

AN OVERVIEW OF CARDIOVASCULAR DISEASES' BURDEN IN SYRIAN ARAB REPUBLIC

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Abstract: *Introduction: Cardiovascular diseases (CVDs) represent the main cause of death in the world, being responsible for around 30% of the total annual registered deaths (2008) and low and middle-income countries contribute to more than 80% of the global CV deaths. The aim of this paper was to present the magnitude of the cardiovascular diseases burden on health status of the Syrian citizens. Methods: Descriptive study, comparing WHO estimates CVDs deaths and Disability Adjusted Life Years (DALYs) in Syria for the years 2002, 2004 and 2008. Results and discussions: Cardiovascular mortality and its consecutive burden seemed to increase in the last years, even the country reporting system is not very informative. Cardiovascular deaths increased in Syria by 1950 and 7270 deaths in 2004 and 2008, respectively (compared to the reference of 2002), mostly due to ischemic heart disease and cerebrovascular. DALYs attributable to CVDs accounted 359,898 years in 2002 (13.5% from all causes DALYs and 21.2 % from non-communicable diseases DALYs) with less than 1% increasing in 2004. Males were significantly more affected than females (57% from deaths and 61.4% from DALYs were registered in males) and in younger age. Conclusion: Our study was based on existing information in Syrian and in international public databases, aimed at describing the magnitude of the CVDs as public health problem. Further research is needed to explore the CVDs risk factors prevalence in the Syrian society and to identify the needs for CVDs mortality and morbidity data to be collected routinely or through surveys. Potential improvements in data collection will provide evidence for a long term strategy for CVDs control.*

Cuvinte cheie: povara
BCV, mortalitate, ani
de viață ajustați după
incapacitate (DALY)

Rezumat: *Introducere: Bolile cardiovasculare (BCV) reprezintă principala cauză de deces la nivel mondial, fiind responsabile de aproximativ 30% din numărul total de decese (2008). Țările cu venituri mici și mijlocii contribuie cu circa 80% la numărul total de decese prin BCV.*

Scop: analiza descriptivă a magnitudinii poverii bolilor cardiovasculare asupra stării de sănătate a populației siriene. Metodologie: Studiu descriptiv, care compară estimările OMS privind decesele și anii de viață ajustați după incapacitate (DALY) în Siria, pentru anii 2002, 2004 și 2008. Rezultate și discuții: Mortalitatea prin BCV și povara indusă de aceste boli au crescut în Siria în ultimii ani, deși sistemul de raportare de date al țării nu este foarte informativ. Decesele prin BCV au crescut în valoare absolută cu 1950, respectiv 7270 în anii 2004 și 2008, comparativ cu nivelul de referință din 2002, în special datorită bolilor cardiace ischemice și celor cerebrovasculare. DALY atribuibile bolilor cardiovasculare au fost estimați la 359898 în 2002 (13,5% din DALY de toate cauzele și 21,2 % din DALY prin boli netransmisibile), cu o creștere mai mică de 1% în 2004. Bărbații au fost semnificativ mai afectați în comparație cu femeile (57% din decese și 61,4% din DALY s-au înregistrat la bărbați) și la grupe de vârstă mai tinere. Concluzie: Studiul nostru s-a bazat pe informația existentă în baze de date publice din Siria și de la nivel internațional, pentru a descrie magnitudinea poverii bolilor cardiovasculare ca problem de sănătate publică. Cercetări ulterioare sunt necesare pentru a explora și prevalența factorilor de risc pentru BCV în populația din Siria și pentru a identifica nevoia de date privind mortalitatea și morbiditatea prin BCV, care să fie colectate de rutină sau prin anchete. Potențialele îmbunătățiri în colectarea datelor vor furniza argumente științifice pentru o strategie pe termen lung privind controlul BCV

INTRODUCTION

Cardiovascular diseases (CVDs) represent the main cause of death in the world, being responsible for around 30% of the total annual registered deaths (around 17.3 million in 2008). These figures will increase by more than 35% in 2030 (23.6 million deaths per year).(1)

According to WHO data, the low and middle-income

countries contribute to more than 80% of the global CV deaths, because the people living in these countries are more exposed to the main risk factors for CVDs (tobacco, unhealthy nutrition, lack of physical activity, harmful alcohol consumption), and have lower access to primary health education interventions and to effective health care.(1)

Situated in the Middle East, the Syrian Arab Republic

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is a lower middle income country, according to the World Bank Classification.(2)

Before the political crisis that marked the country in the last two years, Syria has passed through a well advanced epidemiological transition, marked by an overall decline in mortality, declining rates of communicable diseases and increasing in proportion of burden attributable to non-communicable diseases.(3)

PURPOSE

The aim of this paper was to present the magnitude of the cardiovascular diseases burden on the health status of the Syrian citizens

METHODS

We performed a descriptive study, based on international and national data on CVDs mortality in Syria. Our target variables were deaths and DALYs attributable to CVDs (as absolute number and standardised rate per 100000 inhabitants). We compared WHO estimates for the years 2002, 2004 and 2008 (changes in percentage or as absolute number). Where available, we described data by gender and by age groups (0-14, 15-59,60+). Comparison among genders or by age-groups was considered using Chi² test with a level of significance of 0.05.

RESULTS

From the demographic point of view, Syria faced a 62.6% increase in population in the last two decades (since 1990) (figure no. 1). This population increasing was also accompanied by the increase in life expectancy and a reduction in mortality in both genders (table no. 1).

Cardiovascular mortality and its consecutive burden seemed to increase during this period in Syria, even the country reporting system is not very informative.

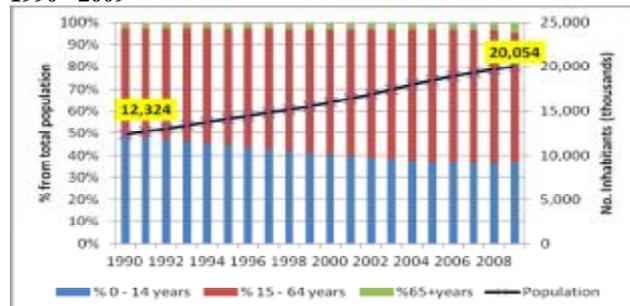
The coverage of death registration was of 80% and the quality of cause of death information from death registration sent to WHO was classified as "low".(8,9)

In this context our approach was to follow the WHO estimates for absolute number of deaths and DALYs attributable to CVDs and the age-standardized CVDs mortality rates and DALYs. These indicators were available for the years 2002, 2004 and 2008.

According to the official statistics reported by the Syrian Ministry of Health, the population accounted in 2010 20619 thousands inhabitants, with a crude mortality rate of 3.8 deaths per 1000 inhabitants, meaning around 78352 deaths.(10)

The absolute number of deaths officially reported is 63336, meaning a difference of around 15000 deaths among the two sources.

Figure no. 1. Population number and age-group structure 1990 - 2009



Source: WHO combined to UN population (4,5)

The estimated cardiovascular deaths increased in Syria

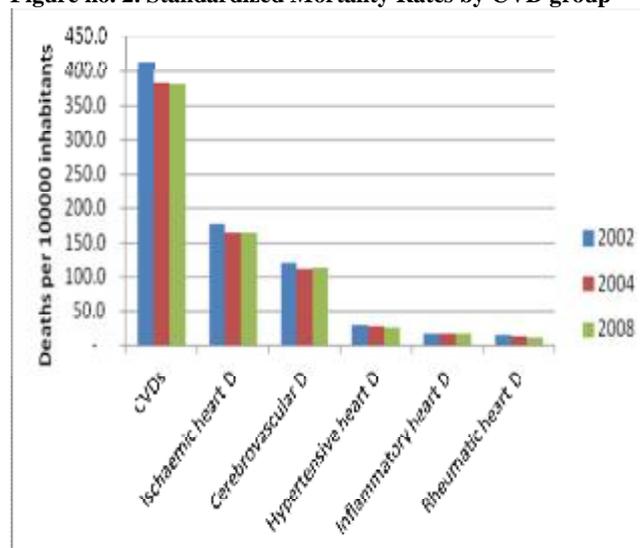
by 1950 and 7270 deaths in 2004 and 2008, respectively (compared to the reference of 2002), meaning 7.15% in 2004 and 26.70% in 2008. This increase was mostly due to ischemic heart disease (3240), followed by cerebrovascular diseases (2090) and hypertension (510) (table no. 2).

The model of CVD mortality seemed to remain stable during 2002 - 2008 (figure no. 2).

Table no. 1. Life expectancy at birth and standardized mortality rates by gender in Syria, 1990, 2000, 2009

	1990	2000	2009
Life expectancy at birth (years)			
Males	64.5	68.7	71
Females	69.7	73.8	76.4
Overall	67	71.1	73.6
Adult mortality rate 15 - 60 years (deaths/100000 inhabitants)			
Males	257	194	159
Females	186	130	95
Overall	221	162	127

Figure no. 2. Standardized Mortality Rates by CVD group



Source: WHO. Death and DALY estimates by cause for WHO member states (11-13)

In 2002 estimated DALYs attributable to CVDs accounted 359,898 years, meaning 13.5% from DALYs from all causes and 21.2 % from DALYs due to non-communicable diseases (table no. 3).

They were caused mostly by ischemic heart disease and cerebrovascular disease. Two years later, Syria experienced a very small increase in DALY attributable to CVDs (3137 years, less than 1%)

However, the standardised DALY rates seemed to increase in 2004 (figure no. 3). If the model of mortality remained stable, the increase in standardised DALY rates may be due to the increase in years of life lost due to time lived in states of less than full health.

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Table no. 2. Difference in CVD deaths (absolute number, thousands)

	Cardiovascular diseases	Rheumatic heart	Hypertensive heart disease	Ischaemic heart	Cerebrovascular disease	Inflammatory heart diseases
2002	27.2	1.7	2.0	11.2	7.7	1.1
2004	29.2	1.7	2.2	12.1	8.2	1.1
2008	34.5	1.9	2.5	14.4	9.8	1.4
Diff 2004-2002	1.95	(0.00)	0.17	0.96	0.54	0.08
Diff 2004-2002	7.27	0.16	0.51	3.24	2.09	0.31

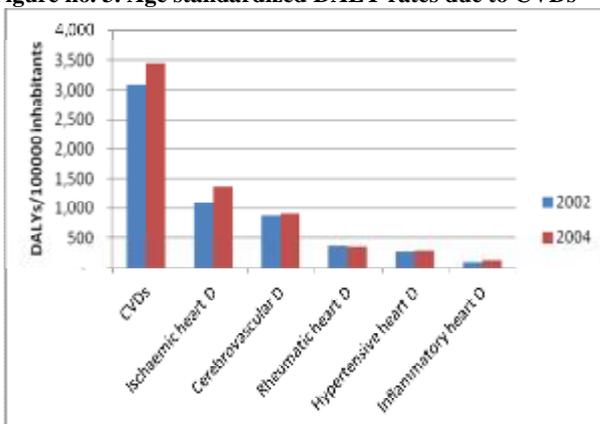
Source: WHO. Death and DALY estimates by cause for WHO member states (11-13)

Table no. 3. Number of DALYs attributable to CVDs groups

	Cardiovascular diseases	Rheumatic heart disease	Hypertensive heart disease	Ischemic heart disease	Cerebrovascular disease	Inflammatory heart diseases
2002	359,898	57,332	25,410	117,906	100,054	12,948
2004	363,035	55,675	27,182	128,869	93,647	13,066
2008	NA	NA	NA	NA	NA	NA
diff 2004 - 2002	3,137	- 1,667	1,771	10,963	-6,407	117

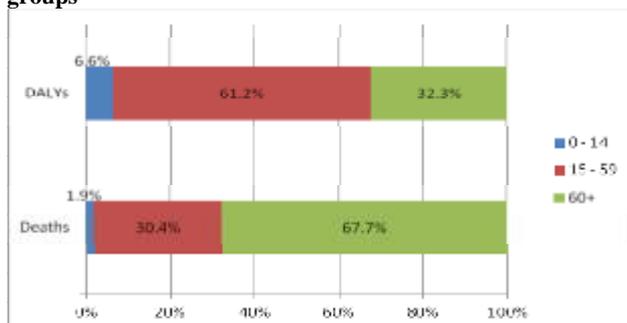
Source: WHO. Death and DALY estimates by cause for WHO member states (11,12)

Figure no. 3. Age standardized DALY rates due to CVDs



Source: WHO. Death and DALY estimates by cause for WHO member states (11,12)

Figure no. 4. Proportion of CVD deaths and DALYs by age-groups



Source: WHO. Death and DALY estimates for 2004 by cause for WHO member states (12)

In 2004 (year with deaths and DALYs distribution by age-group and gender available) 57% from deaths and 61.4% from DALYs were registered in males. By age groups, two thirds of deaths (67.7%) occurred in age-group 60+ years, but two thirds of DALYs occurred in age-group 15-59 years (figure no. 4).

The proportion of deaths and DALYs by gender was significantly different (table no. 4).

Table no. 4. Proportion of deaths and DALYs occurrence by gender

	age-group	0 - 14	15 - 59	60+	p-value*
Deaths	Males	2.05%	34.54%	63.41%	<0.001
	Females	1.72%	24.95%	73.33%	
DALYs	Males	6.62%	64.61%	28.77%	<0.001
	Females	6.49%	55.71%	37.80%	

*Chi² test between males and females

Source: WHO. Death and DALY estimates for 2004 by cause for WHO member states (12)

DISCUSSIONS

The analysis of the health status of the Syrian people in relation to cardiovascular diseases is difficult to perform due to the gaps in routinely reported data. Morbidity indicators are not available in public national and international databases. A particular cross-sectional survey among Aleppo residing Syrian adults (15-65 years) estimated a prevalence of 5.8% for CVDs (4.8 and 1% for heart diseases and stroke respectively). (14) Mortality data are reported to WHO for some years, even though the death registration coverage is estimated to 80% and the

quality of completion of death certificates (cause of death) was classified as low in a previous study.(9) WHO estimates of the disease burden are available for the years 2002, 2004 and 2008.

These figures showed a 26.7% and 0.8% increase in deaths (2002 - 2008) and DALYs (2002 – 2004) attributable to CVDs as absolute numbers. The CVD standardized mortality rate remained rather stable, meaning that the CVD mortality model did not worsen in the last years. However, if we look at the epidemiological transition experienced by the Eastern European countries, their CVD mortality rate started to decrease at the end of '80ies, which is still not the case in Syria.(15)

The increase in absolute deaths is probably due to larger cohorts of population that started to suffer and to die from CVDs. Translated in demand for health services it means that the Government needs to plan increasing facilities and resources dedicated to meet the population needs for CVDs specialized services. Also the standardized DALYs per 100000 seemed to increase. Men are significantly more affected than women by CVDs mortality and this occurs in younger ages.

CONCLUSIONS

Our study was based on existing information in Syrian and international public databases, aiming to put together figures that may help to understand the magnitude of the CVDs as a public health problem. Further research is needed to explore the CVDs risk factors prevalence in the Syrian society and to identify the needs for CVDs mortality and morbidity data, collected routinely or through surveys. Potential improvements in data collection will provide evidence for a long term strategy for CVDs control.

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