71% of deaths worldwide. It predicts that the rapid growth of NCDs will impede poverty reduction initiatives in low-income countries, particularly due to rising out-of-pocket health expenditures. In Morocco, the situation is also problematic. The epidemiological and demographic transition is reflected in an increase in the burden of disease and mortality of NCDs in children 0- 18 years, particularly cancers, diabetes, cardiovascular diseases, chronic respiratory diseases, and chronic renal failure. At the level of the Marrakech-Safi Region, the total number of diabetic children reached 1519 cases in 2019 of which 162 new cases and 1357 old cases, with a predominance (55%) at the level of the city of Marrakech. For children with hypertension, they represent 749 cases in 2019 including 25 new cases and 724 old cases. As for respiratory infections, the number of cases of acute viral bronchiolitis declared at the level of the region during the autumn-winter period 2019-2020 has reached 8404 cases. Finally, for children suffering from chronic renal failure, a total number of 35 children are currently under care at the level of public hemodialysis centers, including 21 children under hemodialysis, 12 under peritoneal dialysis, and 02 kidneys transplanted. this article aims to describe the burden of morbidity and mortality related to non-communicable diseases in the Marrakech-Safi region.

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Introduction

Child health has always been one of the Kingdom's priorities since independence. This interest was first expressed through vertical programs focused on the main child health problems responsible for the large proportion of infant and child mortality at the time.

With the adoption of the recommendations of the Alma Ata declaration that puts primary health care at the center of health systems for the protection and promotion of the health of populations, Morocco has invested in disease prevention through increasingly expanded immunization programs, programs to combat respiratory infections and diarrheal diseases that were among the leading causes of infant mortality. The idea of integrating these programs

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was inspired by the WHO initiative that recommends the adoption of a comprehensive and person-centered approach. Thus, the Ministry of Health adopted the strategy of integrated childcare, which was gradually expanded to cover most of the national territory. The new constitution of the Kingdom of Morocco adopted in 2011 enshrines the right to health and social protection and makes local authorities and public institutions responsible for this, in addition to the state, making health a matter for everyone. In 2015, Morocco committed to achieving the Sustainable Development Goals by 2030. Goal 3 sets the well-being and health of the population as an objective to be achieved by breaking it down into several targets that concern, among other things, children's health.

In order to honor its commitments, Morocco has developed an integrated national child health policy for the year 2030 which, in addition to consolidating the gains made in reducing infant and child mortality, aims at the well-being and harmonious development of children. It is also part of the implementation of the commitments of the Ministry of Health and Social Protection in the national pact for children signed by different departments during the 16th National Congress on the Rights of the Child which coincided with the 30th anniversary of the adoption of the International Convention on the Rights of the Child, held under the effective presidency of her royal highness Princess LALLA MERYEM from 20 to 23 November 2019 in Marrakech.

Presentation of the Marrakech-Safi region

The region of Marrakech-Safi, one of the 12 regions of the Kingdom, was created following the territorial reorganization of 2015. Administratively, the region includes a prefecture (Prefecture of Marrakech, capital of the region) and 7 provinces (Al Haouz, Chichaoua, El Kelâa des Sraghna, Essaouira, Rhamna, Safi and Youssoufia). The MS region covers an area of 39,167 km², equivalent to 5.5% of the national territory, with a population density of 117 inhabitants per km², well above the national average (48 inhabitants per km²). The Marrakech Safi region has a population of 4,835,927, predominantly rural (56%) with a rugged topography in the provinces of Al Haouz, Chichaoua, and Essaouira. The distance from a paved road varies from 1 km (Marrakech) to 7 km (Chichaoua).

In 2014, the regional poverty rate was 4.6% compared to a national rate of 4.8% with a variation ranging from 1% in the prefecture of Marrakech to 9.1% in Essaouira; thus, poor communes represent 24% of all communes in the region, 61 communes out of 255. The regional unemployment rate is 13.1% (F: 31.3%; M: 9.3%) against a national rate of 16.2% (W: 29.6%; M: 12.4%). The illiteracy rate is 37.8% (W: 47.6%; M: 28.1%) against a national rate of 32.2% (W: 42.1%; M: 22.2%). The Marrakech-Safi region is thus confronted with a set of challenges related to geographical and financial accessibility, particularly accentuated for the provinces of Chichaoua, Essaouira, Al Haouz, and Youssoufia, and also to the persistence of illiteracy which is predominantly female.

Characteristics of children aged 0- 18 years

- The proportion of children in the general population

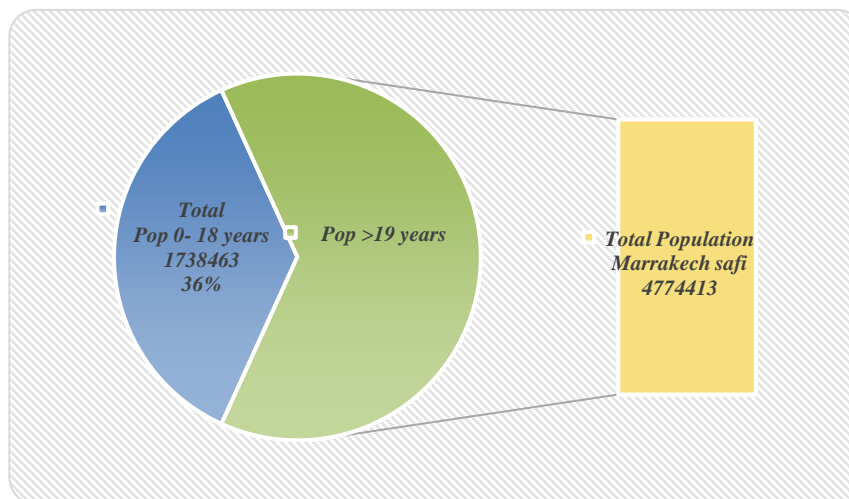


Figure N°1: Number and percentage of children in the general population.

- **Population of children de 0 - 18 ans by Age, Group and setting**

Table N°1: Distribution of children aged 0- 18 by age group and setting.

Age	URBAN	RURAL	TOTAL
0-4	164590	246492	411082
5-9	183582	301071	484653
10-14	161501	262527	424028
15 19	162404	256296	418700
0-19	672077	1066386	1738463

- **Children 0-18 years by province in 2020:**

Table N° 2: Distribution of children aged 0- 18 by province.

Provinces/ Préfecture	Total children from 0 to 18 years old	Percentage
Marrakech	460952	27%
Safi	250562	14%
Al Haouz	244346	14%
Rhamna	129626	7%
Chichaoua	157690	9%
Essaouira	165880	10%
El KelâaDesSraghna	229414	13%
Youssofia	99993	6%
Région	1738463	100%

- **Children in School**

The number of children in school at the regional level is 1089090 of which the majority (56%) are primary school students and 23% are college students.

Table N°3: Distribution of students by level and province.

Provinces/ préfecture	Total students in preschools	Total Students at Primary Schools	Total students from colleges	Total secondary School Students	Global
Al Haouz	12565	93203	35997	13689	155454
Chichaoua	8481	59272	18381	7354	93488
El Kelâa	15507	84656	33422	14589	148174
Essaouira	8926	58548	21973	11703	101150
Marrakech	22346	148263	77048	46707	294364
Rehamna	11355	46417	18729	8781	85282
Safi	13796	81182	33731	20844	149553
Youssofia	7714	35277	12932	5702	61625
Région	100690	606818	252213	129369	1089090

- **Children with disabilities**

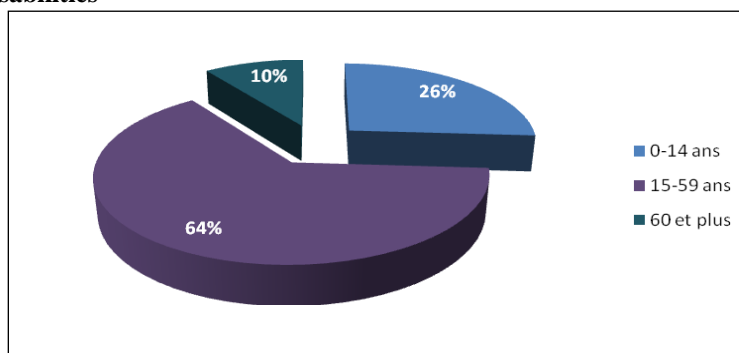


Figure N°2: Proportion of Children with Disabilities by Age Group.

Epidemiology Of Non-Communicable Diseases In Children Aged 0-18 Years

Noncommunicable diseases (NCDs) are a public health problem that includes a broad category of chronic diseases. According to the World Health Organization, NCDs are the leading cause of death worldwide and are responsible for 60% of the global burden of disease, surpassing other health problems in the 21st century. It is important to point out that NCDs are largely preventable through effective, cost-effective, feasible, and affordable preventive measures and actions. Similarly, their implementation should be integrated and multisectoral.

In Morocco, the situation is also problematic. The epidemiological and demographic transition is resulting in an increase in the burden of disease and mortality of NCDs, particularly cancers, diabetes, cardiovascular diseases, chronic respiratory diseases, and chronic renal failure. Faced with the challenges posed by NCDs and their risk factors, the Ministry of Health and Social Protection has been committed for several years to dealing with these diseases. Indeed, the fight against these NCDs has been a priority in the sectoral health plans, mainly in the management of cancer, diabetes, high blood pressure, and renal failure, as well as the strengthening of multisectorality, public-private partnership, and collaboration with non-governmental organizations.

Chronic renal failure (CRF)

In children, chronic renal failure represents a rare but serious pathology, costly and negatively impacting their schooling, and whose management is very specialized. Its etiologies are particularly dominated by congenital anomalies of the kidneys and urinary tract (renal hypo-dysplasia, posterior urethral valve, vesico-urethral reflux...), genetic and glomerular.

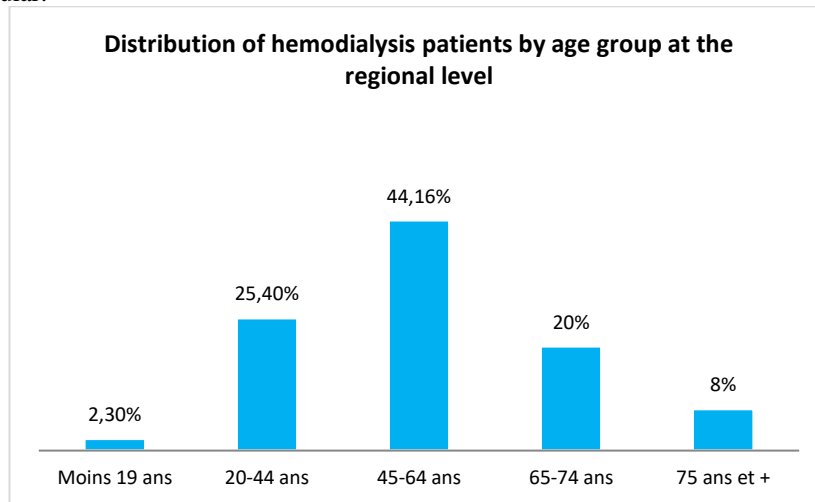


Figure N° 3: Distribution of hemodialysis patients by age group.

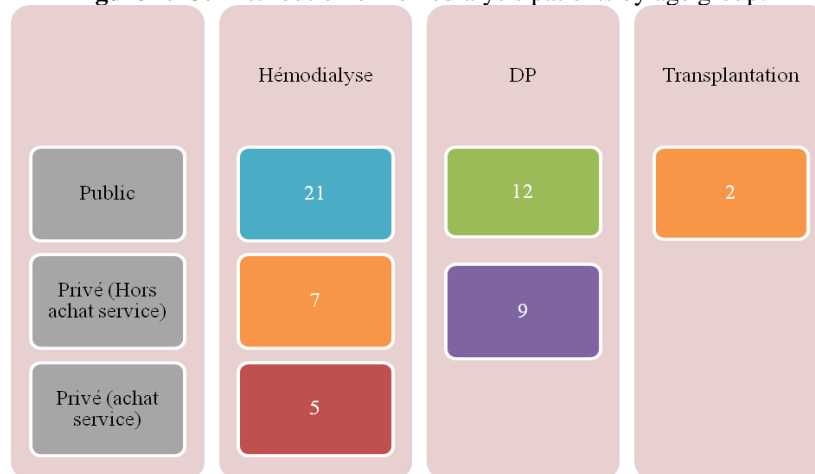


Figure N°4: Treatment of children with CRF by different modes of treatment and public/private sector.

At the regional level, the age group of fewer than 19 years old represents 2.30% of all hemodialysis patients. The public nephrology and hemodialysis centers take care of 35 children, including 21 children undergoing hemodialysis, 12 undergoing peritoneal dialysis, and 2 renal transplant patients. The private nephrology and hemodialysis centers take care of 12 children undergoing hemodialysis, 5 of whom are undergoing hemodialysis as part of the purchase of services and 9 others undergoing peritoneal dialysis.

Diabetes

Diabetes is considered a chronic, debilitating, and costly disease with serious complications that pose serious risks to families, member states, and the world at large, and seriously impedes the achievement of internationally agreed development goals, including the Millennium Development Goals. Diabetes mellitus is the most common endocrinopathy in children, due to insulin deficiency that results in a disorder of carbohydrate metabolism causing hyperglycemia with glycosuria.

Cases of diabetes in children are reported to increase over the years. It is more difficult to have an accurate picture of children aged 0 to 18 years because systematic screening in this age group is often neglected.

Table N°4: Number of children with diabetes by province 2019.

Province	Environment	New Case 0-19		Old Case 0-19	
		M	W	M	W
Marrakech	Urban	26	46	268	331
	Rural	3	2	73	87
Al Haouz	Urban	1	1	19	28
	Rural	9	5	121	96
El kelâa	Urban	3	3	17	18
	Rural	2	3	110	124
Chichaoua	Urban	2	2	8	9
	Rural	6	20	69	75
Essaouira	Urban	0	0	21	16
	Rural	0	0	30	39
Rhamna	Urban	1	1	18	46
	Rural	4	1	71	50
Safi	Urban	8	18	61	88
	Rural	0	10	18	23
Youssoufia	Urban	2	3	14	16
	Rural	16	19	31	28
Région	Urban	43	74	426	552
	Rural	40	60	523	522
	Total	60	102	584	773

High blood pressure (HBP)

HBP is a relatively rare condition in pediatrics. It is peculiar not only for its clinical presentation, which is often misleading but also for its etiologies.

It has become clear in recent decades that adult hypertension is affected by both intrauterine and neonatal pathologies and often begins in childhood. In addition, complications of hypertension in adulthood occur earlier in patients who were hypertensive in childhood. Thus, it is important to identify and treat hypertension in children.

The sixth National Population and Family Health Survey (NPFHS) 2017-2018 showed that the proportion of individuals with hypertension increased from 5.4% in 2011 to 6.8% in 2018 and that the prevalence of hypertension increases significantly with age.

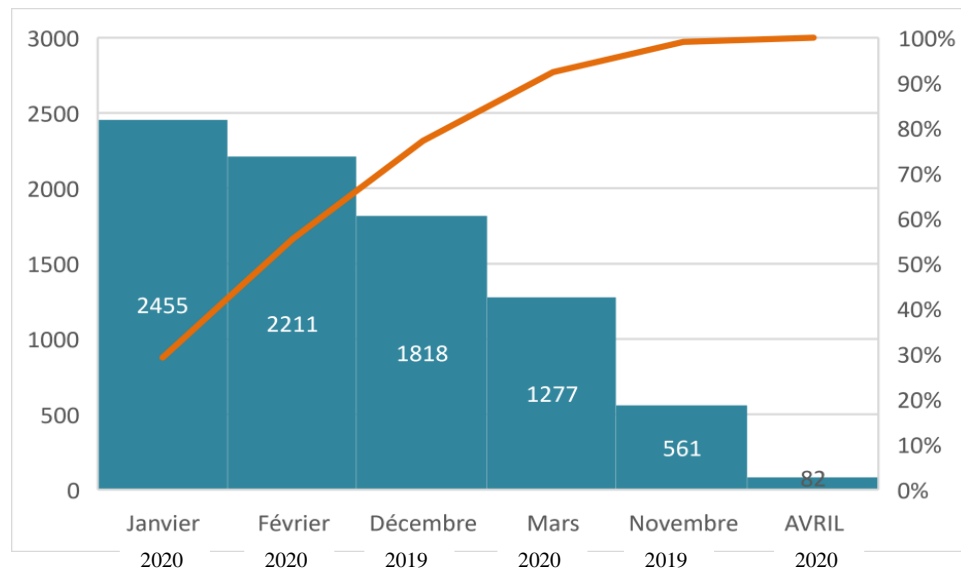
Table N°5: Number of Children with hypertension by province 2019.

Province	Environment	New case 2019 0-19 ans		Case case 2019 0-19 ans		Total
		M	F	M	F	
Marrakech	Urban	1	0	2	40	43
	Rural	0	0	6	38	44
Al haouz	Urban	0	1	0	1	2
	Rural	4	6	51	125	186
El kelaa des Sraghnas	Urban	0	0	4	12	16
	Rural	1	0	76	109	186
Chichaoua	Urban	0	0	0	2	2
	Rural	0	2	18	48	68
Essaouira	Urban	1	3	17	2	23
	Rural	3	0	8	6	17
Rhamna	Urban	0	0	16	0	16
	Rural	0	0	24	52	76
Safi	Urban	1	0	0	0	1
	Rural	0	0	0	0	0
Youssoufia	Urban	0	0	0	27	27
	Rural	0	2	12	28	42
Région	Urban	3	4	39	84	130
	Rural	8	10	195	406	619
	Total	11	14	234	490	749

On a regional scale, the number of hypertensive children aged 0-19 years is around 25 with a predominance of 18 in rural areas against 7 in urban areas. The province of Al Haouz occupies a first place at 44% followed by Essaouira at 28% of new cases.

Viral acute bronchiolitis (VAB)

Acute viral bronchiolitis requires early and appropriate management to avoid the evolution of complicated forms that can compromise the vital prognosis. For this purpose, it is necessary to prepare, before the installation of the winter period, the response against the epidemic of bronchiolitis with a coherent and coordinated organization of care and to ensure adequate care of infants at all levels. In our region, children from birth to 24 months of age represent the target population for VAB. It is estimated at 189179 with 64% in rural areas.

**Figure N°5:** Number of VAB cases.

The number of VAB cases reported at the level of the region during the autumn-winter period 2019-2020 reached 8404 cases with 80% of cases recorded during the 3 months: December, January, and February.

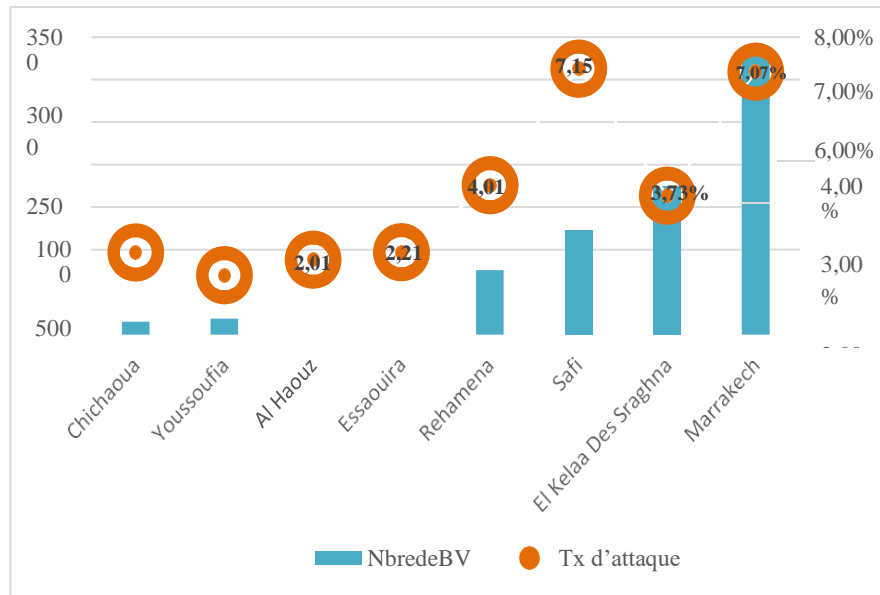


Figure N°6: Number of VAB cases and attack rate by province.

The attack rate is 4.52% at the regional level, with an unequal distribution between the different provinces. The prefecture of Marrakech and the province of Safi have the highest rates (7%).

Conclusion

Child health is multidimensional and not exclusively a health issue. It is part of a wide range of interdependent disciplines and areas of intervention (social, education, protection...). In fact, the Ministry of Health, with its health care missions, and its partners with missions related to other health determinants, will take into account the health and development needs of children by adopting an integrated, decompartmentalized, and continuous approach, taking account the psychosocial specificities of children, according to their age and stage of development. The analysis of the offer of other external departments dedicated to children, notably Education Nationale, Ministry of Youth, Culture and Communication, national assistance, Habous, and Islamic Affairs, reveals that all the departments working in the field of child health in our region have a variety of multidisciplinary structures that represent a propitious environment for developing interventions for children aged 0 to 18 years. However, there is a disparity between rural and urban areas that could be improved through good planning and coordination in order to act on the underlying factors that determine the health and well-being of children aged 0 to 18. In order to improve the situation of child health at the regional level, the Regional Directorate of Health and Social Protection, in collaboration with Unicef, has developed a regional multisectoral action plan 2022-2025 taking into account the various shortcomings and dysfunctions raised as well as the provincial specificities. The objective of this plan is to enable children under the age of 18 to reach their full potential in health development and well-being and to reduce the burden of preventable morbidities and mortality among children. This action plan will target all children ages 0-18, with a special focus on the most vulnerable children. It also targets the families and communities where these children live and grow.

Given the future burden of NCDs, especially among children, and our current health care system, we should emphasize the need to prioritize NCD prevention and control. Our strategies should be geared toward surveillance of the incidence of NCDs and their risk factors. Some NCDs have common risk factors that should be addressed with minimal cost but maximum return. The three key elements of the strategy are surveillance, health promotion and primary prevention, and health management and care. Health promotion strategies, with a strong focus on disease prevention, are needed to empower people to act both individually and collectively to prevent risky behaviors, and to create economic, political, and environmental conditions that prevent NCDs and their risks. Risk trends must be monitored and intervention strategies evaluated against expected outcomes. Issues such as rapid population aging, gender and income inequality, persistent poverty, and the needs of developing countries must be closely examined as they influence the prevalence of NCDs and the success of interventions.

Reference

1. Alfred E-Y ; Aaron A-A ; Delali M-B ; Deborah A; Francis A-A et John K-A. (2016). Non-communicable diseases among children in Ghana: health and social concerns of parent/caregivers. *African Health Sciences* Vol 16 Issue2.
2. Hbib S. (2010) Burden of non-communicable disease: Global overview. *Diabetes and metabolic syndrome; clinical research and reviews* Vol 4 issue 1.
3. Angkurawaranon. C;Jiraporncharoen. W;Chenthanakij. B ; Doyle. P and Nitsch. D. Urbanization and non-communicable disease in Southeast Asia: a review of current evidence. *Public health* Vol 128, Issue 10.
4. Ministry of Health and Social Protection in Morocco (2019). Integrated National Child Health Policy to 2030. Promoting child health from conception to age 18 is an investment in human capital and sustainable development. Nations Unies (2016). Stratégie mondiale pour la sante de la femme, de l'enfant et de l'adolescent 2016- 2030.
5. WHO (2013). Women's and children's health: Evidence of the impact of humanrights.
6. Unicef (2016). Health Strategy 2016-2030.
7. The Regional Directorate of Health and Social Protection (2022). The regional multisectoral action plan for the health of children aged 0-18 years Marrakech Safi Region.