

Review Article: Risk Factors for Non-communicable Diseases in Libya

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ABSTRACT

This review article highlights the current situation of some non-communicable diseases in Libya and factors contributing to its prevalence such as obesity, diabetes, cardiovascular diseases (CVD), high blood pressure and cancer. Obesity is a global epidemic resulting in major morbidity and premature death. Between 26-41% among adult Libyan women and 11-21 % among adult Libyan men (about 64% of Libyan adults are either overweight or obese), obesity progressively increasing with age, and two times more common among Libyan women than men. Hypertension is a common co-morbidity of diabetes, affecting 20-60% of people with diabetes. Hypertension is also a major risk factor for CVD as well as microvascular complications such as retinopathy and nephropathy. About 68.4% of Libyan males and 48.4 % of Libyan females who suffer from high blood pressure are under treatment. The average rate of those who suffer from diabetes mellitus among Libyans reached between 11 – 23.3 % for both sexes. The main causes of death are cardiovascular diseases (43%), cancer (14%), chronic respiratory diseases (4%), diabetes (5%), other Non-communicable diseases (NCDs) (12%), communicable maternal perinatal and nutritional conditions (10%), and road traffic injuries (12%). The prevalence of risk factors for non-communicable diseases has risen as a result of changing lifestyles. More than 30% of the adult male population smokes regularly. Approximately, 1.2 percent of the population is blind, mainly due to cataract. Trachoma remains endemic in some pockets in the country. Road traffic crashes, which result in 6 deaths per day and even higher figures for disability, account for a significant burden of disease.

Keywords: Libya, Non-communicable diseases, obesity, diabetes, cancer, blood pressure.

INTRODUCTION

The prevalence and incidence of non-communicable diseases in Libya have increased dramatically over the past 30 years. Cardiovascular diseases, hypertension, diabetes, cancer beside that traffic accidents, contributed significantly to morbidity and mortality, and have put a considerable strain on the country's health expenditure. The prevalence of risk factors for non-communicable diseases has risen as a result of changing lifestyles. The main causes of deaths are cardiovascular diseases, cancer, road traffic injuries and diabetes (Country Cooperation Strategy for World Health Organization (WHO) and Libya ^(1,2). In an effort to tackle this problem, the Ministry of Health, with the support of WHO, has adopted the WHO stepwise approach to non-communicable disease risk factor surveillance. The WHO stepwise approach is a simple standardized method for collecting, analyzing and disseminating data in countries. The stepwise survey was successfully conducted in 2009 using a standard survey

instrument and a methodology adapted to Libya's resource setting. Therefore, the purpose of this paper is to review the current situation of some non-communicable diseases in Libya, and factors contributing to its prevalence.

Obesity in Libya

Obesity is a global epidemic resulting in major morbidity and premature deaths. Cases of obesity and overweight are increasing in Libya as well as all over the world, with genetic and environmental factors playing a contributory role. Environmental factors, e.g. high energy/high fat foods, fast food consumption, television watching, "super-sized" portions, etc. must play an important role in the obesity epidemic and habitual diet is one of many environmental factors that potentially contribute to the inter-individual differences in body fat mass. Differences in habitual dietary intake are also partly determined by differences in genes influencing smell and taste preferences ⁽³⁾.

Table (1) shows that the mean BMI (kg/m²) in Libyan adults (aged between 24 – 65 years) is

27.7 (26.4 in men and 29 in women). Males and females have the same mean waist circumference, i.e. 93.3 cm. There was no significant difference between male and female children as regards to overweight or obesity⁽⁴⁾ (WHO, 2007). However, obesity was almost two times more common among Libyan women than men, i.e. 21.4% vs. 40.1 %^(5,6). Whereas overweight was more among Libyan women (69%) than men (57.5 %). This is because Libyan women tend to lead sedentary lifestyles than men, and also because women in Libya indulge in binge eating as they spend much time at home, and also attend more social gatherings which are usually associated with consumption of abundance of food. Also, hormonal factors might play a role in accumulation of fat in women than in men⁽⁷⁾.

About 64% of Libyan adults are either overweight or obese⁽⁶⁾. Obesity in Libyan males and females aged 30 years or more increase from 57 % to 61% for males, and 64% to 68% for females between 2005 to 2015 as shown in figure 1⁽²⁾.

The obesity in Libyan children aged 5 years or less is 16.9 %⁽⁹⁾, 6.1% of children aged between 10 and 18 are obese⁽⁴⁾, and 30.5% of adults⁽⁶⁾. Figure (2) shows the rate of obesity progressively increases with age, from 4.2% in those aged between 10 and 12 to 46% in those aged between 55 and 64⁽⁶⁾.

With its known significant morbidity and mortality, obesity should draw the attention of the healthcare community, researchers, and policy makers in Libya⁽⁷⁾. At least, 80 % of premature heart disease, stroke and type 2 diabetes, 40 % of cancer could be prevented through health diet, regular physical activity and avoidance tobacco products⁽⁴⁾.

Lack of Physical Activity

The health benefits of a physically active lifestyle are well known. They include a lower risk of obesity, coronary heart disease and stroke, type II diabetes as well as colon and breast cancer. Globally, over 1.9 million deaths per year could be prevented if everybody was sufficiently physically active.^(10,11) However, it has been shown that physical activity during childhood and adolescence reduces the risk of childhood as well as adulthood obesity^(12, 13), has

a positive effect on blood pressure and is associated with emotional well-being.^(14,15) Table (2) shows Libyan physical measurements for both sexes, aged between 25-64 years. Less than half (43.9%) undertaking regular “low level” physical activity. This was more obvious in women (51.7%) than in men (36.0%). However, just over one third (34.0%) of the total sample reported with low levels of physical activity (even lower in women; 30.7% than in men; 37.3%). The mean time spent in physical activity was 45 minutes / day for both sexes, but was shorter in women (43.3 minutes / day) than in men (60 minutes/day)⁽⁶⁾. This could be due to increasing dependence on mechanical transportation and greater availability of effort-saving equipments domestically. Also, the increase in television viewing time, use of computers, and video games could be other possible contributors to the rise in the prevalence of obesity in Libyan children and adults⁽⁶⁾.

Source: Libya stepwise survey 2009⁽⁶⁾.

Participants from Derna Libyan city children aged 6-9 years were asked how many times per day they spent for each of the following categories: watched television, exercise (walking, running, played football, etc.), sleeping, study, playing video games, and sitting at home engaged in other activities. The questionnaires were completed by the students' parents. This study revealed that the mean daily hours of television watching, playing outside, studying, sleeping, and playing video games were 3.2 hours/day for boys and 3.9 hours/day for girls, 4.86 for boys and 3.93 for girls, 2.93 for boys and 3.20 for girls, 10.33 for boys and 10.33 for girls, and 2.70 for boys and 2.68 for girls, respectively. Among boys, the minimum spent hours on average daily of television watching was 2.6 hours in fourth class, and maximum spent hours was 3.5 hours in first class⁽¹⁶⁾. At the same time, country cooperation strategy for WHO and Libya^(2,17) reported that obesity is also emerging as a major health problem. Almost, 42% of students have been in a physical fight in a 12-month span and almost 60% of schoolchildren do not have easy access to safe water in school. In general, to reduce obesity requires modifying, both energy intake and energy expenditure, not simply focusing on

either alone. Food restriction alone will not be effective in reducing obesity if human physiology is biased toward achieving energy balance at a high energy flux, i.e. at a high level of energy intake and expenditure. Sedentary lifestyle lowers energy expenditure and promotes weight gain in both males and females⁽¹⁸⁾.

Diabetes Mellitus Prevalence

The world prevalence of diabetes among adults (aged 20-79 years) is 6.4%, affecting 285 million adults in 2010, and will increase to 7.7% and 439 million adults by 2030. Between 2010 and 2030, there will be a 69% increase in numbers of adults with diabetes in developing countries, and a 20% increase in developed countries⁽¹⁹⁾. The prevalence of diabetes mellitus among Tripoli / Libya participants in study done by⁽²⁰⁾ among males and females, was 54.1% and 45.9% respectively ($P = 0.0001$). Among different age groups, males have higher rates compared to females except in very young (10-19) and very old >80 (Figure 3). The prevalence of males was higher than females among total population screened (21% and 17.8% respectively). Diabetes mellitus prevalence increases with the increase of age, with higher rates among age groups over 40 ($P < 0.0001$, Figure 3). At the same time, the stepwise survey by Ministry of health- Libya (2009)⁽⁶⁾ reported that the average rate of those who suffer from diabetes mellitus among Libyan reached between 11 – 23.3% for both sexes. The mean fasting blood glucose in the entire survey sample, including those with known diabetes was 84 mg/dl (86 mg/dl in men and 81mg/dl in women). The prevalence of known and newly discovered diabetes was 16.4% (17.6% in men and 15.1% in women). The mean fasting total plasma cholesterol including those on lipid lowering therapies was 174.4 mg/dl with no significant difference between men and women. 20.9 % of the surveyed individuals had either high total blood cholesterol level or were on lipid lowering therapy. There was a slight difference between men (19.0%) and women (22.7%). At the same time, in Benghazi / Libya, the prevalence of diabetes was 14.1%, and the annual average incidence of type I (type I diabetes is an autoimmune disease) among 0-14-year-old is 7.8 per 100,000. This accounts for

22% of all medical admissions to a teaching hospital in Benghazi⁽²¹⁾. Another study from Benghazi revealed an incidence of type II diabetes (0-34 years at onset) of 19.6 and 35.3 per 100,000 individuals for males and females, respectively⁽²²⁾.

High Blood Pressure

High blood pressure is a global public health problem. It is one of the major causes of premature death worldwide, killing nearly 8 million people every year, and the problem is growing. Behavioral and lifestyle-related factors can put people at a higher risk for developing high blood pressure. These factors include tobacco use, unhealthy diet and excessive use of salt, physical inactivity, overweight and obesity and harmful use of alcohol. Blood pressure tends to rise as people get older, thus everyone's risk for hypertension increases with age. Hypertension can be hereditary. People can inherit genes that make them more likely to develop the condition. The risk of high blood pressure increases when hereditary factors are combined with unhealthy lifestyle choices⁽²⁾.

Among Libyan, mean systolic blood pressure - SBP (mmHg), including those currently on medication for raised BP for males, females and for both sexes were 136.3, 129.5 and 132.9 respectively. At the same time the mean diastolic blood pressure - DBP (mmHg), including those currently on medication for raised BP were 80.2 for males, 78.4 for females and 79.3 for both sexes. Percentage with raised BP (SBP - 140 and/or DBP - 90 mmHg or currently on medication for raised BP were 45.8% , 35.6% and 40.6% for males , females and both sexes respectively . Percentages with raised BP (SBP - 140 and/or DBP - 90 mmHg) who are not currently on medication for raised BP were 68.4% for males, 48.5% for females and 59.7 for both sexes (table 3).

Blood pressure can be lowered through lifestyle modifications and regular use of medications. Prevent and manage other medical conditions such as diabetes. About 60% of people who have diabetes also have high blood pressure. The risk of diabetes can be reduced by eating a healthy diet, maintaining a healthy weight and being physically active reduce and

manage mental stress through yoga, meditation and other relaxing techniques⁽²⁾.

Cardiovascular Disease (Cvd)

CVD is a multifactorial disease; with a number of modifiable physiological risk factors such as high blood pressure⁽²³⁾, high total cholesterol⁽²⁴⁾, high blood glucose⁽²⁵⁾ and high body mass index (BMI)⁽²⁶⁾. Also, modifiable behavioral risk factors play a causal role and include increased alcohol use⁽²⁷⁾, tobacco smoking⁽²⁸⁾, unhealthy diet and physical inactivity⁽²⁶⁾. Familial aggregation of CVD suggests evidence of a genetic predisposition⁽²⁹⁾ and twin studies have reported about 40% heritability of coronary heart disease (CHD) mortality⁽³⁰⁾. CVD diseases are the leading causes of morbidity and mortality worldwide. By 2020, the estimated deaths due to CVD are expected to reach 25 million deaths worldwide⁽³¹⁾. CVD is now recognized as the leading cause of death and disability worldwide⁽³²⁾. The World Health Organization (WHO) estimated that, in 2008, out of 17.3 million CVD deaths globally, heart attacks (myocardial infarction) and strokes were responsible for 7.3 and 6.2 million deaths, respectively⁽³²⁾. According to the interheart and interstroke studies, hypertension, diabetes, dyslipidemia, obesity, smoking, physical inactivity, poor diet, and alcohol consumption are the most common risk factors for myocardial infarction (heart attack) and strokes worldwide.⁽³³⁾ Cardiovascular diseases and strokes are rapidly growing problems, and are the major causes of illness and deaths in Libya, accounting for 43% of deaths in 2014 (Figure 4),⁽³⁴⁾. During a 12 month study period, a total of 329 incident cases of stroke occurred in Benghazi, Libya. This provided an unadjusted annual incidence rate for stroke of 63 per 100,000 population. The corresponding rates for the male and female were 69 and 58 per 100,000 respectively. The sex-dependent difference in the incidence was not statistically significant. Cerebral infarction was the commonest type of stroke accounting for 80.9%. The incidence rates increased with age in all categories of stroke. Hypertension and is ischemic heart diseases were common risk factors among the male patients, while diabetes and hypercholesterolemia were more frequent in the female patients⁽³⁵⁾.

Tobacco Use and Alcohol Consumptions

Worldwide, tobacco use causes nearly 5.4 million deaths per year, and current trends show that tobacco use will cause more than 8 million deaths annually by 2030⁽³³⁾. Although tobacco deaths rarely make headlines, tobacco kills one person every six seconds⁽³⁶⁾. Tobacco kills a third to half of all people who use it on average 15 years prematurely.^(37,38) Results of the Global School Health Survey in 2007 show that 15.2 % of school children aged 13–15 years currently use some forms of tobacco products, and 6% of students currently smoke cigarettes. At the same time, country cooperation strategy for WHO and Libya 2001- 2015 report that, more than 30% of Libyan adult male population smokes regularly.

The percentage of current Libyan smokers (2009) aged between 25 – 64 years, among men was very high at 49.6% and was remarkably very low in women at 0.7%. At least, 47.6% of men smoked daily and 88.8% of smokers used manufactured cigarettes on a daily basis. The daily average tobacco consumption reported to be as 6.9 cigarettes per day. Smoking initiation was reported at a mean age of 19.3 years (Table 4).

Over eighty six percent (86.4%) of the surveyed individuals never consumed alcohol in their lives (the corresponding figure was 99.4 % among females). Those who consumed alcohol during the month preceding the survey were small, in men (2.3%) and none (0%) in women

Cancer incidence in Libya

Cancer is a significant problem in Libya⁽³⁹⁾; Cancer is a major burden of disease worldwide. Each year, tens of millions of people are diagnosed with cancer around the world and more than half of the patients eventually die from it⁽⁴⁰⁾. In USA, cancer ranks the second most common cause of death following cardiovascular diseases.^(40,41) Cancer has or will soon become the number one killer in many parts of the world. As elderly people are most susceptible to cancer and population aging continues in many countries, cancer will remain a major health problem around the globe. World Health Organization addressed that two thirds of worldwide of cancer deaths are due to four risk-

factors. These risk factors include food-related such as colorectal, prostate, stomach, liver, mouth and pharynx cancers; tobacco-related such as lung cancer; infection-related such as liver, cervix and lymphoma cancers; and hormone-related such as breast cancer⁽⁴²⁾. Also, they addressed the relationship between total cancer risks and other factors including dietary habits, smoking, ratio of animal to plant food eaten, the quality of food, cooking methods and lifestyle. However, it is estimated that more than half of all cancer cases and deaths worldwide are potentially preventable.

Diet and nutrition are estimated to account for approximately 30% of all cancers in developed countries and 20% in developing countries⁽⁴³⁾. Dietary patterns allow estimates of disease associations beyond those for single food items or nutrients, and include the total diet^(44,45). Slattery et. al. and Park et. al. published that address the relationship between dietary factors and total cancer risk. It has been suggested that vegetarian diets are inversely related to overall cancer incidence, although not all studies agree⁽⁴⁶⁾. In addition many results for specific cancers are inconsistent between studies. This lack of clarity may result from the heterogeneity of vegetarian diets between subjects and in different countries. They may range greatly in the ratio of animal to plant food eaten, the quality of food, cooking methods, the limitations of measures used to quantify dietary intake, as well as other associated lifestyle factors that may produce an impact on the risk of cancer.^(47,48) Healthy nutrition can assist cancer patients get the diet they need to keep up their strength and fight infection⁽⁴⁹⁾. Fruits and vegetables, and plant constituents such as fibers, and antioxidants maintain a healthy body and a lower cancer risk⁽⁴²⁾.

An overview of magnitude of cancer incidence in West Libya from 2009 to 2013 and cancer mortality from 2009 to 2012, to identify the role of bad meal in developing cancer. Among 1851 cancer patients, 1472 cases (79.5%) occur in people aged above 40 years old. Figure (5) shows continuous rise in number of cancer cases with increasing age⁽⁵⁰⁾. The most affected age by cancers was in males aged 61-70 years and in females aged 41-50 years. Lung cancer is the principal cancer in men accounting for 21% of

males cases, while breast cancer is the leading malignancy in women accounting for 34.5% of female cases. Cancer is responsible for approximately 11.7% of death. Among 100 interviewed males and females with colorectal, stomach and liver cancers, 50% of them were eating a lot of red meat and fast foods, whereas 20% of all cases were eating a little of fruits and vegetables. 22% of all cases were more likely to have a positive family history of cancer, and 8% of all cases had chronic diseases such as diabetes, hypertension, urinary tract infection and gastritis.

Breast cancer is by far the leading malignancy in women accounting for 34.5% of infected females (17.6% among all males and females). The breast cancer is one of a serious health problem in Libyan women^(39,51) and represents 18.9 % among 100,000 Libyan females⁽⁵²⁾. Figure (6) shows the ten main types of cancer in infected men and women in west Libya.

The most common malignancies in Benghazi Libya in men cancers of the colon were (22.3 %), lung (20.3%), prostate (16.1%), pancreas (4.2%) and liver (4.2%). For women, they were found to be cancers of the breast (41.5%), colon (16.4%), uterus (8%), ovary (5.5%) and pancreas (3.1%). However, if all Libyans maintained a healthy weight, ate a balanced diet that emphasized plant foods, and engaged in regular physical activity, as many as one-third of all cancer deaths in Libya could be prevented. Nutrition factors that affect cancer risk may include types of foods, how food is prepared, portion size, food variety, age and overall balance of the diet. For the majority of Libyans who do not use tobacco, dietary choices and physical activity are the most important modifiable determinants of non- communicable diseases including cancer risk⁽⁵³⁾.

Consumption of fruits and vegetables

Low fruit and vegetable intake is estimated to cause some 2.7 million deaths each year, and was among the top 10 risk factors contributing to mortality, according to the World Health Report (2002). The announcement was made in Rio de Janeiro, Brazil, at the annual meeting of the WHO Global Forum on Non-communicable Disease (NCD) Prevention and Control.

Consuming a healthy diet including fruits and vegetables throughout the life course helps prevent malnutrition in all its forms as well as a range of non-communicable diseases and conditions, including diabetes, heart disease, stroke and cancer. At least, 400 g (5 portions) of fruit and vegetables a day. Potatoes, sweet potatoes, and starchy roots are not classified as fruits or vegetables. Figure (7) shows that the average fruits quantity consumed by Libyan individual were 174, 163, 146 and 170 grams for 1992, 1997, 2002 and 2007 respectively⁽⁵⁴⁾.

Figure (8) shows the proportion of Libyan who ate less than 5 servings of fruits and vegetables per day amounted to a very high at 97.4% of the sample and this was identical in men and women⁽⁶⁾

Blindness in Libya

In spite of the progress made in surgical techniques in many countries during the last ten years, cataract (51%) remains the leading cause of visual impairment in all areas of the world, except for developed countries. Other main causes of visual impairment in 2010 are refractive errors (RE) (3%), glaucoma (8%), age-related macular degeneration (AMD) (5%), corneal opacities (4%), trachoma (3%), diabetic retinopathy (DR) (1%), childhood blindness (4%), and undetermined (21%- Figure 9). Meanwhile approximately 1.2% of the Libyan population is blind, mainly due to cataract. Trachoma remains endemic in some pockets in the country⁽⁵⁵⁾.

Traffic accidents in Libya

It is estimated that 1.26 million people worldwide died in 2000 from road traffic accidents, 90% of them in low and middle-income countries. In 2000, the road traffic injury mortality rate for the world was 20.8 per 100,000 populations (30.8 in males, 11.0 in females).⁽⁵⁶⁾ The Arab population constitutes 3.6% of the world's population and it owns 1% of the world's vehicles. Its human losses as a result of road traffic accidents (RTA) account for 4.8% of that of the world's losses. It is estimated that the annual cost of road crashes is about 1% of the Gross National Product (GNP) in developing countries, 1.5 in transitional countries, and 2% in highly motorized countries^(57,58) reported that the situation in

Libya is worse. It is a sad fact that road traffic accidents are the number one killer in Libya and as a matter of fact, it consider be an 'epidemic' in all sectors of the Libyan society. At the same time, around 50000 people died in road accidents during the last forty years from 1969 to 2009. However, the road traffic accidents in Libya do not represent a social problem only, but also an economic problem that cost the country a lot of money. It makes it one of the most affected countries, especially from traffic accidents that lead to the death of the equivalent to 6 people per day^(58,59) summarized the possible causes into following points:

1. A driving license is not issued on the basis of how much you know. Therefore the majority of drivers know little or nothing about the law.
2. Wearing seat belts is not compulsory in most parts of Libya. In some places, especially in the Eastern part of Libya, you could be penalized for wearing one.
3. Libyan, the way they behave in the street, the way they drive and their attitude towards pedestrians is not taught in schools at an early age. As a matter of fact, many drivers think it is "cool" to scare pedestrians.
4. Most of the accidents in Libya occur at school times but, unfortunately, no measures are taken by the traffic police to help young children to cross roads safely.
5. Most of the road traffic accidents happen at the same areas, but these are never identified as "black spots" to warn drivers of the possible dangers.
6. Most of the main roads are full of holes and in desperate need of maintenance.
7. Car seats for children are not compulsory.
8. Speeding is responsible for about 70% of accidents.
9. It is a known fact that most of the deaths and permanent disabilities in road traffic accidents are caused by people trying to help due to the lack of Advanced Trauma and Life Support (ATLS) trained personnel

CONCLUSION

The prevalence of non-communicable diseases such as obesity, diabetes, stroke, CVD, high blood pressure, cancer and traffic accidents in Libya are very high among Libyans. They have increased dramatically in the last 30 years.

Obesity is much more prevalent among Libyan women than men, and it increases progressively with age in both sexes. The Libyan diet, which is high in calories and rich in fat, and the lack of physical activity play an important role in the current some non-communicable diseases in Libya. With its known significant morbidity and mortality, non-communicable diseases should draw the attention of the healthcare community, researchers, and policy makers in Libya.

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Table (1): Libyan physical measurements for both sexes, between 25 -64 years of age for BMI and obesity.

Physical Measurements	Both sexes	Males	Females
Mean body Index	27.7	26.4	29.0
% over weight(BMI ≥25)	63.5	57.5	69.0
% obese (BMI ≥30)	30.5	21.4	40.1
Average waist circumference	-	93.3	93.3

Source: Libya stepwise survey 2009⁽⁶⁾

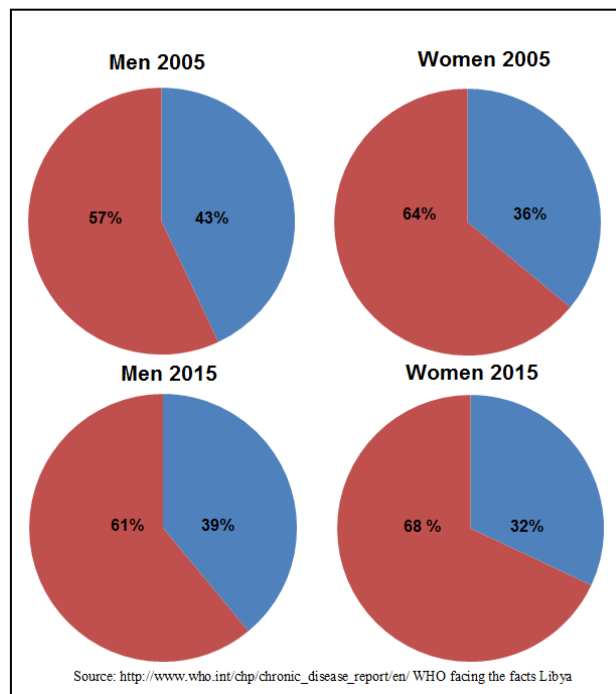


Figure (1): Projected of overweight. Libyan males and females aged 30 years or more ⁽²⁾⁽⁸⁾

Risk Factors for Non-communicable Diseases in Libya

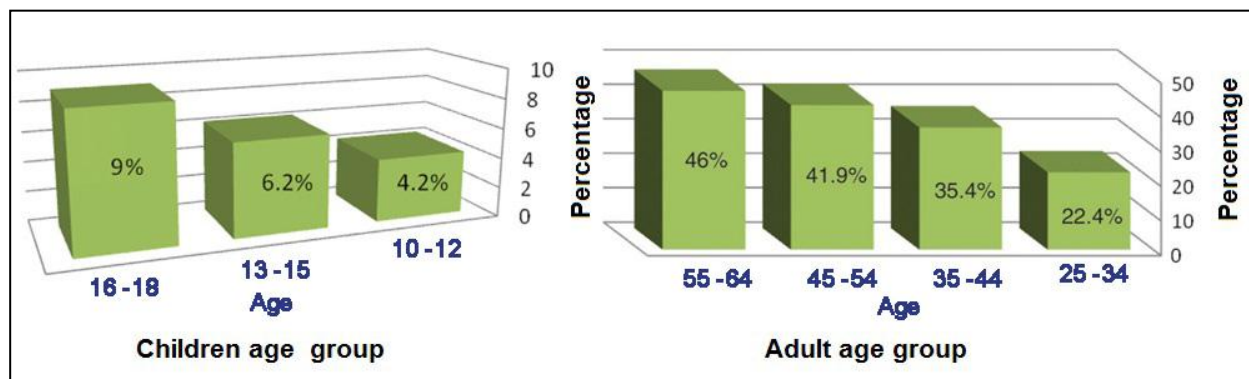


Figure (2): Prevalence of obesity among Libyan children and adults⁽⁷⁾.

Table (2): Libyan physical measurements for both sexes, between 25 -64 years.

Physical activity	Both sexes	Males	Females
Percentage with low levels of activity (defined as less than 600 MET – minutes/week)	43.9	36.0	51.7
Percentage with high levels of activity defined as ≥ 3000 MET – minutes/week)	34.0	37.3	30.7
Median time spent in physical activity on average /day (minutes) (presented with inter-quartile range).	45.0	60.0	43.3
Percentage not engaging in vigorous activity	78.4	69.3	87.4

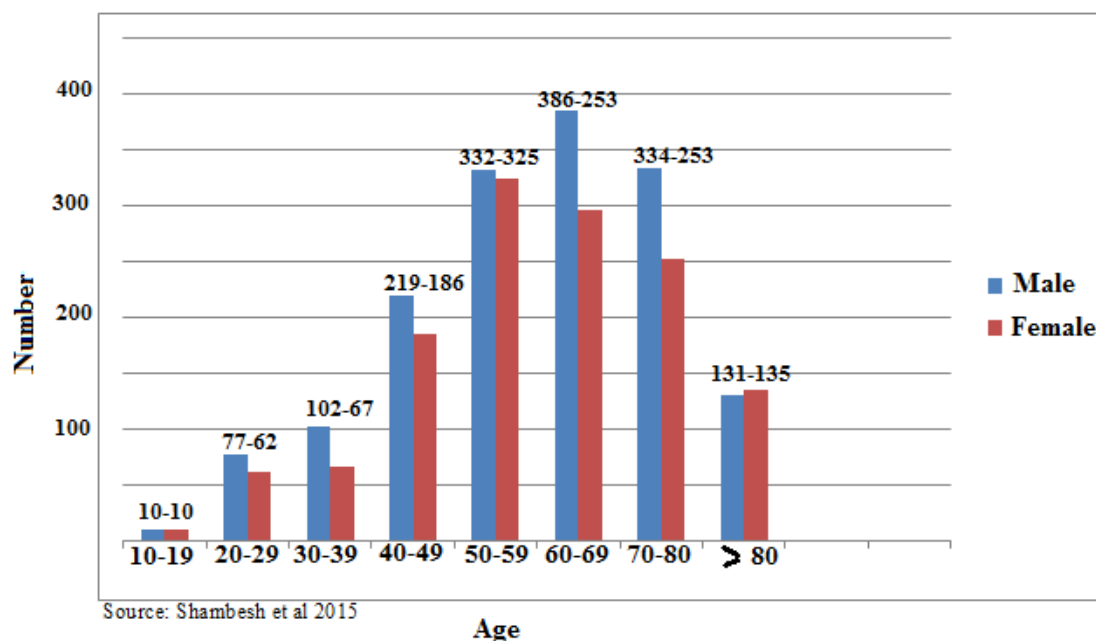


Figure (3) Diabetes mellitus age/sex structure

Table (3): Libyan physical measurements for both sexes, male females aged between 25 -64 years for blood pressure.

Physical Measurements	Males	Females	Both sexes
Mean systolic blood pressure - SBP (mmHg), including those currently on medication for raised B.	136.3	129.5	132.9
Mean diastolic blood pressure - DBP (mmHg) , including those currently on medication for raised BP.	80.2	78.4	79.3
Percentage with raised BP (SBP \geq 140 and/or DBP \geq 90 mmHg or currently on medication for raised BP.	45.8%	35.6%	40.6%
Percentage with raised BP (SBP \geq 140 and/or DBP \geq 90 mmHg) who are not currently on medication for raised BP.	68.4%	48.5%	59.7%

Source: Libya stepwise survey 2009⁽⁶⁾.

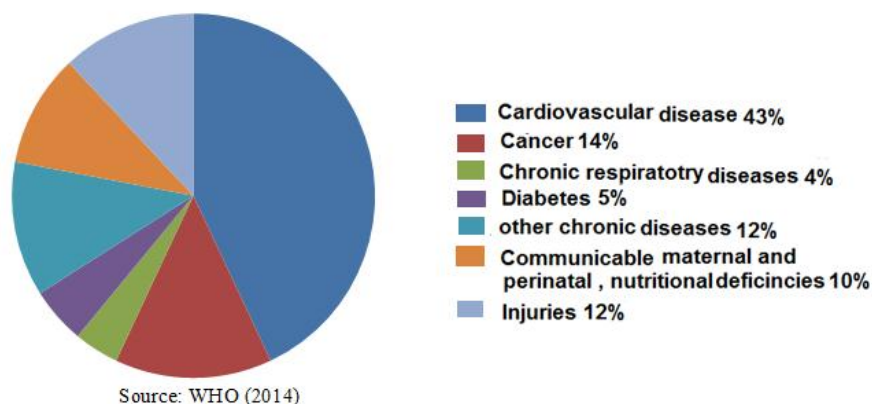


Figure (4): Deaths by cause, all ages, in Libya. Total deaths: 26,000 (NCDs are estimated to account for 78% of total deaths).

Table (4): Physical measurements for 25 -64 years for Libyan tobacco use

Tobacco Use	Both sexes	Males	Females
Percentage who currently smoked tobacco	25.1%	49.6%	0.7%
Percentage who currently smoked tobacco daily	23.8	47.6%	0.1
For those who smoke tobacco daily			
Average age started smoking (years)	19.3	19.3	-----
Percentage of daily smokers smoking manufactured cigarettes	88.8%	88.8%	-----
Mean number of manufactured cigarettes smoked per day (by smokers of manufactured cigarettes)	16.9	16.9	-----

Source: Libya stepwise survey 2009⁽⁶⁾

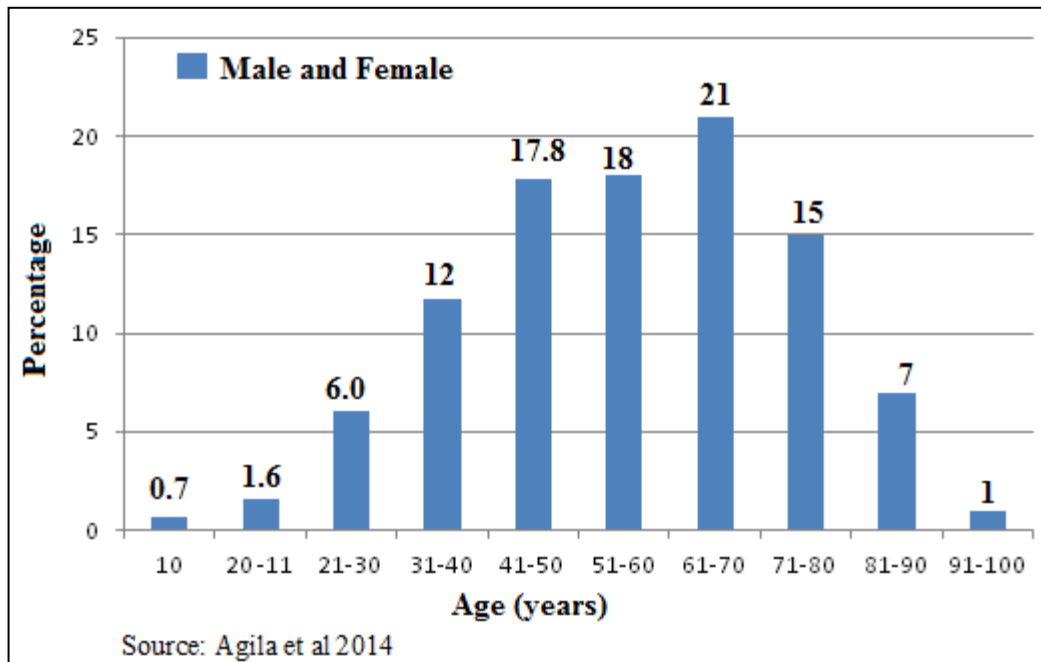


Figure (5): Total percentage of distribution of males and females with Cancer according to age from 2009 to 2013 in west Libya.

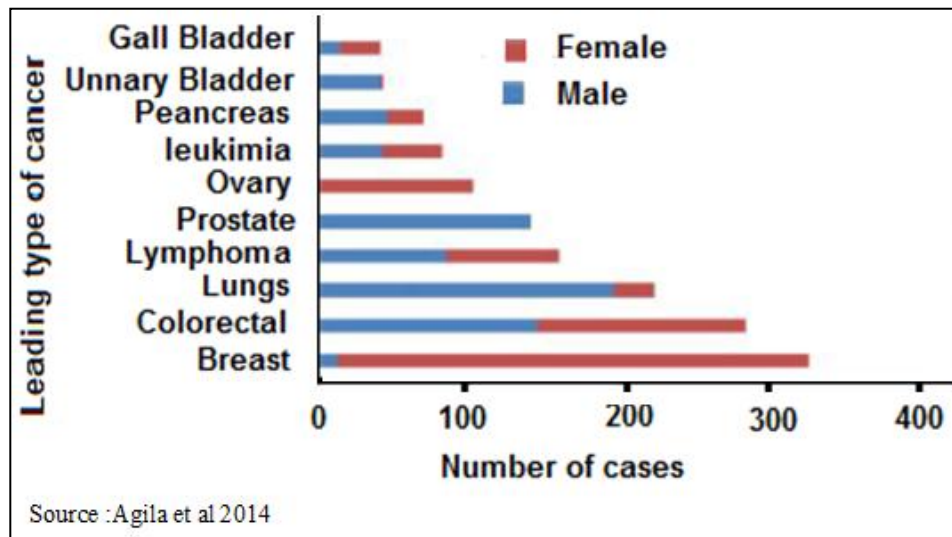


Figure (6): The ten most common cancers in males and Females from 2009 to 2013 in west Libya.

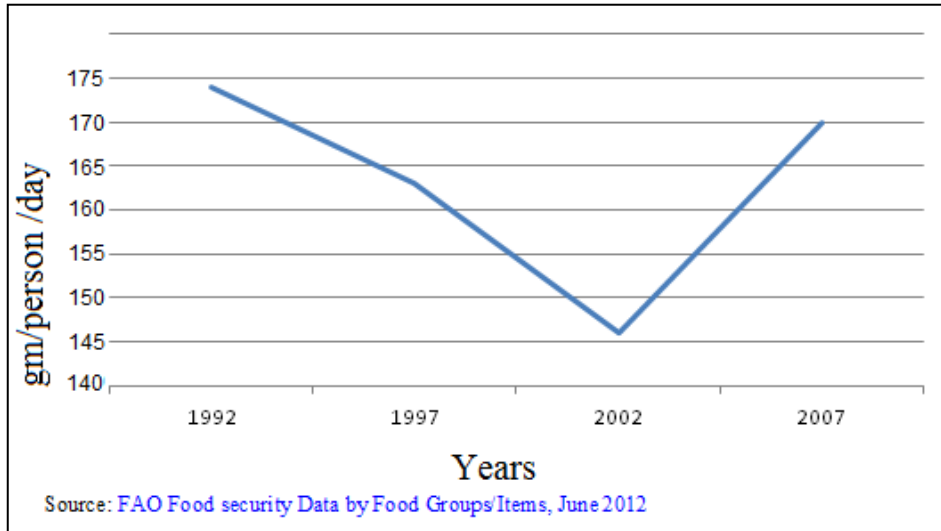
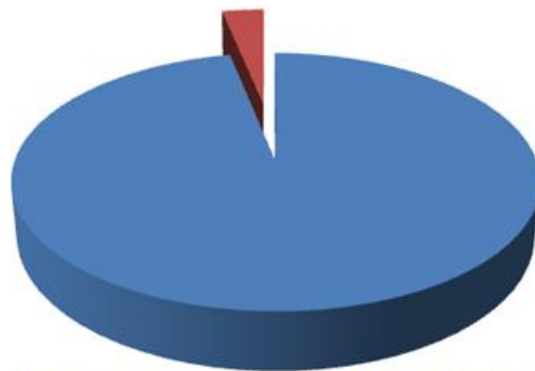


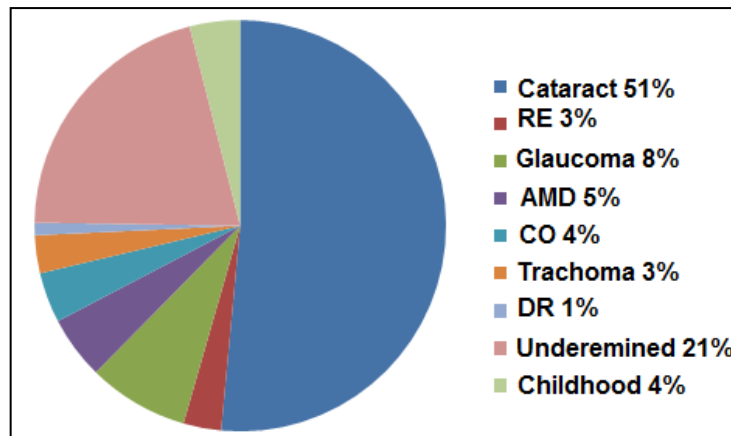
Figure 7. Daily average fruits quantity consumed by Libyan individual (1992 -2007).



Source: Libya stepwise survey 2009(Ministry of health- Libya 2009)

- Less than 5 servings of fruit and vegetables / day
- More than 5 servings of fruit and vegetables / day

Figure (8): Daily Libyan fruits and vegetable consumption.



Source: WHO (2010), Global data on visual impairment (2010).

Figure (9): Global causes of blindness as percentage of blindness in 2010.