**Ministry Of Public Health**
**Directorate of Prevention**
<u>**Department of Statistics**</u>

# Compiled Literature Report on Selected Health Conditions in Lebanon

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# ACKNOWLEDGEMENTS

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| AUB | American University of Beirut |
| AUBMC | American University of Beirut Medical Center |
| AUH | American University Hospital |
| BDI | Beck's Depression Inventory |
| BMD | Bone Mass Density |
| BOD | Burden of Disease |
| CCC | Chronic Care Center |
| DALY | Disability Adjusted Life Years |
| DIS | Diagnostic Interview Schedule |
| ESRD | End Stage Renal Disease |
| ESU | Epidemiologic Surveillance Unit |
| HDF | Hotel Dieu de France |
| IHT | Islamic Hospital- Tripoli |
| ISAAC | International Study of Asthma and Allergies in Childhood |
| LAU | Lebanese American University |
| LU | Lebanese University |
| MCIS | Multiple Cluster Indicator Survey |
| MGH | Makassed General Hospital |
| MOPH | Ministry of Public Health |
| MOSA | Ministry of Social Affairs |
| NACP | National AIDS Control Program |
| NCDP | Non Communicable Disease Program |
| NCPNN | National Collaborative Perinatal Neonatal Network |
| NDH | Notre Dame Hospital |
| NHHEUS | National Household Health Expenditure and Utilization Survey |
| NSSF | National Social Security Fund |
| PAP | Pan Arab Project |
| USJ | University Saint Josef |
| WHO | World Health Organization |
| YLD | Years of Life Lost to Disability |
| YLL | Years of Life Lost |
| YMCA | Young Men Christian Association |

# CHAPTER ONE:

# Introduction and Methodology

## Introduction:

The progressive rise in average age at death in virtually all populations has prompted the necessity to reconsider how the health of populations is measured. In many populations across the globe, there is considerable uncertainty in whether gains in life expectancy have been accompanied by improvement in health status.

The epidemiological transition, in addition to uninformative aspect of the average life expectancy at birth, have paused a question mark on health measurement and assessment of health indicators. In order to better plan the provision of health services, measures of survival/mortality and measures of health status should be combined in a way to provide a holistic measure of population health. In that line of thinking, the burden of disease idea has emerged. The idea behind a Burden of Disease study has for primary aim to combine information on mortality, measured as YLL (Years of Life Lost to death), and non-fatal health outcomes, measured as YLD (Years of Life Lost to Disability), into one summary measure of population health; namely, the DALY (Disability Adjusted Life Years). DALY is thus, a modified life expectancy at birth taking into account the load of both, the mortality and the morbidity in the country.

The intended applications of DALY as a summary measure are many. As a shortlist I mention:
1. Monitoring changes in the health of a given population
2. Comparing two different population health status
3. Informing debates on priorities for research and development
4. Informing debates on priorities for health service delivery and planning
5. Analyzing the benefits of health interventions for use in cost-effectiveness analyses.

In Lebanon, there exist major deficiencies in the knowledge of the magnitude of health problems; especially in view of the epidemiological transition we are passing through, and after the long years of civil war. DALYs, and because of their potential influence on national and international decisions, are of critical importance in Lebanon.

The ideal situation for assessment of the magnitude of a specific health problem is to conduct national studies and surveys. But, in view of the limited financial and manpower resources, the next best alternative would be to assess the present situation at the level of existing knowledge of the mortality and morbidity load of selected health problems of priority, to be able to identify the gaps.

This report is the second of a status review of published information, and available but unpublished data on selected health problems in Lebanon. The first report was done by Nuwayhid and Sibai for the WHO in 2002. In addition, it was agreed in the Burden of Disease meeting of April 2004 in Cairo, to have a repository in the region of all the studies that could contribute, as a whole, or in part, to the BOD work. This report represents a complementary work and an update to the previous review, but this time complete text articles and studies are organized and compiled as appendices to the main review report.


## Selection of Health Problems:

The selection of the health problems has undergone many activities. A checklist was first administered to colleagues at the Ministry of Public Health; namely, Medical Doctors from the

Medical Audit Committee in view of their direct contact with bills of patients admitted to private hospitals at the expense of the ministry. This was supposed to be a pilot test to be generalized to the Board Of Medical Doctors. Major problems encountered were that the doctors were from different medical specialties, and hence they rated some diseases differently. The second activity involved was an interdepartmental advisory meeting in the Preventive Medicine Directorate to pause the issue. This latter still paused other problems as to the priority of diseases being put for discussion among such a small group of experts, not to mention the questioning of the importance of the National Burden of Disease study in the first place. So, holding a workshop was proposed to prioritize the diseases. At this stage, a decision was taken to build upon the diseases and health problems that were first selected to be of utmost priority during the July 2000 workshop, and over which the work of Nuwayhid and Sibai in January 2002 was built. Hence, this will update and complement the previous work. The rational behind this decision was, on one hand, to stick to the terms of reference and the constraint of time; and on the other hand, the health profiles of countries don't change rapidly over time. In addition, the general search of literature will make it clear as to what are the health problems that are subject to research more than others, and which will contribute to the bulk of the review.


## The Search:

The following resources were reviewed for published articles, covering the period from 1990 till 2004
-Medline search, an international Database of all articles published in more than 3000 medical and health journals.
-PubMed, with Lebanon [mesh].
-The National Health Information Center (a center run by WHO-WR office), manual and computer search
-The health and medical Libraries of the Saint Joseph University
-The Lebanese corner at Saab Medical Library. A collective review of all the studies, published and unpublished, that were done in Lebanon concerning the relevant topics during the time period specified. Part of this comprised a manual search in compiled filing cabinets that are not indexed yet (1997-2004).

In addition to publications and library reports, available reports done at governmental and non-governmental institutions, as well as studies undergone on MedNet Liban database were searched. MedNet is a big private insurance company (comprising 24 small companies). The literature was selected and filtered as to its relevance to the epidemiological profile of the selected diseases.

In addition to this, information was extracted from selected national and regional health surveys, such as the National Household Health Expenditure and Utilization Survey (NHHEUS) 1999, PAP child survey 1996, National Perinatal Survey 2000. Complete copies of the before mentioned publications are provided, in addition to some pages that are included in the appendices.

## The Review:

The review tried to tackle all studies done on health problems as identified by the Global Burden of Disease 2000 categorization wherever available and relevant as to their epidemiological meaning. The subsequent points are worth noting:

1. The references sited might sometimes include some data relevant to health problems of the same nature as the searched one. For example, protein-energy malnutrition, which belongs to the same category with iron-deficiency anemia (nutritional deficiencies), had some information on it included although the search did not take account of it as a separate health problem. In that case, the name of the general health condition was sited as title.
2. Certain health problems are by themselves risk factors to other health problems, they were sited as risk factors (like Hypertension)

3. Some health conditions in the Non-communicable diseases category (like substance abuse) comprised certain risk factors (like alcohol consumption) that would otherwise be tackled alone, but was included as part of the non-communicable disease category.

4. The majority of the literature comprised of theses done by medical or pharmacy students as a completion of their studies, which were most of the times hospital based and of clinical nature, and/or of small sample size which weakened their contribution to the public health profile of the disease.

The following review will be presented as summary findings pertaining to the condition of interest, and the full texts will be appended to the report in three groups as grouped by the BOD study; in addition to a fourth volume relating to risk factors namely:
Volume I: Communicable, Maternal, Perinatal and Nutritional conditions
Volume II: Non-Communicable Diseases
Volume III: Injuries
Volume IV: Risk Factors
It is important to note that the partitioning of the volumes (Volume I, part1 and 2, and Volume II, part 1, 2 and 3) has no meaning in disease categorization, but was done for the sole purpose of convenience binding.

On the other hand, the studies and reports pertaining to the year 2004 are not all complete due to the timing of the report (end of the year), but will be updated during January 2005. Namely the Ministry of health in-patient hospitalization data, Cancer registry reports for 2003 and 2004; the HIV/AIDS statistics, the Malaria control annual report, the Tuberculosis annual report, all reportable communicable diseases.
Moreover, the statistics of the National Chronic Drugs program, which is the responsibility of the Young Men Christian Association (YMCA), will be ready soon. It is worth noting that, although this program contains rich information, a major defect with the coding system pauses itself. No international or national classification system of disease is used ever since its beginning and to date, which pauses a problem relating to the identification of individual health conditions, in addition to the problem of comparability to other datasets.

Another general problem lies in the denominators. The target populations of certain programs and the beneficiaries of certain services, are not well defined. In that case the data only serves to identify priority health conditions as to those with higher number of cases, but the risk assessment and the prevalence, which are of a more powerful statistical meaning and use, cannot be derived.

# CHAPTER TWO:

# The Ministry of Public Health In-patient Hospital Data

The visa billing center at the Ministry of Public Health is the place that grants approvals to cover inpatient and some outpatient services at selected hospitals all over the Lebanese territories that have contracts with the Ministry of Public Health . It is a very rich information source that include, in addition to the diagnosis of the condition and the surgical procedures performed (when applicable), the age and sex of the patients and the geographical area from which they are coming.
It used to cover 53 hospitals from Beirut and Mount Lebanon for inpatient services up till end 2003. As of beginning 2004, all visas issued all over Lebanon for inpatients covered by the MOPH are registered in that center.

This dataset is of potential use; and though hospital based, it might serve as a building block for assessment of prevalence or incidence of certain acute health conditions in a certain subgroup of population.

The Ministry of Public Health covers the largest part of the Lebanese population, and which is not covered under any health insurance scheme. The percentage eligible for MOPH coverage was estimated by the National Household Health Expenditure and Utilization Survey 1999, to be around 48.3% of the Lebanese population. This proportion, together with estimates of the total population of 4,314,000 for 2003, make the potential beneficiaries of the MOPH covered population of around 2,000,000.
During 11 months in 2004, 93,672 admissions to hospitals at the expense of the MOPH have occurred. The frequencies and percents of admissions by ICD10 groups of codes are provided in the following table in this section, and will be referred to in the specific health conditions in the review.
It is worth noting that the percentages don't sum up to 100, but rather to 236% which proves that an admission could have more than one diagnosis.

Prevalence per thousand in a population of two million is also calculated which might give an idea about the magnitude of the problem. Knowing that, not necessarily all those eligible do actually use the MOPH services, more opinions should be gathered as to the potential uses of this data set to generate reliable statistics.

# CHAPTER THREE:

# Communicable, Maternal, Perinatal and Nutritional Conditions

## 1. TUBERCULOSIS

| Resource/Study Population | Summary Findings | References | Appendix |
|---|---|---|---|
| The Tb-control Program report. 2002. | 305 cases of pulmonary Tb by age:<br><table><tr><td>Age</td><td>Number</td></tr><tr><td>0-4</td><td>9</td></tr><tr><td>5-15</td><td>21</td></tr><tr><td>15-24</td><td>74</td></tr><tr><td>25-34</td><td>75</td></tr><tr><td>35-44</td><td>43</td></tr><tr><td>45-54</td><td>34</td></tr><tr><td>55-64</td><td>25</td></tr><tr><td>65+</td><td>23</td></tr></table> | Maladies Transmissibles-Programme national de lutte contre la tuberculose. In: Recueil National des Statistiques Sanitaires au Liban. Edition 2004.Pp.78-79. | I-1.1 |
| Annual reports of the TB control Program established at the Ministry of Public Health (1993-1999). | Positive pulmonary Tb test by year:<br><table><tr><td>'93</td><td>'94</td><td>'95</td><td>'96</td><td>'97</td><td>'98</td><td>'99</td></tr><tr><td>235</td><td>148</td><td>197</td><td>198</td><td>206</td><td>224</td><td>249</td></tr></table> | MOPH. Tb-Programme, Rapport Annuel, 1993-1999. | I-1.2 |
| In 1995, all 3931 prisoners in Lebanese jails were tested by PPD for prevalence of Tb. | 45% had positive PPD skin test. Of those 7% had abnormal CXR suggestive of active infection. | -Adib S, El-Takach H, and Al-Hajj C. Tuberculosis in Lebanese jails: prevalence and risk factors. *European Journal of Epidemiology*, 1999;**15**:253-260. -El-Takach H. Tuberculosis in Lebanese jails: prevalence and risk factors Paper presented at the 3rd International Epidemiological Association-EMR scientific meeting, October 1997. | I-1.3 |
| 1236 students (5-14 years) from 25 schools in Beirut who tested | 1-year conversion rate= 1.4% | Saab BR, Sharara NH, Hamadeh GN. et al. Purified Protein | I-1.4 |

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| negative In 1992 were re-tested in 1993 Testing method: 5 tuberculin units (TU) of PPD. Cut off point was >= 10mm. | | Derivative (PPD) conversion rate among Lebanese children in Beirut. *LMJ*,1998;**46(1)**:20-22. | |
| 428 questionnaires :326 university students (Medicine, dentistry, nursing, pharmacy) in 1995-1996 academic year were tested and additional 102 were administered a questionnaire. Intradermal mantoux test. Positive reaction for >10mm. | M/F ratio: 0.86 Subjects reported having been in contact with a Tb patient ranged from 2.9% to 59.69% in different student classes. Prevalence: 7 cases out of 428 (1.67%) (5 males; 2 females) | Geha R. Epidemiologie tuberculinique dans la population des etudiants aux campus des sciences medicales. *These*, USJ, 1996. | I-1.5 |
| 4704 school children (6-10 yrs) selected from 53 primary schools in 1994 randomly selected from all over Lebanon. WHO standard mantoux test was used Cut off point for positively was >= 10mmor >= 14mm | Tb reactivity in Non-vaccinated children: <br><br>| | >=10mm | >=14mm | <br>|---|---|---| <br>| Males | 2.1 | 2.1 | <br>| Females | 1.7 | 1.6 | <br>| Total | 1.9 | 1.9 | | Misljenovic O. Report on the results of the tuberculin survey in school children in Lebanon. *Report*, 1995, WHO: Beirut. | I-1.6 |
| Results from two centers in Beirut (Makassed General Hospital, and AUMBC) were reviewed and the value of chest radiographs in asymptomatic individuals was evaluated. | In MGH: out of 46 PPD positive 44 were reported as having normal CXRay. At AUBMC: 67 were PPD positive, of whom 65 were normal. No active Tb case was detected. | Sarru E, Makarem M, and Jurjus A. The value of chest X ray in asymptomatic young adults with positive PPD test. *Leb Med J*, 1995;**43**:183-185. | I-1.7 |
| 54 Tb cases hospitalized at HDF hospital between 1990 and 1994. 10 were excluded. | 44 patients (23 Males; 21 Females) Mean age 37.2 years. | Sfeir M. La tuberculose pulmonaire: manifestations atypiques et methods de diagnostic. *Memoire*, USJ,1994- | I-1.8 |

| | 1995. | |
|---|---|---|
| 1962 children of age range 7 months to 18 years coming from different socioeconomic status. Old tuberculin monotest was administered on 300 subjects and Intradermis injection of 5 u of standard purified tuberculin on the rest. No information on sample selection Study between 1988 and 1992, interrupted by war. | Risk factor: 0.5 to 2% High risk groups were identified. | Rabay-Chacar H, and Asmar N. Etude preliminaire de la sensitivite tuberculinique au Liban. *Revue Medicale Libanaise*,1993; **5**:270-272. | I-1.9 |
| Survey on 432 schoolchildren in October 1990 in some villages in Akkar-North Lebanon. And comparison with previous data. | Tuberculin positivity rates showed a significant increase between 1980-1984 and 1990: <table><tr><td>age (years)</td><td>1980-84</td><td>1990</td></tr><tr><td>All</td><td>5.8%</td><td>14.6%</td></tr><tr><td>7-11</td><td>3.8%</td><td>10.0%</td></tr><tr><td>> 11</td><td>8.3%</td><td>23.2%</td></tr></table> | Bahr G, de L. Costello AM, Al Ahdab Y, et al. Epidemic tuberculosis in north Lebanon. *Lancet*, 1991;**337**:983-984. | I-1.10 |
| 2412 school children (4-14 years) were selected from 17 different schools in June 1983. They were of low socioeconomic status. Students were tested using the time test first and those who tested positive 48-72 hours later, were tested with PPD. Cut point for positivist not stated | Positive reaction by age: <table><tr><td>Age</td><td>Percent +ve</td></tr><tr><td><4</td><td>0</td></tr><tr><td>4-6</td><td>0.52</td></tr><tr><td>7-12</td><td>2.81</td></tr><tr><td>>12</td><td>0</td></tr></table> Positive reaction by sex: <table><tr><td>Male</td><td>1.51%</td></tr><tr><td>Female</td><td>2.12%</td></tr><tr><td>Total</td><td>1.82%</td></tr></table> | Yazigi A, and Najjar S. Tuberculin test survey in the southern suburbs of Beirut. *LMJ*, 1985;**35**:23-29. | I-1.11 |

## 2. HIV/AIDS

| Resource/Study Population | Summary Findings | References | Appendix |
|---|---|---|---|
| National AIDS program. Established as a program in the MOPH in collaboration with WHO. It provides annual Statistics concerning HIV/AIDS. These are annual reports for the years 2000, 2001,2002, 2003 (in two forms) and 2004 (till November). | Cumulative number of HIV/AIDS reached 756 cases by end 2003. 246 are asymptomatic and 270 are AIDS (140 unspecified). 20 incident cases of AIDS were reported during 2003. The most probable way of transmission was sexual. | MOPH. NAP report, 2004. unpublished data. | I.2.1 |
| National AIDS program. Annual Statistics. 2002. | 30 incident cases in 2002 with a total cumulative number of 250 cases. | Maladies Transmissibles-Programme national de lutte contre le VIH-SIDA. In: Recueil National des Statistiques Sanitaires au Liban. Edition 2004.Pp.82-83. | I.2.2 |
| The Ministry of Public Health- Drug Dispensing Center. Statistics from its opening in 2000 till end 2003. | 173 AIDS cases are currently registered and receiving their medication from the Drug Dispensing Center at the MOPH. | Statistiques de la Centrale de Distribution des Medicaments (2000-2003). In: Recueil National des Statistiques Sanitaires au Liban. Edition 2004.Pp.44-45. | I-2.3 |
| To determine HIV subtypes in Lebanon The subtypes of HIV in 26 seropositive Lebanese citizens. | -Remarkable variability of HIV subtypes [25 HIV-I(A,B,C,D,G and unclassifiable), 1 case HIV-IIB] | Pieniazek D, Baggs J, Hu DJ, et al. Introduction of HIV-2 and multiple HIV-1 subtypes to Lebanon. *Emerging Infectious Diseases*, 1998;**4**:649-656. | I-2.4 |
| To determine the occupational risk to | Laboratory facilities are adequately equipped and available for HIV | Jurjus A. Assessment of AIDS knowledge, | I-2.5 |

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| contract the disease. All 83 licensed laboratories in the country were visited. | testing. <br> -Mouth-pipeting should not be practiced. <br> -Wearing gloves should be more practiced (currently 52.1%) <br> -61.8% of technicians did not have training on HIV testing. | attitudes, behaviours, and occupational risk of laboratory. *LMJ*, 1998;**46**:285-290. | |
| Magazine article. | Scientists estimated the number of HIV positive cases close to 2000. will rise to 5000 by the year 2000. And, the number of deaths from AIDS will be 750. | Halassa M. Aids in Lebanon. *Lebanese Gazette*, October 30, 1997. | I-2.6 |
| The purpose was to describe HIV/AIDS surveillance in the Eastern Mediterranean Region. | 1% of STD were HIV positive in 1994. | Shrestha PN. HIV/AIDS surveillance in the Eastern Mediterranean Region. *Eastern Mediterranean Health Journal*, 1996;**2**:82-84.(a) | I-2.7 |
| Magazine article. | To the date of the article 15 Lebanese children are born with the virus. <br> In 1994, mandatory premarital test of HIV is required by law. | King-Irani L. Women and AIDS in Lebanon. *Al-Raida*, Fall/Summer 1996;**XIII**(74/75):49 -51. | I-2.8 |
| To describe the epidemiological aspects of HIV/AIDS cases reported up till 1993. Cases reported to the NACP are described in terms of year of report, age, gender, risk factor and clinical status at time of report | Mostly reported AIDS indicators seen in patients were *Pneumocystic carinii pneumonia*, then kaposi's sarcoma. | Adib S, Tawila J. Surveillance and control of HIV/AIDS in Lebanon. *Report*, WHO: Beirut, 1995. | I-2.9 |
| To determine HIV seroepidemiology in Lebanon <br> ELISA test was performed on 11,384 Lebanese individuals (classical high risk groups and control populations) between | 0.24% were seropositive | Naman R, Mokhbat J, Farah AE, et al. Seroepidemiology of the Human Immunodeficiency Virus in Lebanon: primary evaluation. *LMJ*, 1989;**38**:5-8. | I-2.10 |

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|---|---|---|---|
| October 1985 and December 1988. Positive sera were retested. Western Blot was used to retest consistently positive individuals. No information was given on the sampling method. | | | |
| To determine HIV seroepidemilogy among multitransfused patients in Lebanon: A total of 64 patients with hemophilia and thalassemia were tested for HIV (1985 - 1986). 35 were interviewed about their history of blood products transfusions. | 4 out of 64 hemophiliacs tested positive. | Mokhbat J, Naman R, Rahme FS, et al. Clinical and serological study of the Human Immunodeficiency Virus infection in a cohort of multitransfused persons. *LMJ*, 1989;**38**:9-14. | I-2.11 |
| To determine the prevalence of anti-HIV among medical students: Elisa test was performed on 458 individuals (333 men) belonging to four non high-risk groups.) (March 1986 – June 1986). | No seropositivity was found Sample was partitioned as such: 29% blood donors, 50% university students, 15% hospital inpatients and 6% hospital staff nurses | Nassar NT. HIV antibody in Lebanese Arabs. *Ann Intern Med*, 1987;**107**:429. | I-2.12 |
| A case report of a 34 year old Lebanese male presented at AUBMC in October 1984 with an anal mass | 1st case in Lebanon was diagnosed in 1984. It was that of a male, heterosexual, whose partner was an intravenous drug user. | Mokhbat J, Ibrahim NK, AbdulKarim FW, et al. The Acquired Immuno-Deficiency Syndrome: report of the first case in Lebanon and a review of the literature. *LMJ*, 1985;**35**:295-317. | I-2.13 |

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| A total of 462 non-pregnant women (15-55 years old) presenting for a routine gynecological exam or a gynecological complaint to 4 different sties [Armenian Relief Cross (175 women); a private clinic of Arz hospital (146 women); AUBMC (96 women); and Trad Hospital Outpatients Clinic (45 women)]. Women were interviewed and examined with specimens tested for Chlamydia, candida, gardenella, trichonomas, HBV, gonorrhoea, H. ducreyi, syphilis and HIV. | No seropositivity was found. | National AIDS Program (NAP). Prevalence of Sexually Transmitted Diseases in women attending OB/GYN clinics in Lebanon. *Report*, WHO:Beirut, March 2001. | Report not delivered |

## 3. DIARRHOEAL DISEASES

| Resource/Study Population | Summary Findings | References | Appendix |
|---|---|---|---|
| The data are extracted from the hospital visa issuance center at the Directorate of Medical Care. This report covers the period from Jan 1, 2004 till Nov 30, 2004 (11 months). | Intestinal infectious diseases accounted for 2166 cases out of 93672 cases registered during the 11 months period. | MOPH. Department of Statistics. *Report*, December 2004. | Part of the main report. |
| In-and out-patient claims of all children who visited a hospital facility or underwent an ambulatory test and who were less than 20 years of age. Data covers the time period between January 1, 1995 and December 31, 2003. | Intestinal infectious diseases were the second leading cause of non-emergencies in infants and children up to 9 years old. | El-Zein S. Our children: select health care issues. *Center for Healthcare Information and Policy Studies (CHIPS)*, Bulletin 20, May 2004. | I-3.2 |
| MedNet Liban Database.  This database contains information about patients covered by public payers (NSSF), private insurance companies , mutual funds and self-funded schemes. It also includes all types of hospitals that are spread throughout Lebanon.This is an overview of hospital care during 1995-2001. | Intestinal infectious diseases accounted for the top cause of hospitalization in those aged less than one year with 21.2%, and 13.1 % for those aged 1-17 years old. | El-Zein S. Leading causes of hospitalizations and in-hospital mortality-an update. *Center for Healthcare Information and Policy Studies (CHIPS)*, Bulletin 17(2), December 2002. | I-3.3 |
| Reports of three major health centers visits Malta organization-Kobayyet, Malta organization-Nabatieh, and AUB-University Health Services in the | Prevalence of diarrhea was as follows:<br>4% in Malta-Kobbayyet<br>3% in Malta-Nabatieh<br>3% in AUB-UHS | Nuwayhid I, Sibai A. Epidemiological review of selected diseases, injuries and risk factors in Lebanon: Background | I-3.4 |

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| year 1999 | | information for the National Burden of Disease Study. *Report*, WHO: Beirut, 2002. | |
| MOPH- ESU data 1998-1999. | Number of reported cases of Brucellosis was 286 in 1998 and 191 in 1999. | MOPH-ESU. *Epi News*, no. 7, Aug 2000. | I-3.5 |
| Descriptive analysis of all brucella cases reported to the ESU at the MOPH during 1997. | Incidence rate of brucellosis 8.1 per 100,000 (8.6 per 100,000in males, 7.6 per 100,000 in females) Lebanon is endemic for brucellosis. | Kalaajieh WK. Epidemiology of human brucellosis in Lebanon in 1997. *Med Mal Infect*, 2000; **30**:1-4 | I-3.6 |
| National Household Health Expenditure and Utilization Survey (NHHEUS) in 1999: a total of 6544 households representative of Lebanon were included (a weighted sample 32000) | 5.2% of outpatient visits and 5.5% of hospitalized cases were due to infectious and parasitic reasons. | Ministry of Public Health (MOPH). <u>National Household Health Expenditure and Utilization Survey</u> (NHHEUS). 1999 | I-3.7 (complete copy of publication is provided) |
| MOPH-ESU data 1995-1997 | Distribution of cases of brucellosis by year of reporting<br><br>| 1995 | 1996 | 1997 | Cumulative |<br>|---|---|---|---|<br>| 188 | 302 | 324 | 814 |<br><br>Overall incidence 10.8 per 100,000 | Jabbour J. Epidemiological surveillance of human brucellosis in Lebanon. Paper presented at the third workshop on human and animal brucellosis, Damascus- Syria, 1998. | I-3.8 |
| A household survey The PAP child survey, examined 4600 households (2156 children < 5 years) information was gathered on type, place and outcome of injury. | Point Prevalence of diarrhoea in children< = 5% (Males 5.4%; Females 3.7%) Deaths due to diarrhea in children less than five constituted 9.9% of all deaths. | PAPCHILD. The Lebanon Maternal and Child Health Survey, Pan Arab Project for Child Development, League of Arab States (LAS), Ministry of Social Affairs, Ministry of Public Health, 1996. | I-3.9 |

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|---|---|---|---|
| Descriptive study on 532 Dysentery cases reported from all Lebanon to the Epidemiological Surveillance Unit at MOPH in 1995 | Dysentery showed a decreasing trend with age. Almost no difference in number of cases between males and females. | Haddad R, et al. Dysentry in Lebanon. An overview for the year 1995. *Epi News*, Mar1996:(2) | I-3.10 |
| Descriptive study on 44,864 stool specimens form AUBMC (1989-1993) and Islamic Hospital in Tripoli (1991-1993) | Prevalence of Positive findings: <table><tr><td>IHT</td><td>45%</td></tr><tr><td>AUBMC</td><td>8%</td></tr></table> | Araj G, Abdelbaqi NY, Hamze MM, et al. Prevalence and etiology of intestinal parasites in Lebanon. *J Med Liban*, 1996;**44**:129-133. | I-3.11 |
| Between July and December 1993, 344 cases of Cholera were reported to MOPH. | Outbreak figures. Children aged five or less accounted for 27% of the cases. Person-to-person transmission. 92.1 % of the cases recovered and 7.9% (29 cases) died. Highest case fatality rates reported were in two mental institutions (Deir Kamar in Mount Lebanon 23%; and 21% in DAI in greater Beirut) | Adib S, Makarem E, Hajj H. Cholera in Lebanon, II-investigation of the 1993 outbreak. *Report*, MOPH, year not listed. | I-3.12 |
| Descriptive study on 112 pediatric cases admitted to HDF with diarrhea from 1980-1992. | Most frequent in infants, peak at three months. Frequency : 4-5 stools/day 45% females | Eid B. Les etiologies des diarrhees trainantes et chroniques. *Memoire*, USJ;1991-1992. | I-3.13 |
| A descriptive study on 75 adult patients (>15 years of age) presenting to HDF from 1981-1989 (looking for chronic diarrhea) | -57% of cases were females -30.6% bloody diarrhea with mucous | Karam P. Les diarrhees chroniques. A propos de 75 cas de l'HDF1981-1989. *Memoire*.USJ,1991. | Not found |

## 4. HEPATITIS

| Resource/Study Population | Summary Findings | References | Appendix |
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| **General** | | | |
| The Epidemiology Surveillance Unit of the MOPH. Annual Statistics. | Number of cases reported in 2003:<br>Hepatitis A: 616<br>Hepatitis B: 204<br>Hepatitis C: 51<br>Number of cases reported in 2002:<br>Hepatitis A: 330<br>Hepatitis B: 254<br>Hepatitis C: 71<br>Number of cases reported in 2001:<br>Hepatitis A: 319<br>Hepatitis B: 205<br>Hepatitis C: 32 | MOPH-ESU. Website: www.public-health.gov.lb 2004. | I-4.1 |
| Chart review of 224 patients admitted to AUBMC with viral hepatitis between 1961 and 1971. | Age distribution of cases:<br><table><tr><td>Age</td><td>N</td><td>%</td></tr><tr><td>6mo-3 yrs</td><td>5</td><td>2</td></tr><tr><td>4-13</td><td>25</td><td>11</td></tr><tr><td>14-20</td><td>35</td><td>15</td></tr><tr><td>20-30</td><td>80</td><td>36</td></tr><tr><td>30-67</td><td>79</td><td>35</td></tr></table> | Bitar JG, and Andonian K. Viral Hepaitis in Lebanon. *LMJ*, 1971; **24**:329-337. | I-4.2 |
| **Hepatitis A** | | | |
| Case study of a 5-year-old girl presented with gangrene of the digits. Suggestive HAV serious complication. | Results suggest a pertinent finding that it is the third case of symptomatic aCL titers post HAV infection in the literature. | Muwakkit S, Al-Ajam M, Arayssi T et al. Isolated digital gangrene complicating Hepatitis A infection in a child. *J Clin Rheum*, 2002;**8**(4):223-227. | I-4.A.3 |
| 740 children aged 6 months to 15 years were tested for anti HAV in three clinics in North Lebanon. | Overall prevalence of HAV antibodies was 29.3% | Kalaajeh W, Rima A, Dennaoui M, et al. seroprevalence of Hepatitis A antibodies in Lebanese children. *Med Mal Infect*, 2000;**30**:757-61. | I-4.A.4 |

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| ٢٠٠ subjects randomly selected from the general population in 1998-1999 were screened for HAV using enzymatic immunoassay. Selection of study population not stated. | Prevalence of anti HAV by age:<br><br>| Age | Prev.(%) |<br>|---|---|<br>| 1-9 | 12.5 |<br>| 10-19 | 29 |<br>| 20-29 | 51.4 |<br>| 30-39 | 93.3 |<br>| 40-49 | 92 |<br>| >50 | 97.5 | | Bekdache N. La prevalence de l'Hepatite A au Liban. *Memoire*, USJ, 1999. | I-4.A.5 |
| Three groups (total 772 subjects) were screened for HAV (using radio immuno assay (RIA)):<br>Group 1= (adult population) 51 pregnant women at AUBMC + 344 'healthy' adults from blood donors and staff at AUBMC + 90 patients undergoing kidney dialysis in 5 centers in Beirut<br>Group 2= 171 children (1 day – 12 yeas old) born at AUBMC or admitted for reasons different than liver disease.<br>Group 3= 116 foreigners (20-62 years old) living in Lebanon. | Prevalence of anti HAV in the three groups (%):<br><br>| Group | Prev.(%) |<br>|---|---|<br>| Group 1(adults) | 97.7 |<br>| Group 2(children) | 76.1 |<br>| Group 3 (foreigners) | 38.8 | | Shamma'a MH, Abu-samra S, Salameh V, et al. The significance of anti-HAV in different population sectors in Lebanon: a comparative seroepidemiologic study. *Int J Epidemiol*, 1982;**11**:406-409. | Not Found |
| **Hepatitis B** | | | |
| To summarize the status of HBV in Lebanon since 1966. Data were collected from different laboratories of major hospitals in the 6 Mohafazas in Lebanon in the year 2000. In addition to a review of literature. | Overall carrier rate among 61,271 tested individuals was 2.2 % (1.3% among 30,809 blood donors; and 3.6 % among 13,669 tested individuals in serology labs)<br>Lebanon is moderately endemic for HBV.. | Nabulsi M, El-Saleeby C, Araj G, et al. The current status of Hepatitis B in Lebanon. *LMJ*, 2003;**51**(2):64-70. | I-4.B.6 |
| Laboratory units over the whole country. | Overall Prevalence of HB exposure is 18.9% | Baddoura R. Seroprevalence of | I-4.B.7 |

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| Blood samples were collected and tested. | Prevalence of Hb positive antigen is 1.9% | Hepatitis B and C in the general population of Lebanon. Report, 1998.(currently in press, *Eastern Mediterranean Health Journal*) | |
| The study assessed HBV seroprevalence. It included: (i) 139,000 blood donors from different hospital in Lebanon [Islamic Hospital in Tripoli 1995-1996; AUBMC 1987-1992 & 1994-1996; HDF 1986-1996; Geitawi (G) and SGH in Beirut 1994-1996; Notre Dame Hospital in Jbeil 1993-1996: Testing method not specified. Study interrupted because of the war. Charts of blood donors reviewed. (ii) 2431 pregnant women from HDF (1993-1996): Tested using EIA. (iii) 312 USJ students (medicine and dentistry: 1993-1995): Tested using EIA. | Prevalence of HbsAg:<br><br>| | Prev(%) |<br>|---|---|<br>| Blood donors-IHT | 2.66 |<br>| Blood donors-NDH | 0.44 |<br>| Blood donors-HDF +G+SGH | 1.27 |<br>| Blood donors-AUBMC | 3.3 |<br>| In pregnants of HDF | 0.12 |<br>| In students of USJ | 0.62 | | Germanos M. Seroprevalence de l'Hepatite B au Liban. *These*, Universite De Paris XI, 1998. | I-4.B.8 |
| A total of 558 pregnant women from the obstetrics outpatient clinic at AUBMC (1993-1995) were tested for HBSAg. | Prevalence in Pregnant women=2.9% | Nabulsi MM, Khalil AM, Farah AE, et al. Prevalence of Hepatitis B surface antigen in pregnant Lebanese women. *Int J Gynaecol Obstet*, 1997;**58**:243-244. | I-4.B.9 |
| A total of 1922 pregnant women from HDF (1994-1997) | Prevalence in Pregnant women=1.73% | Maalouf R. Hepatite B chez les femmes enceintes, utilites de | I-4.B.10 |

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| screened for hepatitis B. Testing method not specified. | | la vaccination chez les nouveaux-nes. *These*, USJ 1997. | |
| Three groups (total 772 subjects) were screened for HBV<br>Group 1= adults (51 pregnant +344 healthy adults)<br>Group 2= 171 children<br>Group 3= 116 Foreigners<br>Group 4=90 kidney dialysis patients in 5 centers in Beirut. | Prevalence of anti HBV in the four groups (%):<br><br>| Group | Prev.(%) |<br>|---|---|<br>| Group 1(adults) | 25.3 |<br>| Group 2(children) | 16.4 |<br>| Group 3 (foreigners) | 11.2 |<br>| Group 4(dialysis) | 46.7 | | Shamma'a MH, Abu-samra S, Salameh V, et al.The significance of anti-HAV in different population sectors in Lebanon: a comparative seroepidemiologic study. *Int J Epidemiol*, 1982;**11**:406-409. | Not found |
| A total of 939 blood donors at AUBMC (1973-1974), 6153 blood donors at AUBMC (1974-1975), and 2359 AUB students (same years) were screened for hepatitis B [HbsAg] (using commercial counter electrophoresis) | -Prevalence in 1973-1974=1.4%<br>-Prevalence in 1974-1975=1.7%<br>no major change over time<br>-Prevalence in 2356 students=1.7%<br>M/F ratio of 4.0 | Nassar NT, Alameh SY, Nasrallah SM, et al. The prevalence of Hepatitis B surface antigen (HbsAG) among students and blood donors at the American University of Beirut. *The Johns Hopkins Medical Journal*,1976;**139s**:45-48. | Not found |
| **Hepatitis C** | | | |
| 135 patients considered at risk of blood borne viruses: (30 severe hemophiliacs; 40 IVDU; 65 on cycled cancer chemotherapy) with 500 apparently healthy controls. Study period between 2000 and 2002. in HDF hospital in Beirut. | Hemophiliacs and those on cancer chemotherapy were more likely to have at least one marker of HBV infection. But, all groups were at higher risk of HCV infection. But none of the subjects showed any evidence of exposure to HIV or HTLV-1. | Ramia S, Klayme S, and Naman R. Infetion with hepatitis B aand C viruses and human retroviruses (HTLV-1 and HIV) among high risk Lebanese patients. *Ann Trop Med Parasit*, 2003;**97**(2):187-192. | I-4.C.11 |
| 395 Lebanese patients with B-thalassemia major or intermedia registered at the Chronic Care Center. | 55 (14%) were anti-HCV positive. None was diagnosed as having active hepatitis. | Ramia S, Koussa S, Taher A, et al. Hepatis C virus genotypes and hepatitis G virus infection in Lebanese thalassemics. *Ann* | I-4.C.12 |

| | | *Trop Med Parasit*, 2002; **96**(2):197-202. | |
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| 108 Lebanese hemodialysis patients from various hospitals and tested for anti HCV antibodies by ELISA and Line Immunoassay (LIA) | 17 out of 108 (16%) were reactive in ELISA. All 17 were also positive in LIA. 11 of the 17 (65%) were positive by RT-PCR. Infection with HCV is more dialysis machine-related rather than blood transfusion-related. | AbdelNour G, Matar G, Sharara H, et al. Detection of anti-Hepatitis C-virus antibodies and Hepatitis C-virus RNA in Lebanese hemodialysis patients. *Euro J Epid*, 1997;**13**:863-867. | I-4.C.13 |
| Cross sectional study on 558 healthy pregnant women attending the antenatal clinic at the AUBMC between July 1993 and September 1995. | 0.7% positive to anti HCV by ELISA. 0% by RIBA. Although the sample is not representative of all Lebanese, the investigators concluded that Lebanon is not endemic for HCV. | Nabulsi M, Araj G, Farah A, et al. Hepatitis C virus antibodies in pregnant Lebanese women. *Journal of Ostetrics and Gynecology*, 1997;**17**(6):000-000. | I-4.C.14 |
| 108 blood samples were previously collected from various Lebanese hospitals and tested by ELISA and western Blotting. | HCV genotype 4 was present in tested sample cases. And genotype 1 in controls. | Matar G, Sharara H, AbdelNour G. et al. Genotyping of hepatitis C virus isolates from Lebanese hemodialysis patients by reverse transcription-PCR and restriction fragment length polymorphism analysis of 5' noncoding region. *J Clin Microbiology*, October 1996:2623-2624. | I-4.C.15 |
| A total of 7771 blood donors (18-65 years old with a mean age of 30/ source not mentioned) and 317 patients (6-85 years old) on hemodialysis in 5 | Prevalence of HCV markers in blood donors= 0.45%\n\nPrevalence of HCV markers in heamodialysis patients= 29% | Naman RE, Mansour R, Klayme S, et al. Le virus de l'Hepatite C chez les hemodialyses et les donneurs de sang au Liban. *LMJ*, | I-4.C.16 |

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| centers (4 of which were in Beirut) were screened for HCV in 1996 using EIA. Positive results were retested with same method. | | 1996;**44**:4-9. | |
| A total of 3643 Lebanese blood donors (age not specified from AUBMC (1992-1993). Tested for HCV using EIA. Positive tests checked with ELISA and immunoblot assays. | Prevalence= 0.11% | Araj GF, kfoury-Baz EE, Barada KA, et al. Hepatitis C virus: prevalence in Lebanese blood donors and brief overview of the disease. *LMJ*, 1995;**43**:11-16. | I-4.C.17 |
| **Hepatitis D** | | | |
| 63 consecutive patients at AUBMC with HbsAg. Sera tested with RIA for Delta Hepatitis. | Prevalence in chronic active hepatitis patients=57% | Farci P, Burroughs AK, Thomas HC, et al. Delta Hepatitis in Lebanon: prevalence study and a report of six siblings with chronic delta positive active hepatitis. *J Hepatol*, 1987;**4**:224-228. | Journal Not found |
| **Hepatitis E** | | | |
| 100 Lebanese blood donors screened with RIA for HEV in 1995 | Prevalence = 4% | Irani-Hakime N, and Feghali-Haibe R. Virus de l'Hepatite E: detection des anticorps dans une population de donneurs de sang au Liban. *LMJ*, 1998;**46**:60-62. | I-4.E.18 |
| 150 patients of age range 1month to 83 years admitted to HDF for reasons other than Hepatitis in 1995. | Prevalence = 12% | Fakhoury F. l'Hepatite E mise au point. *Memoire*, USJ, 1995. | Not found |

## 5. MALARIA

| Resource/Study Population | Summary Findings | | | | References | Appendix |
|---|---|---|---|---|---|---|
| Epidemiological Surveillance Unit at the Directorate of Prevention MOPH. | Number of reported cases: 39 cases in 1998 49 cases in 1999 42 cases in 2001 60 cases in 2002 34 cases in 2003 | | | | MOPH-ESU. *Epi News*, no. 7, Aug 2000. website: www.public-health.gov.lb | I-3.5 I-4.1 |
| Diagnosed Malaria cases were collected from log books of 13 major hospitals in Beirut covering the period of three years from September 1 1994 till August 31, 1997. | Data for the three periods: | | | | Al Awar G, et al. Malaria in Lebanon: the current state. *Progress report*, MOPH,1998. | I-5.2 |
| | | 1994-1995 | 1996 | 1997 | | |
| | Number of tests requested | 6331 | 4453 | 3851 | | |
| | Overall positive tests | 0.77 % | 1.10 % | 1.32% | | |

## 6. RESPIRATORY INFECTIONS

| Resource/Study Population | Summary Findings | References | Appendix |
|---|---|---|---|
| The data are extracted from the hospital visa issuance center at the Directorate of Medical Care. This report covers the period from Jan 1, 2004 till Nov 30, 2004 (11 months incidence). | Influenza and pneumonia accounted for 2043 cases, and acute upper respiratory infections, 676 cases out of a total of 93672 hospitalized cases in 11 months. | MOPH. Department of statistics. *Report*, December 2004. | Part of the main report. |
| In-and out-patient claims of all children who visited a hospital facility or underwent an ambulatory test and who were less than 20 years of age. Data covers the time period between January 1, 1995 and December 31, 2003. | Diseases of the respiratory system (Acute respiratory infections, pneumonia and influenza) are the leading causes of non emergencies in infants (M:57.72%; F:72.31%). | El-Zein S. Our children: select health care issues. *Center for Healthcare Information and Policy Studies (CHIPS)*, Bulletin 20, May 2004. | I-3.2 |
| Multiple Cluster Indicator Survey 2000. to assess the state of children a sample of 2786 children less than 5 years of age were randomly selected at a national scale. | 20% of the deaths in age 7 to 30 days are caused by pneumonia and 12% in those aged between 1 and 11 months. | Etude de l'etat de l'enfant au Liban-MICS (2000) In: Recueil national des satistiques sanitaires au Liban. Edition 2004. | I-6.3 |
| MedNet Liban Database. This database contains information about patients covered by public payers (NSSF), private insurance companies, mutual funds and self-funded schemes. It also includes all types of hospitals that are spread throughout Lebanon.This is an overview of hospital | Pneumonia and influenza constitute the 8th top cause of hospitalization with 2.38% of discharged cases. And the third top cause in those aged <1 year (11.6%) and 1-17 years (7.9%) | El-Zein S. Leading causes of hospitalizations and in-hospital mortality-an update. *Center for Healthcare Information and Policy Studies (CHIPS)*, Bulletin 17(2), December 2002. | I-3.3 |

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| care during 1995-2001. | | | |
| Reports of three major health centers visits Malta organization-Kobayyet, Malta organization-Nabatieh, and AUB-University Health Services in the year 1999 | Overall respiratory infections accounted for 19% of all visits to AUB-HS, 21% in Malta-Kobayyet and63% in Nabatieh | Nuwayhid I, Sibai A. Epidemiological review of selected diseases, injuries and risk factors in Lebanon: Bakground information for the National Burden of Disease Study. *Report*, WHO: Beirut, 2002. | I-3.4 |
| National Household Health Expenditure and Utilization Survey (NHHEUS) in 1999: a total of 6544 households representative of Lebanon were included (a weighted sample 32000) | 12.4% of all hospital admissions were due to diseases of the respiratory system<br><br>22% of the surveyed individuals who visited an outpatient clinic in the past year did so for respiratory infections | Ministry of Public Health (MOPH). National Household Health Expenditure and Utilization Survey (NHHEUS). 1999 | I-3.7 (Copy of publication is provided) |
| Household survey of 4 areas (Baalbeck-Hermel, Akkar, Tirpoli, Batroun) each made of cluster of villages (more than 1000 children under five each). Survey on acute respiratory infections. Cough, per se, was the research topic. | In Akkar, Incidence of cough in the first 6 months of life is low, starts increasing after 6 months. In Akkar and Tripoli, 36.3 % of children had breathing difficulties (reported by their mothers). Compared to 42.7% in Baalbeck Hermel, and 32.6% as national average. | Preliminary report on the acute respiratory infections survey among children under five conducted in the regions of Baalbeck/Hermel, Akkar, Tripoli, Batroun and Koura. *Report*, 1993. UNICEF, Beirut | I-6.6 |

## 7. MATERNAL CONDITIONS

| Resource/Study Population | Summary Findings | References | Appendix |
|---|---|---|---|
| The data are extracted from the hospital visa issuance center at the Directorate of Medical Care.. As of beginning 2004, all visas issued all over Lebanon for in-patients covered by the MOPH registered in that center. This report covers the period from Jan 1, 2004 till Nov 30, 2004. | Hospitalization due to Pregnancy childbirth and puerperium accounted for 9882 cases out of 93672. The majority are for simple delivery (8863). Cesarean section comprised 2994 cases (33.8 %) of all deliveries. The number of pregnancies with abortive outcomes was 446 (0.5% in11 month period). | MOPH. Department of statistics. *Report*, December 2004. | Part of the main report. |
| National Perinatal Survey. Study carried out by the MOPH, the UNICEF and the Society of Perinatal Medicine in 1999-2000. | Obstetrical pathologies comprised 22.3% (including those caused by cesarean sections) Cesarean section rate was 12.1% | Mere et Enfant: Enquete National Perinatal. In: Recueil National des Statistiques Sanitaires au Liban. Edition 2004.Pp.131-137 | I-7.2 (Copy of original publication is provided) |
| A total of 557 ever-married women aged between 15-60 years of age were randomly selected in a rural community in the Beka'a region of Lebanon in 1998. An interview, a physical exam and history taking by a physician, and laboratory tests were performed. | Signs or symptoms:<br><br>| Abnormal vaginal discharge | 24.5% |<br>| Vulvar itching and burning | 38.3% |<br>| Lower abdominal pain | 41.1% |<br>| Pain during intercourse | 40.7% |<br>| Menstrual irregularities | 32.5% |<br><br>Prevalence of STD 1% Prevalence of endogenous Reproductive Tract Infections 9% | Deeb M, Awwad J, Yeretzian J, et al. Prevalence of reproductive tract infections, and obesity in a rural community in Lebanon. *Bull WHO*, 2003;**81**(9):639-645. | I-7.3 |
| Study supported by UNFPA and done through the MOPH and MOSA. It is a compilation of all available research on reproductive health. Most of the researches | Abstracts and explanations of all studies are available within the review. | El-Kak F. Review of reproductive research studies in Lebanon. 2000-2002. *Review Report*. | I-7.4 |

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| done are not published and some are ongoing. Summaries are provided when available. | | | |
| Interviewed 398 women delivery in a hospital in Beirut and in Beka'a, 3 to 4 months after delivery. | -Postpartum Depression : 21.3% (26.3 % in Beka'a;16.4% in Beirut) -Puerperal sepsis and infections: 14.1% -Postpartum hemorrhage: 8.3%. | Chaaya M, Campbell O, Kak F, et al. Postpartum depression: prevalence and determinants in Lebanon. *Arch womens Ment Health*, 2002;**5**:65-72 | I-7.5 |
| The National Collaborative Perinatal Neonatal Network (NCPNN) was designed to achieve a system of continuous and prospective data collection covering all newborn infants-and their mothers-who are admitted to the normal and intensive care nurseries of hospitals participating in the network | Out of 9356 deliveries, a total of 553 (5.9%) were affected by at least one pregnancy related complication, mainly bleeding (n=194), premature labor (n=173), pregnancy-induced hypertension (n=66), preeclampsia (n=60) and others. | NCPNN. First Annual report (April 1st, 1999-Mar 31st, 2000) | I-7.6 |
| | -Deaths due to hypertensive disorders of pregnancy= 10 per 100,000 livebirths -Deaths due to maternal conditions =130 per 100,000 livebirths. | Abou Zahr C, and Vaughan JP. Assessing the burden of sexual and reproductive ill-health: questions regarding the use of disability-adjusted life years. *Bulletin of the WHO*, 2000; **78**(5). | I-7.7 |
| Original sample:  2,017 households, consisting of 8,940 individuals in Beirut in 1992-1993. The reproductive and child Health survey | -Maternal Mortality Ratio estimated at 63 per 100,000 Live births -5.2% prevalence of hemorrhage during delivery. | Deeb M, Campbell O, Kabakian T. Safe motherhood in Lebanon: new population-based results from the | I-7.8 |

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| included married women aged 50 yeas or less. Of these, 251 women who had their last child during the past 3 years were interviewed. | | Beirut 1994 survey. *International Journal of Gynecology and Obstetrics*, 1997;**56**:181-182. | |
| A household survey The PAP child survey, examined 4600 households (2156 children < 5 years) information was gathered on type, place and outcome of injury. | Maternal Mortality = 104 per 100,000 assessed by sisterhood method. | PAPCHILD. The Lebanon Maternal and Child Health Survey, Pan Arab Project for Child Development, League of Arab States (LAS),Ministry of Social Affairs, Ministry of Public Health, 1996. | Original Publication |
| 4788 diagnoses (1148 gynecological diagnoses and 3640 obstetrical diagnoses) were reviewed using the medical; records of the American University Hospital in Beirut. (June 1990-March 1991). | No maternal deaths occurred during the investigation period. Gynecological procedures had the highest prevalence (38.7%) followed by operations (29.0%) In obstetrics, delivery complications ranked first (39.3%) followed by procedures (35.5%). | Jabbour J. Report on the gynaecological and obstetrical problems at AUH. July 1991. | I-7.9 |
| Interviewed 398 women delivering in a hospital in Beirut and in Beka'a, 3 to 4 months after delivery. | Rate of Cesarean section=15.62% | Deeb. M, Ghorayeb F, Aswad N, et. al. Gynecological morbidity in Beirut. Paper presented at the Arab Regional Population Conference, IUSSP, 1996. Cairo, Egpt. | Not present (refer to review by El-Kak, I-7.4) |
| ٦٠٠ women interviewed 24-48 hours after in one of 10 hospitals in Beirut | -Incidence of Cesarean section: 35% .was 43% in primigravidas .was 92% among those having had a previous CS .was 15% among those having had a previous Vaginal delivery | Kassak K, Mohammad Ali A, Tamim H, et al. Determinants of cesarean section in Beirut. *Unpublished study*, 2000. | Not prvided |

## 8. NUTRITIONAL DEFICIENCIES (IRON-DEFICIENCY ANEMIA)

| Resource/Study Population | Summary Findings | References | Appendix |
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| 100 elderly 65 years and over, who are institutionalized for more than three months now were matched to 100 controls living at home. Area selected covered around 40% of the population. | Elderly at institutions had:<br>-Higher mean dietary iron intake<br>-Lower Body Mass Index<br>Both groups had 100% RDA intake of energy, very low intake of vitamins A, D and alpha-tocopherol. | Sibai A, Zard C, Adra N, et al. Variations in nutritional status of elderly men and women according to place of residence. *Gerontology*, 2003;**49**: 215-224. | I-8.1 |
| 560 women of childbearing age and 310 children were selected from all over Lebanon. Blood samples were analyzed for serum ferritin and hemoglobin and plasma transferring receptor. | 23.1% of women and 24.8% of schoolchildren had deficiency hemoglobin levels.<br>Iron stores were deficient in 26.7% of women and 25.4% in children.<br>Iron deficiency anemia was in 47.8% of serum ferritin deficient women and 58.2% in children counterparts. | Hwalla-Baba N, and Adra N. Prevalence and selected determinant of iron deficiency anemia in women and under five children in Lebanon. Report submitted to MOPH and UNICEF. 1998 | I-8.2 |

# CHAPTER FOUR:

# Non-Communicable Diseases

## 1. MALIGNANT NEOPLASMS: General

| Resource/Study Population | Summary findings | References | Appendix |
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| The data are extracted from the hospital visa issuance center at the Directorate of Medical Care. This report covers the period from Jan 1, 2004 till Nov 30, 2004 (11 months incidence). | The 11 month hospitalized cancer cases comprised the top of the list (12.6%) with 11826 cases out of the total. Breast cancer was the highest followed by cancer of the lymphoid, haematopoetic and related tissue. | MOPH. Department of statistics. *Report*, December 2004. | Part of the main report. |
| It is the first national population-based registry. It was established by the Lebanese Cancer Epidemiology Group which is a network of all hospitals with oncology specialists and all pathology laboratories. Data pertains to the year 1998. | 4388 incident cases of cancer were reported and registered in the year 1998.<br>Bladder cancer together with prostate and lung cancers topped the list for males with 18.5%, 14.2% and 14.1% respectively. Breast cancer topped the list for females with 33.4% followed by colorectal cancer with 8.6%.<br>Crude incidence rate: males 141.4 per 100,000; females 126.8 per 100,000. | Shamseddine A, Mehio-Sibai A, Gehchan N, et al. Cancer incidence in postwar Lebanon: findings from the first national population-based registry, 1998. *Ann Epidemiol*, 2004: 1-6. | II-1.2 |
| MedNet database. MedNet summed up 2688 cancer cases in all exposed to risk (covered population) from 1995 to 2003. | Prevalence of 228 cancer cases per 100,000.<br>Probability of getting cancer is 2.1 per thousand fro females and 2.4 per thousand for males<br>The relative risk increases with age till 75 years then starts declining.<br>Top 5 cancer sites by gender are as follows:<br><br>| Rank | Male | Female |<br>|---|---|---|<br>| 1 | Urinary bladder | Breast |<br>| 2 | Prostate | Colorectal |<br>| 3 | Lung and bronchus | Ovary |<br>| 4 | Colorectal | Lung and bronchus |<br>| 5 | Non-hodgkins lymphoma | Thyroid/urinary bladder | | El-Zein S. cancer: facts and trends. *MedNet Liban,* Bulletin no 23, October 2004. | II-1.3 |

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| The Ministry of Public Health- Drug Dispensing Center. Statistics from its opening in 2000 till end 2003. | Cancer topped the list of medications distributed by the Ministry of Public Health with 39.1 % of the total number and 47.3% of the total cost of medications. | Statistiques de la Centrale de Distribution des Medicaments (2000-2003). In: Recueil National des Statistiques Sanitaires au Liban. Edition 2004.Pp.44-45. | II-1.4 |
| Internal Security Forces data. It covers 22,372 hospitalizations for the personnel and their families | 10.74 % of all discharge diagnoses were for cancer cases. | Direction Generale de la Securite Interieure: Service Medical (2002). In: Recueil National des Statistiques Sanitaires au Liban. Edition 2004.Pp.185-188. | II-1.5 |
| National Cancer registry. Established as part of the Non Communicable Disease Program as a joint activity between the MOPH and WHO. Data for the year 2002 were published in their first report. | 2124 cases were registered with an estimated coverage of 40% of incident cases. M/F ratio: 0.74 Top 2 cancers in males were: trachea-bronchial, lung (21.7%) and prostate (18.9%). Top 2 cancers in females were: Breast (49.7%) and ovary (7.3%). | MOPH, NCDP. National Cancer Registry, Lebanon 2002. *Report*. | II-1.6 |
| Retrospective study aiming at determining the survival of cancer patients admitted to ICU between January 1998 and June 1999. | The majority of admissions were due to Cancer and/or treatment complications (59 out of 66 cases) and the mortality rate ranged from 41% during ICU recovery to as high as 83% at last to follow-up. No statistically significant difference in age. | Ghosn M, Kanso C, Kattan J, et al. Outcome of cancer patients admitted to the intensive care unit (ICU). *LMJ*, 2002;**50**(4):132-136. | II-1.7 |
| The National Household Health Expenditure and Utilization Survey (NHHEUS) in 1999: a total of 6544 households representative of Lebanon were included (a weighted sample of 32000). | Reported prevalence of cancer at household= 0.3 % (0.2% in males;0.3% in females)<br><br>Cancer accounted for 12.7 % of all hospitalizations (107 cancer cases) | Ministry of Public Health (MOPH). National Household Health Expenditure and Utilization Survey (NHHEUS). 1999 | Copy of publication is provided. |
| AUBMC cancer registry. Description of | -Top three cancers in males are prostate (16.0), lung(12.5), and | Report | II-1.9 |

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|---|---|---|---|
| 2378 cases between 1999 and 2000 | Lymphoma and multiple myeloma (0.5). -Top three cancers in females are breast(33.1), Lymphoma and multiple myeloma (13.1) and Brain(6.4) | | |
| AUBMC cancer registry. Description of 10220 cases between 1983 and 1995 | -Top three cancers in males are lung(18.0), Bladder(9.9), and Larynx(8.6). -Top three cancers in females are breast(35.5), cervix uteri(10.4) and colorectal(5.0) | El Saghir NS, Adib S, Mufarrij A, et al.Cancer in Lebanon: 10220 cases from the American University of Beirut Medical Center.*LMJ*, 1998;**46**:4-11. | II-1.10 |
| 36 cases of infantile solid cancers between January 1993 and 31 December 1996 and admitted to HDF pediatric center were studied retrospectively. Age between 1 month and 3 yrs3mos. | Majority of the cases were neuroblastomas (13 cases) and lymphomas (11 cases) | Mrad R. Les tumeurs solides de l'enfant: experience de services de pediatrie a l'HDF. *Memoire*, USJ, 1997-1998. | II-1.11 |
| A household survey of Beirut conducted in 1992-1993 by the Faculty of Health Sciences. A follow-up of the population surveyed in the Beirut 1983-1984 survey. Information on 2017 households (8,940 individuals) Information on type, place and outcome of injury was collected. | 6 out of 4297 males (0.14%) and 8 out of 4609 females (0.17%) reported having cancer. | Nuwayhid I, Sibai A, Adib S,Shaar K. Morbidity, mortality, and risk factors. In Beirut: A Health Profile 1984-1994. Deeb M, (ed). Beirut: AUB, 1997.Pp123-182. | II-1.12 |
| Estimation of cancer incidence in Lebanon from fragmentary data from 1984. | Estimated incidence of 106 per 100,000. | Adib S. Estimation of cancer incidence in Lebanon. *LMJ*, 1996;**44**:142-143. | II-1.13 |
| Cancer assessment in the EMR . | Most frequent cancers in males: urinary bladder, lung and prostate. In females, breast, uterine cervix, colorectal. | EMRO. Data on cancer patterns in the Eastern Mediterranean Region. *Technical* | II-1.14 |

| | | *publication series #20.* | |
|---|---|---|---|
| Review of publications between 1962 and 1993. | -No major change in incidence over time.<br>-Incidence as reported by Abou Daoud to be 103.5 cases per 100,000<br>-Incidence as reported by Adib to be 3500 incident cases per year.<br>-Top three cancers in males are Bladder(18.0), lung(14.0), and prostate(11.0).<br>-Top three cancers in females are breast(30.0), uterus (12.0) and colorectum(6.0) | Taleb N. Cancer in Lebanon: an update of epidemiological data. *LMJ*,1994;**42**:29-31 | II-1.15 |
| HDF Pathology files in 1989. Description of 541 cases. | -Top three cancers in males are lung(19.0), Bladder(16.7), and prostate(11.6).<br>-Top three cancers in females are breast(36.1), genital organs (18.7) and digestive systems(12.1) | Ghosn M, Tannous R, and Gedeon E. Registre du cancer a l'Hotel Dieu de France. *LMJ*, 1992;**40**:4-10. | II-1.16 |
| 57 patients with prolactine adenomas diagnosed and treated at HDF between 1980 and 1991. | 47 % micro- and 53% macro-adenomas. 18 males and 39 females. 40% of microadenomas and 68% of macroadenomas were treated with surgery .<br>No radiotherapy was used on all patients. | Bejjani G. traitement des adenomas a prolactine. *These*, USJ. 1991. | II-1.17 |
| Review of hospital files, hematology lab records, and hematologists private clinics in Beirut: 412 histologically confirmed cases from 1963 to 1965. | Incidence of 103.5 cases per 100,000 | -Abou Daoud K. Leukemia, hodgkin's disease and other lymphomas in Lebanon. *LMJ*, 1967;**20**:19-29.<br>-Abou Daoud K. Morbidity from cancer in Lebanon. *Cancer*, 1966;**19**:1293-1300. | II-1.18 |

## 2. MALIGNANT NEOPLASMS: Colorectal Cancer

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| Visa issuance center data at the MOPH. 11 months incidence. | 982 cases of colorectal cancers were admitted to hospitals in 11 months. Accounting for 8.3% of all cancer cases. The 11-month rate of 49.1 per 100,000 corresponding to an at risk population of 2,000,000. | MOPH. Department of statistics. *Report*, December 2004. | Part of the main report. |
| MedNet database. MedNet summed up 2688 cancer cases in all exposed to risk (covered population) from 1995 to 2003. | Cancer of the colon and rectum is the second most frequent cancer in females, average age is 61 years with an occurrence as early as at 24 years of age. Cancers of the colon and rectum account for 9% of all cancers of the male population with average age 60 years. | El-Zein S. cancer: facts and trends. *MedNet Liban*, Bulletin no 23, October 2004. | II-1.3 |
| Retrospective multi-center study involving four major hospitals in Lebanon. 29 patients were identified with Gastrointestinal Stromal Tumors (GIST) between 1993 and 2000. | 16 males and 13 females. No operative mortality. Mostly presenting symptoms, gastrointestinal blood loss (14 cases) and abdominal pain (12 cases). | Salamoun W, El Hajj G, Aftimos G, et al. Gastrointestinal Stromal tumors (GISTs)- the Lebanese experience. *Molecular Immunology*, 2003;**39**:1129-1132. | II-2.3 |
| Retrospective file review of 174 cases from 1991 to 1998 at HDF | Incidence of colorectal cancer by age: <table><tr><td>Age group</td><td>Incidence (%)</td></tr><tr><td>19-30</td><td>2.67</td></tr><tr><td>31-40</td><td>9.82</td></tr><tr><td>41-50</td><td>8.92</td></tr><tr><td>51-60</td><td>26.8</td></tr><tr><td>61-70</td><td>25.0</td></tr><tr><td>71-80</td><td>18.8</td></tr><tr><td>81-90</td><td>8</td></tr><tr><td>Total number</td><td>174 cases</td></tr></table> 5-year survival rate for young patients was 43% | Kabbara N. Le cancer colorectal du sujet jeune d'age inferieure a 40 ans ('experience de l'Hotel Dieu de France sur une periode de 8 ans entre 1991 et 1998). Memoire, USJ, 1998-1999. | II-2.4 |
| Case report of a 36 yr old male patient who developed colon cancer 18 years after treatment for Hodgkin's disease. | Radiation-induced colon cancer. Diarrhea was the strongest sign attributed to radiation colitis. | Kreiker S, and Kattan J. second colon cancer following Hodgkin's disease. *LMJ*, 1996;**44**:107- | II-2.5 |

| | | 108. | |
|---|---|---|---|
| Retrospective review over 17 patients with intestinal occlusion postoperative for intestinal tumours. They were admitted at HDF between 1989 and 1993. | Mean age 53.4 years. 6 of the 17 were colorectal adenocarcinomas. | Sayad P. Occlusion intestinal après chirurgie pour cancer. Memoire, USJ, 1993-1994. | II-2.6 |
| A description of 82 cases admitted to AUBMC over 10 years (1981-1990) | Incidence of colorectal cancer by age: <table><tr><td>Age group</td><td>Incidence(%)</td></tr><tr><td>19-30</td><td>3.5</td></tr><tr><td>31-40</td><td>2.5</td></tr><tr><td>41-50</td><td>6</td></tr><tr><td>51-60</td><td>14.5</td></tr><tr><td>61-70</td><td>9.5</td></tr><tr><td>71-80</td><td>3.5</td></tr><tr><td>81-90</td><td>1</td></tr><tr><td>Total number</td><td>82 cases</td></tr></table> | Nabbout G. Rectal cancer: 10 years experience at AUB-MC.*LMJ*, 1992;**40**:194-197. | II-2.7 |
| Pathology records of all 553 patients with colorectal cancer in AUBMC (1945-1985). Review of 132 younger patients (< 30 years). | M/F ratio=1.4 6th most common cause of death from malignancy in Lebanon. Almost equal incidence between M and F below age 30 years. | Ibrahim NK and Abdul Karim FW. Colorectal adenocarcinoma in young Lebanese adults. *Cancer*, 1986;**58**:816-820. | II-2.8 |

## 3. MALIGNANT NEOPLASMS: Lung Cancer

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| Visa billing report of the MOPH. This report covers the period from Jan 1, 2004 till Nov 30, 2004 (11 months incidence). | 1570 incident cases of neoplasms of the bronchus and lung were hospitalized during the 11 months period. | MOPH. Department of statistics. *Report*, December 2004. | Part of the main report. |
| AUBMC cancer registry. Description of 2378 cases between 1999 and 2000 | 197 cases of lung cancer<br>12.5% of all male cancers<br>3.7% of all female cancers | Report | II-1.9 |
| AUBMC cancer registry. Description of 10220 cases between 1983 and 1995 | Lung cancer represents 17.98% and 3.2% of all male and female cancers, respectively. | El Saghir NS, Adib S, Mufarrij A, et al.Cancer in Lebanon: 10220 cases from the American University of Beirut Medical Center.*LMJ*, 1998;**46**:4-11. | II-1.10 |
| Review of medical files (1979-1995). A description of 386 cases in HDF in Beirut | Age sex distribution of cases:<br><br>Age sex table below | Khayat G, Riachi M, Aoun-Bacha Z, Khoury F. Lung cancer in Lebanon, experience at the l'Hotel Dieu de France in Beirut. *LMJ*, 1998; **46**:74-77 | II-3.4 |
| HDF Pathology files in 1989. Description of 541 cases. | -Lung cancer represents19% of all male cancers and 5.6% of female cancers<br>-72 cases of 541, M/F ratio=4.6 | Ghosn M, Tannous R, and Gedeon E. Registre du cancer a l'Hotel Dieu de France. *LMJ*, 1992;**40**:4-10. | II-1.16 |
| Retrospective file review. A description of 139 cases between 1984 and 1988 in Saint Georges Hospital in Beirut. | 70% of cases stage III<br>Mean age 64.4 years<br>Age-sex distribution of cases:<br><br>Age sex table below | Abdel Jalil A, Nasr V, Bahous J. The characteristics of lung cancer in Lebanon. A study on 139 cases. *Rev Med Libanaise*, 1992;**4**:71-74. | II-3.6 |

Review of medical files (1979-1995) age sex distribution:

| Age group | M | F |
|---|---|---|
| <50 | 48 | 10 |
| 51-60 | 107 | 15 |
| 61-70 | 115 | 18 |
| 71-80 | 57 | 7 |
| >80 | 7 | 0 |
| Total | 334 | 50 |

Retrospective file review age-sex distribution:

| Age group | M | F |
|---|---|---|
| 30-40 | 4 | 0 |
| 41-50 | 10 | 5 |
| 51-60 | 36 | 11 |

| | | | | | |
|---|---|---|---|---|---|
| | 61-70 | 46 | 12 | | |
| | 71-80 | 26 | 11 | | |
| | >81 | 5 | 0 | | |
| | Total | 112 | 27 | | |
| Cyto-analysis of 225 sputum of 79 clinically and radiological suspected patients (from Jan 1st, 1970). 5 specimen on 5 consecutive days were collected. | -Screening helps reduction of around 50% in death rate. | | | Tomb J. Cyto-analysis in suspected cases of cancer of the lung. *LMJ*, 1971; **24**:135-142. | II-3.7 |

## 4. MALIGNANT NEOPLASMS: Breast Cancer

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| This report covers the period from Jan 1, 2004 till Nov 30, 2004 (11 months incidence). | This was the top of the list with 2274 incident cases of breast cancer that were hospitalized which forms19.2% of all cancers. | MOPH. Department of statistics. *Report*, December 2004. | Part of the main report. |
| Clinical study to assess problems with breast cancer surveillance | Unidentified cases due to social taboo, "old age" theory, ostrich principle, cancer is untouchable (it gets worse when handled with surgery) Recommend decrease age at 1st screening for high risk women. Recommend breast cancer registry. | Allouch M, Aoun A. Problems preventing surveillance of breast cancer in Lebanon. *Leb J Med Sciences*, 2002;**9**:39-40. | II-4.2 |
| All female breast cancer patients recorded at the AUBMC between 1983 and 2000 were evaluated. | 2673 female breast cancers with an average of 148 cases per year. 49.1 of cases were below 50 years of age. Incidence by age group: <table><tr><td>Age group</td><td>Number</td><td>Percent</td></tr><tr><td><30</td><td>125</td><td>4.7</td></tr><tr><td>30-39</td><td>426</td><td>16.0</td></tr><tr><td>40-49</td><td>750</td><td>28.3</td></tr><tr><td>50-59</td><td>698</td><td>26.3</td></tr><tr><td>60-69</td><td>448</td><td>16.9</td></tr><tr><td>70-79</td><td>162</td><td>6.1</td></tr><tr><td>>=80</td><td>42</td><td>1.6</td></tr></table> | El Saghir N, Shamseddine A, Geara F, et al. Age distribution of breast cancer in Lebanon: increased percentages and age-adjusted incidence rates of younger aged groups at presentation. *LMJ*, 2002;**50**(1-2):3-9. | II-4.3 |
| Observational study (pathology lab). A description of 51 mastectomy specimens in 19995-1996 at HDF | -85% ductal in origin | Fakhoury W. Prognostic factor in breast cancer; correlation with other factors; estrogen and progesterone receptors, MIB and histoprognostic grade. *Thesis*. USJ, 1996-1997. | II-4.4 |
| Retrospective file review. A description of 289 breast cancer cases (1987-1994) at Hotel Dieu de France Hospital. Presented as a thesis to the faculty of Medicine | -Age distribution of 289 cases: <table><tr><td>Age</td><td>Percent</td></tr><tr><td><30 years</td><td>3.6</td></tr><tr><td>30-40</td><td>20.85</td></tr><tr><td>40-60</td><td>50.6</td></tr><tr><td>> 60</td><td>24</td></tr></table> -48.4% diagnosed in stage II | Dib M. Prognostic factors of lung metastasis from breast tumors. *Memoire*. USJ, 1995-1996. | II-4.5 |

| | | | |
|---|---|---|---|
| at the Universite Saint Josef | -36% 5-year survival after mastectomy<br>-45% complete cure after surgery if coupled with chemotherapy or radiotherapy | | |
| 283 cases of cancer at HDF were retrospectively studied by returning to medical files. 193 cases were included. | Incidence of cancer is high at HDF, with 76% having size 2cm and more. Hence, incidence could be decreased by improving women's knowledge of possibility of cure if early detection is done.<br>Doctors should assume role of health educator. | Aoun N, Ata T, Ghanem G, et al. La prevention du cancer du sang au Liban. *Memoire*, USJ, 1995. | II-4.6 |
| 85 breast cancer cases studied for receptors of estrogen and progesterone. The study was done at SGH in Beirut. | <table><tr><td></td><td colspan="2">Positive</td><td colspan="2">Negative</td></tr><tr><td>Receptors</td><td>N</td><td>%</td><td>N</td><td>%</td></tr><tr><td>Estrogen</td><td>56</td><td>65.8</td><td>29</td><td>34.1</td></tr><tr><td>Progesterone</td><td>38</td><td>45</td><td>47</td><td>55</td></tr></table> | Tabbal, M. Les recepteurs hormonaux dans le cancer du sein. *Memoire*, 1990-1991. | II-4.7 |
| Review of hospital files, hematology lab records, and hematologists private clinics in Beirut: 412 cases from 1963 to 1965. | Breast cancer constitutes 18% of all cancers in women. | -Abou Daoud K. Leukemia, hodgkin's disease and other lymphomas in Lebanon. *LMJ*, 1967;**20**:19-29.<br>-Abou Daoud K. Morbidity from cancer in Lebanon. *Cancer*, 1966;**19**:1293-1300. | II-1.18 |

## 5. MALIGNANT NEOPLASMS: Cervical Cancer

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| Women between the ages of 18 and 70 years who visited AUB private clinics and received a pelvic exam as part of a routine gynecological exam. Screening for Human Papilloma Virus | Out of 1026 women, 3% were HPV positive<br>Low prevalence of HPV DNA (3%) and HPV type 16 DNA (4.9%) are in line with low incidence of abnormal cytological smears. | Mroueh A, Seoud M, Kaspar H, et al. Prevalence of genital human papilloma virus among Lebanese women. *Eur J Gynaec Oncol*, 2002;**23**(5):429-432. | II-5.1 |
| Survey and health education campaign in Qada El Shouf (Mohafazah of Mount Lebanon) (1286 women surveyed / 742 women included in educational campaign) | -2826 pap smears performed, 61% negative.<br>-Average survival rate in invasive cervical cancer 38%<br>-if properly managed, 98% survival rate. | Ammar W, Hamadeh R, AbuShakra Z, and Hamade G. Cervical screening in the Shouf area. *LMJ*, 2000;**48**(3):161-163.. | II-5.2 |
| AUBMC. Cancer registry report of 1999-2000 | Prevalence decreased to 4% | Report. | II-1.9 |
| AUBMC cancer registry. Description of 10220 cases between 1983 and 1995 | Cancer of the uterine cervix represented 10.4% of female cancers | El Saghir NS, Adib S, Mufarrij A, et al.Cancer in Lebanon: 10220 cases from the American University of Beirut Medical Center. *LMJ*, 1998;**46**:4-11. | II-1.10 |
| Retrospective file review of 177 invasive cervical cancer cases from 1978 till May 1998 at HDF. | -Most patients asymptomatic<br>-Survival rate for diagnosis at stage I: 78.5 % | El Khoury M. Traitement du cancer du col stade IB. *Memoire*. USJ, 1998-1999. | II-5.5 |
| Retrospective file review of 54 cases from 1988 till August 1997 followed and treated by 2 physicians at HDF | -one-year survival rate 59%<br>-Three-year survival rate 29% | Dahdouh O. Chimiotherapie pre-operatoire pour le cancer du col localement avance. *Memoire*. USJ, 1997-1998. | II-5.6 |

| Retrospective file review of 81/102 cases with invasive cervical cancer from 1985-1993 at HDF. | -Mean age 53 years.<br>-Age distribution:<br><br>| <40 years | 13.7% |<br>| 41-60 years | 62.7% |<br>| > 60 years | 23.5% |<br><br>-More than 70% in stages I and II<br>-Survival rate for Dx at stage I: 65% | Geahchan NG. L'Experience de l'Hotel –Dieu de France dans le cancer du col invasive. *Memoire*. USJ,1994. | II-5.7 |

## 6. MALIGNANT NEOPLASMS: Prostate Cancer

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| National survey for screening for prostate cancer:<br>- Media campaign encouraging men to be evaluated<br>- A questionnaire<br>- Blood sample for PSA<br>- Digital rectal exam by a urologist to palpate the prostate | -8.1% had prostate hypertrophy<br>-Age distribution:<table><tr><td>50-59</td><td>37.1%</td></tr><tr><td>60-69</td><td>42.0%</td></tr><tr><td>> 70</td><td>20.9%</td></tr></table>-18.1% reported a family history of prostatic adenoma<br>-2.9% reported a family history of prostate cancer<br>-result of digital rectal exam:<table><tr><td>Benign</td><td>87.9%</td></tr><tr><td>suspect</td><td>11.3%</td></tr><tr><td>malignant</td><td>0.8%</td></tr></table> | Merhej S. Prostate cancer screening: isn't a necessity in Lebanon. *Le Monde Medical*, 1998;**5**:22-26. | II-6.1 |

## 7. MALIGNANT NEOPLASMS: Leukemia

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| The data are extracted from the hospital visa issuance center at the Directorate of Medical Care. This report covers the period from Jan 1, 2004 till Nov 30, 2004 (11 months incidence). | 835 cases of leukemia were admitted for hospitalization in the 11 month period in 2004. | MOPH. Department of statistics. *Report,* December 2004. | Part of the main report. |
| MedNet database. MedNet summed up 2688 cancer cases in all exposed to risk (covered population) from 1995 to 2003. | Leukemia comprised 4.9% of all cancers | El-Zein S. cancer: facts and trends. *MedNet Liban,* Bulletin no 23, October 2004. | II-1.3 |
| Retrospective study over 20 patients between Jan '97 and Apr '98. | Receiving 46 cure episodes. Average level of platelets was 101,000/ul (range 6000 to 632000). Hospitalization days range between 10 and 64 days. Cost per induction $3,100. | El Hage R. Les besoins en plaquettes dans les inductions des leucemies aigues myeloblastiques. *Memoire*, USJ, 1998-1999. | II-7.3 |
| Retrospective file review of 22 patients with Acute Myeloblastic Leukemia admitted at HDF between Jan 1997 to February 1998. | 42 inductions. 78% dysplasias. Questioning the effectiveness of chemotherapy. 37.5% of neutropenia complicated by infections. Majority of infections Gram positive. Mortality is 18%. | Irani J. Complications infectieuses des inductions des leucemies aigues myeloblastiques. *Memoire*, USJ, 1998-1999. | II-7.4 |
| Review of hospital files, hematology lab records, and hematologist private clinics In Beirut: 412 cases from 1963 to 1965. | -Annual Incidence 3 per 100,000 (4.4 in males, 1.7 in females) -25% occurred in children less than 9 years -25% between age 50-69 years -18 cases of leukemia were diagnosed | -Abou Daoud K. Leukemia, hodgkin's disease and other lymphomas in Lebanon. *LMJ*, 1967;**20**:19-29. -Abou Daoud K. Morbidity from cancer in Lebanon. *Cancer*, 1966;**19**:1293-1300. | II-1.18 |

## 8. THALASSEMIA

| Resource/Study Population | Summary Findings | References | Appendix |
|---|---|---|---|
| This Data report covers the period from Jan 1, 2004 till Nov 30, 2004 (11 months incidence). | 13649 circulatory system cases were admitted in 11 months. The majority were for Ischemic Heart disease with 7016 cases. | MOPH. Department of statistics. *Report*, December 2004. | Part of the main report. |
| The Chronic Care Center is a medico-social institution specialized in the treatment of chronic childhood diseases, especially thalassemia and Insulin Dependent Diabetes Mellitus. | The CCC estimates the number of thalassemia major patients by 1500 cases. Till end 2002, 579 thalassemia and 869 diabetes patients were registered at the CCC. 50.3% of thalassemics are below age 15. Beneficiaries per year are distributed as such: <br><br> Year / Cumulative Number / Incident number <br> 1993 / 312 <br> 1994 / 362 / 50 <br> 1995 / 416 / 54 <br> 1996 / 447 / 31 <br> 1997 / 489 / 42 <br> 1998 / 512 / 23 <br> 1999 / 531 / 19 <br> 2000 / 544 / 13 <br> 2001 / 561 / 17 <br> 2002 / 579 / 18 | Chronic Care Center (2002). In: Recueil National des Statistiques Sanitaires au Liban. Edition 2004. | II-8.2 |
| 50 Lebanese Thalassemia Intermedia patients treated at the CCC. | Mean age 22.76 years No homozygous mutations.35 splenectomized, 9 had HCV antibodies. Prevalence of heterozygous state for Factor V Leiden of 14%. | Zotz R, Gerhardt A, Schwarf E. Incidence of thromboembolic events in Lebanese thalassemia intermedia patients. Letter to the editor, *Thromb Haemost*, 2003;**89**:767-768. | II-8.3 |
| 73 thalassemia patients from the CCC. Patients were classified as mild, moderate or severe, according to time of 1st | 38 M and 35 F. Mean age 19.5 years (range 3 to 60 years). 53.5% were mild, 30% moderate and a6.5% severe. Growth retardation detected in 11 %. 72 of 73 had beta-thalassemia | Qatanani M, Taher A, Koussa S, et al. ß-thalassemia intermedia in Lebanon. *Eur J Haematol*, | II-8.4 |

| Year | Cumulative Number | Incident number |
|---|---|---|
| 1993 | 312 | |
| 1994 | 362 | 50 |
| 1995 | 416 | 54 |
| 1996 | 447 | 31 |
| 1997 | 489 | 42 |
| 1998 | 512 | 23 |
| 1999 | 531 | 19 |
| 2000 | 544 | 13 |
| 2001 | 561 | 17 |
| 2002 | 579 | 18 |

| | | | |
|---|---|---|---|
| transfusion and frequency of transfusions. | mutations, beta genotype is the most important factor contributing to thalassemia intermedia in Lebanon. | 1999;**63**:1-8. | |
| 83 couples of child bearing age with at least one affected child were randomly selected as they presented to the CCC. Interview was conducted by a trained nurse educator or a genetist. | B-thalassemia not evenly distributed across communities. Mostly (73.4%) present in geographic areas were malaria was endemic. 90.4% of couples were at risk of B-thalassemia, 8 couples were at risk for sickle cell anemia. 47% had good awareness of genetic risk, 59% accepted prenatal diagnosis as genetic counseling. | Zahed L, and Bou Dames J. Acceptance of first trimester prenatal diagnosis for the haemoglobinopathies in Lebanon. *Prenatal Diagnosis*, 1997;**17**(5):423-428. | II-8.5 |
| 110 DNA samples from carriers of thalassemia were screened for common Mediterranean mutations of B-thalassemia using ARMS (Allele Refractory Mutation System) technique. | 16 different mutations were detected, most frequent one was IVSI-110 (40%) | Zahed L, Talhouk R, Saleh M, et al. the spectrum of Beta-thalassemia mutations in the Lebanon. *Hum Hered*, 1997;**47**:241-249. | II-8.6 |
| Review article. | Frequency of carrier of beta-thalassemia in Lebanon has been estimate to be 2-3%. 8 different mutations had been detected. | Saleh M, Zahed L, and Talhouk R. The molecular basis of beta-thalassemia in Lebanon and its neighbouring countries. *JML*, 1996;**44**(2):75-79. | II-8.7 |
| Descriptive analysis of 163 cases of beta-thalassemia between 1994 and 1995 in the CCC (383 hemolytic anemia cases were studied). | 52% Males and 48% Females 41% was the total frequency of beta-thalassemia 78.5 had first blood transfusion between 0 and 1 year of age, and 91 % at 2 years of age or less. In the 163 cases, 3 were HBV +ve and 14 were HCV +ve. | Fakhoury C. B thalassemia majeure au Liban. *These*, USJ, 1994-1995. | II-8.8 |
| Screening for the prevalence of thalassemais and hemoglobinopathies among 3000 consecutive patients admitted to a hospital | Prevalence of hemoglobinopathies is 4.25% 2.9% carrier of trait 0.2% thalassemia major 0.23% sickle cell thalassemia | Nabulsi M. Incidence of thalassemia and hemoglobinopathies in north Lebanon. *Unpublished Thesis*, AUB, 1993. | Not available |

| | | | |
|---|---|---|---|
| in North Lebanon in 1993 over a 4—month period (April-August). Blood was analyzed for red cell indices, red cell morphology, and Hb-electrophoresis. | | | |
| Assignment report on thalassemia control programme in Lebanon (Chronic Care Center) A total number of 314 in 1993 | Age distribution of thalassemia patients at CCC:<br><br>| | Number | Percent |<br>|---|---|---|<br>| 1-3 | 31 | 9.87 |<br>| 4-5 | 66 | 21.01 |<br>| 7-9 | 59 | 18.79 |<br>| 10-12 | 42 | 13.38 |<br>| 13-15 | 44 | 14.01 |<br>| 16-18 | 28 | 8.92 |<br>| 19-21 | 16 | 5.09 |<br>| 22-24 | 11 | 3.50 |<br>| 25-27 | 8 | 2.55 |<br>| 28-31 | 4 | 1.28 |<br>| >31 | 5 | 1.59 | | Angastiniotis M. Control of thalassemia in Lebanon. WHO, 1993. | Not available |

## 9. DIABETES

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| 31 Lebanese patients with Wolfram Syndrome. | Central diabetes insipidus found in 87% of patients. Deafness (64.5%). Incidence of microvascular complications with duration of DM:<br><br>| Duration | 5-10 | 10-20 | >20 |<br>|---|---|---|---|<br>| Retinopathies | 16.6% | 42.8% | 100% |<br>| Nephropathies | 16.6 | 57.1 | 75 |<br>| Neuropathies | 33.3 | 57.1 | 100 | | Medlej R, Wasson J, Baz P, et al. Diabetes Mellitus and optic atrophy: a study of Wolfram Syndrome in the Lebanese population. *The Journal of Clinical Endocrinology and Metabolism*, 2004; **89**(4):1656-1661. | II-9.1 |
| The YMCA (Young Men Christian Association) is a Non-Governmental Association covering 398 health centers with chronic disease medication. | In their annual 2003 statistics, 22,387 patients (9029 Males; 13,358 females) out of 170163 were diabetic. | YMCA annual statistics, 2003. (Unpublished data) | II-9.2 |
| The YMCA (Young Men Christian Association) is a Non-Governmental Association covering 398 health centers with chronic disease medication. | In their annual 2002 statistics, 13.2% out of 144714 patients were diabetic | Maladies chroniques-programme de distribution des medicaments, YMCA (2002) In: Recueil National des Statistiques Sanitaires au Liban. Edition 2004.Pp.42-43. | II-9.3 |
| In-depth interviews were conducted with 17 NIDDM patients presenting at AUB-MC between Dec 5 and Dec 15 2002. Patients with disease onset less than 5 years were excluded. | Duration of diabetes ranged from 5 to 35 years (average 11.76 years). 10 had satisfactory microalbuminuria 7 had efficient foot care. | Dada S, Mastory R, Mousallem T, et al. Diabetic patients at AUB-MC: adherence to follow-up. Clerkship report, AUB, 2002. | II-9.4 |

| National Household Health Expenditure and Utilizaiton Sruvey (NHHEUS) in 1999. A total of 6544 households representative of Lebnaon were included (a weighted sample of 32000) | Total reported prevalence =3.1%<br>In males (2.9%), in females (3.3%) | Ministry of Public Health (MOPH). National Household Health Expenditure and Utilization Survey (NHHEUS). 1999 | Complete publication is provided. |
|---|---|---|---|
| To assess the quality of care provided to diabetic patients by family physicians at AUB-UHS. Chart reviews of previous year's medical notes for 204 diabetic patients. | Prevalence 4.2% for over 30 years of age. | Akel M and Hamadeh G. Quality of diabetes care in a university health center in Lebanon. *International Journal of Quality in Health Care*, 1999; **11**(6): 517-521. | II-9.6 |
| A household survey of Beirut conducted in 1992-1993 by the Faculty of Health Sciences at the American University of Beirut. This is a follow-up of the Beirut 1983-1984 survey. Information on 2017 households (8,940 individuals). | Age sex reported prevalence in Beirut:<br><br>| Age grp | M (%) | F (%) |<br>|---|---|---|<br>| 0-9 | 0 | 0 |<br>| 10-19 | 0.1 | 0 |<br>| 20-29 | 0.2 | 0.2 |<br>| 30-39 | 0.9 | 0.6 |<br>| 40-49 | 3.2 | 3.4 |<br>| 50-59 | 10.4 | 11.4 |<br>| 60-69 | 12.5 | 17.8 |<br>| >=70 | 15.5 | 14.2 |<br>| All ages | 3.4 | 3.9 | | Nuwayhid I, Sibai A, Adib S,Shaar K. Morbidity, mortality, and risk factors. In Beirut: A Health Profile 1984-1994. Deeb M, (ed). Beirut: AUB, 1997.Pp123-182. | II-1.12 |
| A cross-sectional study of 2518 Lebanese subjects (1138 males, 1380 females) aged 30 years and over. A screening between November 1994 and September 1995 was conducted in three communities: Aishah Bakkar | -Prevalence of NIDDM=13.1%<br>-Prevalence of Impaired Glucose Tolerance (IGT)=6%<br>-Prevalence by age and sex<br><br>| Age grp | NIDDM | | IGT | |<br>|---|---|---|---|---|<br>| | M | F | M | F |<br>| 30-39 | 1 | 0.3 | 1 | 1 |<br>| 40-49 | 8.8 | 5.4 | 5.6 | 4.9 |<br>| 50-59 | 16.1 | 16.9 | 7.7 | 6.2 |<br>| 60-69 | 23.1 | 24.1 | 8.3 | 7.6 |<br>| >=65 | 28.5 | 30.2 | 8.4 | 15.8 |<br>| **All ages** | **13.1** | **13.2** | **5.6** | **6.4** | | Salti IS, Khogali M, Alam S, et al. Epidemiology of diabetes mellitus in relation to other risk factors in Lebanon. *East Med Hlth J*, 1997;**3**:462-471. | II-9.8 |

| | | | |
|---|---|---|---|
| Aishah Bakkar (Beirut), AUB, and Hammana (Mt. Lebanon), in which an interview and examination, including glucose tolerance, were administered. For NIDDM: if fasting blood sugar (FBS) > 140 mg/dl and/or 2-Hour glucose value was > 200 mg/dl. Impaired glucose tolerance (IGT) if FBS < glucose value was > 200 mg/dl. Impaired glucose tolerance (IGT) if FBS < 140mg/dl and 2-hour glucose was between 140-200 mg/dl. | -Main risk factor was obesity | | |
| National survey for screening for prostate cancer: <br>- Media campaign encouraging men to be evaluated <br>- A questionnaire <br>- Blood sample for PSA <br>- Digital rectal exam by a urologist to palpate the prostate. | 15.7% of the 7452 men were diabetic (age range 34-92 years) | Merhej S. Prostate cancer screening: isn't a necessity in Lebanon. *Le Monde Medical*, 1998;**5**:22-26. | II-6.1 |
| Retrospective study over 38 diabetic patients at HDF between 1993 and 1996 for foot cellulites. | 97% were NIDDM patients. <br>60% had an amputation of a toe or more. <br>87% had debridement <br>58 % had nephropathies | Farah R. Pied diabetique. *Memoire*, USJ, 1996-1997. | II-9.10 |
| 586 type II diabetics were | Age at onset of NIDDM: <br><br>| Age group | Percent | | Hirbli K, and Brouby T. Distribution du | II-9.11 (article not |

| compared to 502 non-diabetics. 302 of them reported the age at onset (between 20-80 years) | 20-30 | 2 | diabete du type II dans les familles Libanaises. *Abstarct*,1996. | found) |
|---|---|---|---|---|
| | 30-40 | 18 | | |
| | 40-50 | 37 | | |
| | 50-60 | 27 | | |
| | 60-70 | 13 | | |
| | 70-80 | 3 | | |
| | Total | 100 | | |
| 82 diabetic patients with cutaneous manifestations (endocrinologic and dermatologic) at HDF between 1991 and 193. | 40 had macroangiopathies<br>Incidence of vascular disease was 17% at 10 years duration and 40.5% at 20 years. Diabetic foot incidence was 51%.<br>4 out of 82 had vitiligo and 5 had psoriasis. | | El Hajj L. les manifestations cutanees du diabete. *Memoire*, USJ, 1993-1994 | II-9.12 |
| Case report of an 88-year old diabetic woman scheduled for below knee amputation at AUB-MC | Spinal anesthesia remains a preferred technique in patients with Diabetes mellitus | | Baraka A, Nader A, amaha S. Hypoglycemia of the diabetic patient during spinal anesthesia. *M E J Anesth*, 1993;**13**:177-179. | II-9.13 |
| 130 Lebanese diabetic patients were studied as to their knowledge of diabetes management. | 70% were hospitalized<br>30% outpatients<br>duration of diabetes was as follows. 7.7% less than one year, 17.07 % between 1 and 5 years, 24.6% between 5 and 10 years , and 50.7% more than 10 years. | | Hirbli K, El-Hajj C, Hallak M, et al. Connaissances et pratiques diabetologiques: analyse d'un echantillon libanais. *Revue Medicale Libanaise*, 1993;**5**:254-257. | II-9.14 |
| A total of 436 persons (202 men and 234 women) from all over Lebanon volunteered as a response to a national TV campaign in 1989 for the prevention of cardiovascular diseases inviting people to participate in a | -Total prevalence: 4.8% (males 6.4%; Females 3.4%)<br><br>-Prevalence by age: | | Hirbli K, Gerges T, Karam V, et al. estimation de la prevalence du diabete sucre au Liban. *J Med Liban*, 1992; **40**(1):22-30. | II-9.15 |

Prevalence by age table:

| Age group | Prevalence(%) |
|---|---|
| <20 | 0 |
| 21-30 | 4.2 |
| 31-40 | 9.1 |
| 41-50 | 12 |
| 51-60 | 11.6 |
| 61-70 | 13.1 |
| <70 | 21.2 |

| | | | |
|---|---|---|---|
| screening for lipid profile and blood sugar. Volunteers were seen in 11 medical centers spread all over Lebanon. Those on medications or known to be diabetic or on mediations were excluded. A blood sugar level of 140mg/dl or above was considered diabetic. | | | |
| Two descriptive studies 1985 at Rizk and St. Joseph Hospitals: 1737 persons presenting to clinical laboratories for blood tests (a blood glucose level of 140mg/dl used as cutoff for diabetes/120mg/dl cutoff for intolerance). Chart review of a sample of hospitalized patients (n=2434) in 1970, 1975, 1980 and 1985. | -Prevalence of Diabetes in ambulatory patients (%)<br><br>| Male | Female | Total |<br>|---|---|---|<br>| 29.2 | 28.1 | 28.6 |<br><br>-Prevalence of Diabetes in hospitalized patients(%)<br><br>| Male | Female | Total |<br>|---|---|---|<br>| 14.3 | 11.7 | 13.1 | | Hirbli K, Abou jaoude J, Ghorra F, et al. Prevalence and incidence of diabetes mellitus in Lebanon. *Diabete et Metabolisme*, 1990;**16**:476-483. | II-9.16 |

## 10. CARDIOVASCULAR DISEASES

| Resource/Study Population | Summary Findings | References | Appendix |
|---|---|---|---|
| This is a recent drug study of the MedNet, which covers the MedNet Liban population and examines data from Jan1, 1999 to Dec 31,2003. It relates to 298 pharmacies and 8446 prescribing physicians | Drugs of the CVD type ranked 3rd after anti-infective agents and Central Nervous System drugs, with 14% of the total; and are the top rank prescribed drugs to population aged 46 years and above (20% in age group 46-65, 35.8% in those aged 66 years and above) | Avedikian A. Prescription medicines, let's talk prescriptions. *Bulletin* no.21, June 2004. | II-10.1 |
| MedNet 2001-2002 data. | First cause of hospital deaths was due to cardiovascular system problems with 36.7% of deaths. | MedNet 2001-2002. In: Recueil national des statistiques sanitaires au Liban. Edition 2004.Pp 243-247. | II-10.2 |
| The YMCA (Young Male Christian Association) is a Non-Governmental Association covering 398 health centers with chronic disease medication. 2003 annual statistics | The top rank disease treated was Cardio-Vascular Disease (CVD) contributing to 64887 cases (38%). The prevalence was 37.8% and 38.5 % in males and females, respectively, with a male to female ratio of 0.72 suggesting a higher utilization among females by almost 40%. | YMCA report, 2003.(unpublished data) | II-9.2 |
| Follow-up of 111 patients with CABG surgery in HDF | Mean age 64 years, 77% were men. The majority returned to work after 45 days. The striking result is that the majority of the smoking patients continue to smoke after surgery. | Ghoussoub K, Abou Jaoude, Sawan D, et al. Re-education postoperatoire, reinsertion socio-professionnelle et reprise du sport chez 111 patients Libanais operas de pontage aorto-coronarien suivis pendant 2 ans. *JML*, 2002;**50**(4):144-148. | II-10.4 |
| MedNet Liban Database.  This database contains | In addition to this, the first condition for hospitalization in the ages 45 to 79 is Ischemic Heart Disease, with more | El-Zein S. Leading causes of hospitalizations and | I-3.3 |

| | | | |
|---|---|---|---|
| information about patients covered by public payers (NSSF), private insurance companies , mutual funds and self-funded schemes. It also includes all types of hospitals that are spread throughout Lebanon.This is an overview of hospital care during 1995-2001. | than 5% of cases (page 15), and cardiac arrest represented the cause of highest probability of in-hospital mortality with 68% (page 23). In general, diseases of the circulatory system represented the top cause of in-hospital deaths with 41.43% of 519 deaths | in-hospital mortality-an update. *Center for Healthcare Information and Policy Studies (CHIPS)*, Bulletin 17(2), December 2002. | |
| A follow up study of 1567 individuals 50 years of age and over to estimate overall cardiovascular diseases and overall mortality. | Proportionate Mortality Rate for IHD=40.4 from a total of 416 deaths. Ten-year Mortality rate was estimated at 16.2 and 7.6 per thousand person years for males and females, respectively | Sibai AM, Fletcher A, Hills M, Campbel O. Non-commuicable disease mortality rates using the verbal autopsy in a cohort of middle-aged and older population in Beirut during wartime, 1983-1993. *J Epidemiol community Hlth*, 2001;**55**:271-276. | II-10.6 |
| Consecutive admissions due to myocardial infarction to 18 medical centers in various regions of Lebanon were entered into the Lebanese Myocardial Infarction Study conducted between January and July 1996. | 44 in-hospital deaths among the 433 admissions (10.2%) showing improvement in survival compared to previous studies. | Sawaya J, Jazra C, Farhat F, et al. In-Hospital mortality after acute myocardial infarction in Lebanon: incidence, associations, and influence of newer treatment regimens. *LMJ*, 2000;**48**(2):63-69. | II-10.7 |
| The National Household Health Expenditure and Utilization Survey (NHHEUS) in 1999: a total of 6544 | -Prevalence of cardiac problems=3.5%, prevalence in males 3.5%, in females 3.3%. -13% of 3981 hospital admissions were due to diseases of the circulatory system. | Ministry of Public Health (MOPH). National Household Health Expenditure and Utilization Survey (NHHEUS). | Original publication provided |

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|---|---|---|---|
| households representative of Lebanon were included (a weighted sample of 32000). | | 1999 | |
| Prospective study (Jan-June 1996) on 433 patients admitted to CCU of 18 medical centers in different regions in Lebanon. Assessed gender difference. | -M/F ratio=3.45<br>-Incidence rate: 11%(F), 3%(M)<br>Recurrent ischemia rate: 32%(F), 22%(M)<br>-Mortality rates of IHD by age:<br><br>| Age grp | M (%) | F (%) |<br>|---|---|---|<br>| <51 | 6.9 | 7.7 |<br>| 51-60 | 5.4 | 12.3 |<br>| 61-70 | 10.8 | 16.1 |<br>| >70 | 13.2 | 24.6 |<br>| Total | 8.1 | 16.2 | | Sawaya J, Jazra C, Eid E,Sabra R. Gender differences in the diagnosis and treatment of acute myocardial infarction in Lebanon. *J Med Liban*,1999;**47**:63-9 | II-10.9 |
| A household survey of Beirut conducted in 1992-1993 by the American University of Beirut, Faculty of Health Sciences. It is a follow-up of the target population in the Beirut 1983-1984 survey. Information on 2017 households (8,940 individuals). | - Prevalence of IHD by age and sex<br><br>| Age grp | M(%) | F(%) |<br>|---|---|---|<br>| 0-9 | 0.4 | 0.2 |<br>| 10-19 | 0.0 | 0.3 |<br>| 20-29 | 0.2 | 0.2 |<br>| 30-39 | 0.9 | 0.9 |<br>| 40-49 | 4.6 | 3.2 |<br>| 50-59 | 11.7 | 8.2 |<br>| 60-69 | 15.0 | 16.4 |<br>| >=70 | 24.1 | 24.4 |<br>| Total | 4.3 | 3.9 |<br><br>-CVD leading cause of death. | Nuwayhid I, Sibai A, Adib S,Shaar K. Morbidity, mortality, and risk factors. In Beirut: A Health Profile 1984-1994. Deeb M, (ed). Beirut: AUB, 1997.Pp123-182. | II-1.12 |
| Retrospective study on 70 patients aged >70 years undergoing CABG at HDF between Jan 1993 and Jan 1995 | 58 males;12 females<br>Mean age 71.2 years<br>65.7% were smokers and 18.5% had COPD | El-Asmar B, Yazigi A, El Rassi I, et al. La chirurgie coronaire chez les maladies agees de plus de 70 ans, a propos de 70 cas. J Med Liban, 1996;**44**(4). | II-10.11 |
| A thesis for doctoral degree at the Universite Saint Josef (USJ) Faculty of Medicine, tackled a descriptive study of 100 patients (> 70 years) admitted to | M/F ratio=3.55 | Kassabian E. Les pontages aorto-coronariens chez les patients ages de plus de 70 ans.*These*,1996. | II-10-12 |

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|---|---|---|---|
| HDF Hospital between Jan 1993 and Oct 1995 for CABG (coronary artery bypass). | | | |
| The study compared the specificity and sensitivity of Troponin T versus CPK-MB in the diagnosis of MI 50 patients admitted because of angina to HDF. | M/F ratio=2.13 | Achou P. Troponine T et infarctus du myocarde.*These*, 1996. | II-10.13 |
| Prospective study done on 201 patients admitted with MI to 6 hospital Cardiac Care Units in 1993. Assessed hospital survival. | M/F ratio=3.0 <u>Prevalence of IHD by age</u>: 4.47% in age <40 years, 18.4% in age grp 40-50 years 27.9% in age grp 50-60 years 33.8% in age grp 60-70 years 15.42% in age > 70 years -<u>Mortality rate of IHD patients by age</u>:11% (<65), 27% (65-75), 21%(>75), overall Mortality Rate= 14.4% | Jazra C, Khoury A, Adem N, et al. Survis hospaliere dans l'infarctus du myocarde. Etude multicentrique de 201 patients en 1993.*J Med Liban*, 1995;**4**:131-134. | II-10.14 |
| Descriptive study on 763 patients admitted to Cardiac Care Unit of AUBMC (July 1977-December 1978). | M/F ratio=4.0 | Sawaya JI, Atweh G, Armenian H. Coronary care experience in a university hospital.*M.E.J. Anaesth,* 1979;**5**:249-67. | II-10.15 |
| A case-control study matching 91 cases of CHD in AUBMC to 100 controls (1964-1966) | M/F ratio=3.55 <u>Prevalence of IHD by age</u>: 5.5% in age <40 years, 12.1% in age grp 40-50 years 38.5% in age grp 50-60 years 30.8% in age grp 60-70 years 13.1% in age > 70 years | Abou-Daoud K. Coronary heart disease. Associations observed in hospitalized patients.*J Med Lib*,1968;**21**:49-57. | II-10.16 |
| Descriptive study on 81 patients from the outpatient department (OPD) of AUBMC (August 1962-July 1963) | M/F ratio=5.25 <u>Prevalence of IHD by age</u>: 4.9% in age <40 years, 16% in age grp 40-50 years 31% in age grp 50-60 years 34.5% in age grp 60-70 years 13.6% in age > 70 years | McLaren DS, Ammoun C, Foster I. Coronary Heart Disease in Lebanon. A Public Health Problem. *J Med Lib*,1964;**17**:15-21. | II-10.17 |

## 11. CONGENITAL HEART ANOMALIES

| Resource/Study Population | Summary Findings | References | Appendix |
|---|---|---|---|
| MOPH visa billing data during Jan 2004-Nov 2004. | 114 cases of congenital anomalies of the heart were hospitalized during the 11 months period. | MOPH, Department of Statistics. Unfinished report, 2004. | |
| Relationship between congenital heart defects and consanguinity was investigated. 759 Lebanese patients with different types of congenital heart malformations were selected from the cardiac registry center at the AUBMC. | 397 were males. Rate of consanguineous parental marriages was 34.7%. Significantly increased rate of consanguinity in all categories of cardiac malformations except great vessel and coronary artery lesions. | Nabulsi M, Tamim H, Sabbagh M, et al. Parental consanguinity and congenital heart malformations in a developing country. *American Journal of Medical Genetics*, 2003;**116A**:342-347. | II-11.2 |
| A leading article about pediatric cardiology in Lebanon. | Adults between 18 to 71 years who have CHD are an emerging population. In 206 patients admitted to surgery Atrial Septal Defect was the most common cardiac malformation accounting for 53.4%, followed by Ventricular Septal Defects (11.2%). | Bitar F, Sabbagh M, and Obeid M. The status of pediatric cardiology in Lebanon. *Leb J Med Sci*, 2003;No10:4-9. | II-11.3 |
| MedNet Liban Database. This database contains information about patients covered by public payers (NSSF), private insurance companies, mutual funds and self-funded schemes. It also includes all types of hospitals that are spread throughout Lebanon.This is an overview of hospital care during 1995-2001 | In the MedNet experience, 22.3 % of deaths less than one year of age are caused by congenital anomalies of the heart and circulatory system | El-Zein S. Leading causes of hospitalizations and in-hospital mortality-an update. *Center for Healthcare Information and Policy Studies (CHIPS). Bulletin* 17(2), December 2002. | I-3.3 |
| The National Collaborative Perinatal Neonatal | 64 cases of 1279 admissions (5%) had Congenital Heart Disease. | NCPNN. First Annual report (April 1st, 1999-Mar 31st, | I-7.6 |

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|---|---|---|---|
| Network (NCPNN) was designed to achieve a system of continuous and prospective data collection covering all newborn infants-and their mothers-who are admitted to the normal and intensive care nurseries of hospitals participating in the network | | 2000) | |
| a retrospective review of newborns with Congenital Heart Disease (CHD) during the year 1996, and a prospective evaluation of all pediatric patients admitted to the pediatric cardiology service between the first of March, 1997 and 31$^{st}$ of January, 1999 | The incidence of CHD at the AUB-MC was 11.5 per 1000 live births; and, out of 670 with cardiac anomalies registered at CCRC, 613 (91.5%) had CHD and the rest had Acquired Heart Disease (AHD). More than half (59.2%) of CHD were of more than 1 year of age with 10.6% aged less than one month. <br> The Mortality rate in CHD patients was 4.2% as compared to 3.5% in those having AHD. | Bitar F, Obeid M, Alam S, et al. The Children's Cardiac Registry Center (CCRC), Epidemiology of Cardiac Disease in Children in Lebanon, the American University of Beirut-medical Center Experience, March 1, 1997-January 31, 1999.*Study* | II-11.6 |
| Monitoring the surgical treatment of Congenital Heart Disease in Lebanon between 1993 and 1995, 455 cases of CHD were studied. | 455 consisted 12% of all cases covered by MOPH. Most frequent CHD were: Ventricular Septal Defects (20%), Atrial Septal Defect (24%, quite elevated value), Tetralogy of Fallot (17%), and Patent Ductis Arteriosus (8%, elevated). | Abou Charaf L, Timani N, Hajj Ali W, et al. Cardiopathies congenitales au Liban, statistiques, indications therapeutic et centralizations. *Revue Medicale Libanaise*, 1997;**9**:155-157. | II-11.7 |
| Between July 1993 and June 1994, 407 cardiovascular and thoracic surgeries were done at HDF. 67 were for congenital cardiopathies. | Of the 67, 44 were for infants and newborns and 23 for adults 18 years and more. <br> M/F=1.09. | Asmar R. Les cardiopathies congenitales de l'adulte. *Memoire*, USJ, 1994-1995. | II-11.8 |

## 12. CHRONIC OBSTRUCTIVE PULMONARY DISEASE

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| MOPH visa billing data during Jan 2004-Nov 2004. | 846 cases of Chronic lower respiratory diseases reported for hospitalization in 11 months | MOPH, Department of Statistics. Unfinished report, 2004. | Part of the main report |
| MedNet study on a database of more than 250,000 hospitalization claims since 1994. All respiratory related claims reported between 1995 and 2000 were analysed. | Sevenfold increase in the prevalence of chronic respiratory diseases from 0.05/1000 in 1995 until 0.35/1000 in those aged 65 years or more in1999. Drastic action against air pollution needs to be taken. | Souraty P. Respiratory diseases in Lebanon: the MedNet experience. Health care management research and development department, *Bulletin* no.16, April 2001. | II-12.2 |
| National Household Health Expenditure and Utilization Survey (NHHEUS) in 1999: A total of 6544 households representative of Lebanon were included (a weighted sample of 32000). | 4 % reported having a chronic respiratory system disease diagnosed by a medical professional. | Ministry of Public Health (MOPH). <u>National Household Health Expenditure and Utilization Survey (NHHEUS)</u>. 1999 | Publication provided |
| A household survey of Beirut conducted in 1992-1993 by the Faculty of Health Sciences. A follow-up of the population surveyed in the Beirut 1983-1984 survey. Information on 2017 households (8,900 individuals). Information on type, place and outcome of injury was collected. | Presence of respiratory disease by age and sex in Beirut:<br><br><table><tr><td></td><td>Male</td><td>Female</td></tr><tr><td>0-9</td><td>1.2</td><td>1.2</td></tr><tr><td>10-19</td><td>1.1</td><td>0.9</td></tr><tr><td>20-29</td><td>0.5</td><td>0.5</td></tr><tr><td>30-39</td><td>0.5</td><td>1.0</td></tr><tr><td>40-49</td><td>0.9</td><td>1.1</td></tr><tr><td>5059</td><td>1.1</td><td>1.9</td></tr><tr><td>60-69</td><td>1.6</td><td>2.2</td></tr><tr><td>>=70</td><td>2.1</td><td>6.6</td></tr><tr><td>All ages</td><td>1.0</td><td>1.3</td></tr></table> | Nuwayhid I, Sibai A, Adib S,Shaar K. Morbidity, mortality, and risk factors. In <u>Beirut: A Health Profile 1984-1994</u>. Deeb M, (ed). Beirut: AUB, 1997.Pp123-182. | II-1.12 |

## 13. ASTHMA

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| The YMCA (Young Male Christian Association) is a Non-Governmental Association covering 398 health centers with chronic disease medication. 2003 annual statistics | 3489 cases of asthma were treated out of a total of 170,163 cases during 2003. Prevalence in males was 2.26% and in females 1.90 %. | YMCA report, 2003.(unpublished data) | II-9.2 |
| MedNet study on a database of more than 250,000 hospitalization claims since 1994. All respiratory related claims reported between 1995 and 2000 were analyzed. | Steady increase of asthma prevalence from 1.02/1000 in 1995 to 2.16/1000 in 1999. More pronounced in the less than 17 years of age category. Sevenfold increase in the prevalence of chronic respiratory diseases from 0.05/1000 in 1995 until 0.35/1000 in those aged 65 years or more in1999. Drastic action against air pollution needs to be taken. | Souraty P. Respiratory diseases in Lebanon: the MedNet experience. Health care management research and development department, *Bulletin* no.16, April 2001. | II-12.2 |
| National Household Health Expenditure and Utilization Survey (NHHEUS) in 1999: A total of 6544 households representative of Lebanon were included (a weighted sample of 32000). | 1.7% all over Lebanon (1.9% in males; 1.6% in females) | Ministry of Public Health (MOPH). <u>National Household Health Expenditure and Utilization Survey (NHHEUS)</u>. 1999 | Complete copy of publication provided. |
| Medical records review 300 children with asthma who sought care in 2 pediatric pulmonary clinics and one allergy clinic in Beirut. 100 registered charts between Jan'95 and Dec '97 were randomly selected | M/F ratio=1.8<br>Age distribution:<br><table><tr><td>< 2 years</td><td>6%</td></tr><tr><td>2-6</td><td>56%</td></tr><tr><td>6-10</td><td>26%</td></tr><tr><td>> 10</td><td>12%</td></tr></table>1st symptoms appeared in preschool age for 86% of children, 39% onset during first 2 years of life.<br>Asthma was mild in 25%, | Torbey P, Majdalani P, and Hejjawi A. Profile of the asthmatic child in Lebanon. *Pediatric Pulmonology*, 1999. supplement.**18**: 225-227 | II-13.4 |

| | | | |
|---|---|---|---|
| from each clinic. | moderate 50%, and severe 25%. Most frequently used drugs used drugs for acute asthma attack were oral beta-2 agonists (50%). | | |
| To assess prevalence of allergic rhinitis and atopic eczema in school children (13-14 years) in Beirut. More than 2000 children completed the ISAAC written and video questionnaires in 1996.<br>It is an international survey to assess prevalence among a representative sample of school children chosen from 32 schools in Beirut. | 23% of 2059 students wheezed Children who ever had rhinitis were 33.4% of the sample. 15.4% had itchy eyes, 19.6% had hay fever.<br>5% had severe asthma, wile 11% of children 13-14 years have a history of asthma.<br>51% of those who wheeze admitted having asthma. | -Ramadan FM, Khoury MN, Hajjar TA, et al. Prevalence of allergic diseases in children in Beirut: comparison to worldwide data. *LMJ*, 1999;**47**:216-221.<br>-Strachan D, Sibbald B, Weiland S, et al. Worldwide variations in prevalence of symptoms of allergic rhinoconjunctivitis in children: the International Study of Asthma and Allergies in Childhood (ISAAC). *Pediatr Allergy Immunol*, 1997;**8**:161-176.<br>-Ramadan F, Mroueh S, Khoury M, et al. Prevalence of asthma and asthma symptoms in children in urban Lebanon. *Saudi Medical Journal*, 1999;**20**(6):453-457. | II-13.5 |
| 60 patients with a diagnosis of allergic asthma. All had indoor jobs and selected based on clinical asthma symptoms. | 29 males and 31 females.<br>28 patients had allergic rhinitis and asthma; and, 32 patients were asthmatic.<br>Age range 12 to 83 years with average age of 45.2 years. | Ramadan F, Hamadeh F, and AbdelNoor A. Identification of allergens in a selected group of asthmatics in Lebanon. *European Journal of Epidemiology*, 1998;00:000-000. | II-13.6 |
| A household survey of Beirut conducted in 1992-1993 by the Faculty of Health Sciences. A follow-up of the population surveyed in the Beirut | Presence of Asthma by age and sex in Beirut:<br><br>| Age grp | Male | Female |<br>\|---\|---\|---\|<br>\| 0-9 \| 2.8 \| 1.6 \|<br>\| 10-19 \| 3.6 \| 2.4 \|<br>\| 20-29 \| 1.2 \| 1.1 \|<br>\| 30-39 \| 0.5 \| 1.5 \| | Nuwayhid I, Sibai A, Adib S, Shaar K. Morbidity, mortality, and risk factors. In <u>Beirut: A Health Profile 1984-1994</u>. Deeb M, (ed). Beirut: AUB, | II-1.12 |

| | | | | | |
|---|---|---|---|---|---|
| 1983-1984 survey. Information on 2017 households (8,900 individuals). Information on type, place and outcome of injury was collected. | 30-39 | 0.5 | 1.5 | 1997.Pp123-182. | |
| | 40-49 | 1.4 | 2.7 | | |
| | 50-59 | 1.3 | 2.4 | | |
| | 60-69 | 1.4 | 3.3 | | |
| | >=70 | 4.8 | 3.0 | | |
| | All ages | 2.1 | 1.8 | | |
| Review of all 11600 patients who visited the emergency service of HDF in one year (December 1995 – December 1996): 142 had asthma. | 142 cases classified as : Pediarics (<14 years)56.3% Adult (14-45 years)19% Elderly (45-84 years)24.6% | | | Mouannes W. Etude epidemiologique sur l'Asthme. *These*. USJ, Beirut,1997. | II-13.8 |
| Clinical and epidemiological review paper. | | | | Ramadan F. New trends in asthma. *JML*, 1993;**41**:27-31. | II-13.9 |
| Review of all 3049 pediatric patients (< 14 years) who presented to the emergency service of AUBMC (September 1980- August 1981) | 472 of 3049 (15.5 %) had asthma | | | Yazigi A and Mudawwar F.Childhood asthma in Lebanon: An epidemiologic study. *Arab Journal of Medicine*, year not listed;**2**:6-8. | Could not be found (Journal not available) |

## 14. PEPTIC/GASTRIC ULCER

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| The YMCA (Young Male Christian Association) is a Non-Governmental Association covering 398 health centers with chronic disease medication. 2003 annual statistics | 9786 cases of ulcer out of a total of 170,163 cases during 2003. Prevalence in males was 5.57% and 5.88 % in females. | YMCA report, 2003.(unpublished data) | II-9.2 |
| National Household Health Expenditure and Utilization Survey (NHHEUS) in 1999: A total of 6544 households representative of Lebanon were included (a weighted sample of 32000). | 3.1 % reported peptic ulcer (3 % males; 3.1 % females) | Ministry of Public Health (MOPH). National Household Health Expenditure and Utilization Survey (NHHEUS). 1999 | Copy of publication is provided |
| A household survey of Beirut conducted in 1992-1993 by the Faculty of Health Sciences. A follow-up of the population surveyed in the Beirut 1983-1984 survey. Information on 2017 households (8,900 individuals). Information on type, place and outcome of injury was collected. | Presence of peptic ulcer by age and sex in Beirut:<br><br>| Age grp | Male | Female |<br>|---|---|---|<br>| 0-9 | 0 | 0 |<br>| 10-19 | 0.2 | 0 |<br>| 20-29 | 0.8 | 0.7 |<br>| 30-39 | 0.9 | 2.1 |<br>| 40-49 | 3.7 | 3.0 |<br>| 50-59 | 3.6 | 4.1 |<br>| 60-69 | 7.6 | 4.6 |<br>| >=70 | 4.3 | 3.0 |<br>| All ages | 1.9 | 1.8 | | Nuwayhid I, Sibai A, Adib S,Shaar K. Morbidity, mortality, and risk factors. In Beirut: A Health Profile 1984-1994. Deeb M, (ed). Beirut: AUB, 1997.Pp123-182. | II-1.12 |
| A two-month follow-up of 21 patients treated with Famotidine for Gastric Ulcer in HDF. | | Sayegh R, Khoury k, and Nassr W. La famotidine dans le traitement de l'ulcere gastrique. *J Med Liban*, 1992;**40**:11-15. | II-14.4 |

## 15. CHRONIC KIDNEY DISEASE

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| MOPH visa billing data during Jan 2004-Nov 2004. | 648 cases of renal failure reported for hospitalization in 11 months (ICD10 codes N17-N19) | MOPH, Department of Statistics. Unfinished report, 2004. | Part of the main report |
| All hemodialysis centers in Lebanon were visited. 925 Hemodialysis patients were surveyed. Transplant and chronic renal failure patients were not included in the study. | Nearly half have an unknown diagnosis. 26% (243) of hemodialysis patients were consanguineous. 35% of those (85 patients) started hemodialysis before the age of 30 and 40.4% of them were diagnosed with kidney disease before the age of 30. | Berbari A, Stephan A, Masri M, et al. Consanguinity-associated kidney diseases in Lebanon: and epidemiological study. *Molecular Immunology*, 2003;**39**:1109-1114. | II-15.2 |
| Study of all 20 Lebanese Children of age less than 15 years who are with ESRD on June 1997. | No psychological support was provided | Mourani C, Kfouri W, Mallat S, et al. Etudes multicentriques des enfants en insuffisance renale terminale au Liban. *J Med Liban*, 1999;**47**(5):309-312 | II-15.3 |
| Study of 13 Lebanese children of age less than 15 years (mean age 6 years)who are with ESRD on hemodialysis in between 1993 and June 1996. | Actuarial survival of the grafts was 100% for an average follow-up time of 18 months. 11 children returned to school after 11 months. | Mourani C, Moukarzel M, Gerbaka B. La transplantation renale chez l'enfant. *J Med Liban*, 1999;**47**(1):7-12. | II-15.4 |
| National Household Health Expenditure and Utilization Survey (NHHEUS) in 1999: A total of 6544 households representative of Lebanon were included (a weighted sample of 32000). | 1.8% reported chronic renal failure diagnosed by a physician (1.4 males; 2.2 % females) | Ministry of Public Health (MOPH). National Household Health Expenditure and Utilization Survey (NHHEUS). 1999 | Copy is provided |
| 118 consecutive renal biopsies performed on 104 children and adolescents which are all patients under the | Acute nephropathy was seen in 9.6% of the patients, primary nephrosis in 45% and secondary glomerular disease in 14.6% | Barakat A and Attiyeh B. Renal disease in Lebanese children and adolescents, findings in 118 consecutive | II-15.6 |

| age of 20 years who underwent percutaneous renal biopsies in the American University of Beirut medical center, between 1978 and 1984 | | percutaneous renal biopsies. *LMJ*, 1998;**46**(6):306-309. | |
|---|---|---|---|
| A household survey of Beirut conducted in 1992-1993 by the Faculty of Health Sciences. A follow-up of the population surveyed in the Beirut 1983-1984 survey. Information on 2017 households (8,900 individuals). Information on type, place and outcome of injury was collected. | Presence of chronic renal failure by age and sex in Beirut:<br><br>| Age group | Male | Female |<br>|---|---|---|<br>| 0-9 | 0 | 0 |<br>| 10-19 | 0.2 | 0.3 |<br>| 20-29 | 1.5 | 1.5 |<br>| 30-39 | 1.6 | 3.9 |<br>| 40-49 | 3.2 | 4.7 |<br>| 50-59 | 3.2 | 4.5 |<br>| 60-69 | 3.0 | 6.0 |<br>| >=70 | 4.3 | 4.6 |<br>| All ages | 1.6 | 2.7 | | Nuwayhid I, Sibai A, Adib S,Shaar K. Morbidity, mortality, and risk factors. In Beirut: A Health Profile 1984-1994. Deeb M, (ed). Beirut: AUB, 1997.Pp123-182. | II-15.7 |
| Reviewed the social and demographic profile of all 407 ESRD patients undergoing hemodialysis in Lebanon under the MOPH (1983-1984) | Hemodialysis patients by age:<br><br>| Age | Number | Percent |<br>|---|---|---|<br>| <25 | 50 | 12 |<br>| 25-34 | 46 | 11 |<br>| 35-44 | 51 | 13 |<br>| 45-54 | 97 | 24 |<br>| 55-60 | 55 | 14 |<br>| >60 | 107 | 26 | | Nassif E and Kutan K. Social and demographic profile of hemodialysis patients in Lebanon. *LMJ*,1985;**35**(2):125-132. | |

## 16. ARTHRITIS

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| National Household Health Expenditure and Utilization Survey (NHHEUS) in 1999: A total of 6544 households representative of Lebanon were included (a weighted sample of 32000). | 5.3 % reported arthritis (3.3 % males; 7.2 % females) | Ministry of Public Health (MOPH). National Household Health Expenditure and Utilization Survey (NHHEUS). 1999 | Publication provided |
| A household survey of Beirut conducted in 1992-1993 by the Faculty of Health Sciences. A follow-up of the population surveyed in the Beirut 1983-1984 survey. Information on 2017 households (8,900 individuals). Information on type, place and outcome of injury was collected. | Presence of Arthritis by age and sex in Beirut: <table><tr><th>Age grp</th><th>Male</th><th>Female</th></tr><tr><td>0-9</td><td>0.7</td><td>0.6</td></tr><tr><td>10-19</td><td>1.0</td><td>2.2</td></tr><tr><td>20-29</td><td>1.0</td><td>2.5</td></tr><tr><td>30-39</td><td>1.4</td><td>5.5</td></tr><tr><td>40-49</td><td>0.7</td><td>9.7</td></tr><tr><td>50-59</td><td>4.5</td><td>15.5</td></tr><tr><td>60-69</td><td>6.8</td><td>19.7</td></tr><tr><td>>=70</td><td>9.6</td><td>20.8</td></tr><tr><td>All ages</td><td>2.2</td><td>7.2</td></tr></table> | Nuwayhid I, Sibai A, Adib S,Shaar K. Morbidity, mortality, and risk factors. In Beirut: A Health Profile 1984-1994. Deeb M, (ed). Beirut: AUB, 1997.Pp123-182. | II-1.12 |
| 328 Rheumatic diseases patients in the outpatient department at the AUB medical center in 1994 and 1995. | More than a third of the patients suffer from either rheumatoid arthritis (15.2%) or osteoarthritis (14.9%). | Uthman I, Kassak K, Sanjakdar R, et al. Letter from Lebanon. *British Journal of Rheumatology*, 1997;**36**:806-807. | II-16.3 |
| Studying the epidemiologic characteristics of 81 arthritis patients during 8 months in HDF hospital. | Mean age 63.5 years More than 40% had severe pain Primary arthritis is the most frequent condition. | Daniel F. Arthrose, *Thesis abstract*. In: Bulletin annuel de la faculte de medicine USJ, 1997-1998. p: 400 | II-16.4 |
| Retrospective file review of 191 patients admitted between 1 Jul 1994 and 30 June 1997 at HDF. | Mean age 45.8 years Females 68.1% Males 31.9% 11.5% had complications,1.6% died and 8.4% were readmitted. Degenerative pathologies were the top causes in frequency with 20.9%. | Salibi F. Etude retrospective de l'hospitalization en rheumatologie, *Thesis abstract*. In: Bulletin annuel de la faculte de | II-16.5 |

| | | medicine USJ, 1997-1998. p: 405 | |
|---|---|---|---|
| Retrospective file review of patients hospitalized in Rheumatology services between April 1994 and July 1995 at HDF hospital. | Total of 103 medical files, of whioch 76 were analysed. Mean age 44 years M/F ratio=0.416 with difference in mean age of 10 years, with females older. 1 death out of 76 during the study period | Harfouche J. etude retrospective des atients de rheumatologie a l'HDF Durant 15 mois (27/4/1994-27/7/1995). *Thesis Abstract*, In: : Bulletin annuel de la faculte de medicine USJ, 1996-1997. p: 27. | |
| Study limited to 100 cases of hip osteoarthritis selected from 10,000 observations in a rheumatology practice over a 9.5 - year period. Selection method and years of study not specified. | -86% older than 40 years -75% females -Partitioned by severity as such: Mild 79% Moderate 15% Severe 6% | Bitar E (1970) | Could not be located |

## 17. BACK PAIN

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| Three independent observational studies (1997-1999) to assess the prevalence of low back pain (as self reported) via a questionnaire among: 1035 adults (random sample from a national household survey sample fame) 633 nurses from 4 hospitals 201 employees out of 3800 population | 54 % of nurses 50% of employees reported back pain<br><br>13.1% was the point prevalence of low back pain<br><br>Mean age 41.8%<br><br>53.7% reported a specific diagnosis. Degenerative spine disorders ranked first representing 80.9%.<br><br>Surgical treatment reported in 12.5% of cases. | Baddoura R. Low back pain in Lebanon: a hint on the magnitude of the problem, *Cochrane Library*, 2000: 17. | II-17.1 |
| A questionnaire was sent to hundreds of physicians (who might manage back pain) to inquire about he last 5 consecutive ambulatory patients with LBP they treated. A total of 233 physicians responded. | Bed rest was prescribed in 37.8% of cases. Surgical treatment was offered for 10%. Sick leaves were prescribed in 54.1% of the cases with average duration of 12 days. | Baddoura R. Low back pain in medical practice. *Cochrane Library*, 2000: 7-8 | II-17.2 |
| A review of back pain reported by all AUB employees registered under the University Health services. | Back pain was the second most important reason for sick leaves (7.9%) | Bou Khalil T, and Doudakian R. Back pain at the American university health services. *Cochrane Library*, 2000: 12 | II-17.3 |
| National Household Health Expenditure and Utilization Survey (NHHEUS) in 1999: A total of 6544 households representative of Lebanon were included (a weighted sample of 32000). | 6.5 % reported low back pain (5.3% males; 8.6 % females) | Ministry of Public Health (MOPH). <u>National Household Health Expenditure and Utilization Survey (NHHEUS)</u>. 1999 | Publication provided |
| A household survey of | Presence of back pain by age and | Nuwayhid I, Sibai A, | II-1.12 |

| Beirut conducted in 1992-1993 by the Faculty of Health Sciences. A follow-up of the population surveyed in the Beirut 1983-1984 survey. Information on 2017 households (8,900 individuals). Information on type, place and outcome of injury was collected. | sex in Beirut:<br><br>| Age group | Male | Female |<br>|---|---|---|<br>| 0-9 | 0.0 | 0.2 |<br>| 10-19 | 0.4 | 0.2 |<br>| 20-29 | 1.7 | 1.8 |<br>| 30-39 | 3.9 | 8.5 |<br>| 40-49 | 5.0 | 17.4 |<br>| 50-59 | 8.5 | 17.7 |<br>| 60-69 | 7.6 | 18.0 |<br>| >=70 | 5.9 | 16.2 |<br>| All ages | 3.2 | 7.9 | | Adib S,Shaar K. Morbidity, mortality, and risk factors. In Beirut: A Health Profile 1984-1994. Deeb M, (ed). Beirut: AUB, 1997.Pp123-182. | |
|---|---|---|---|
| The prevalence of back pain among nurses working at the AUBMC in 1994 was assessed through a self-administered questionnaire. | 66% reported low back pain<br>12% upper back pain<br>21% both upper and lower | Nuwayhid et al. (1994) | Not found |
| Assessed back pain among students in one or two schools: one questionnaire completed by 706 students and another for their parents | 57% of school children who carry school bags experience back pain 56% boys<br>One third of those who experience back pain sought medical advice | Ghoussoub K et al. (2000) | Not found |
| Medical record review for the last 10 years on 638 employees | Average annual incidence of back pain sick leaves is 8.7%. higher frequency in males, longer leaves for females. | Khalili A. Low back pain at the tobacco national agency: a retrospective study. Lebanese GP association, 2000. | Not found |

## 18. OSTEOPOROSIS

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| A randomly selected sample of 25-35 years old (because peak BMD is reached at age 35) individuals from the greater Beirut area. The study was conducted in Fall 1999 on 213 eligible subjects. | Prevalence of fractures in postmenopausal women after age 50 is 11%. Peak mean bone mineral density (BMD) was 6%-13% lower in women than in men. 70% of the study sample drank coffee more than occasionally, only 27% exercised regularily. | El-Hajj-Fleihan G, Baddoura R, Awada H, et al. Low peak bone mineral density in healthy Lebanese subjects. *Bone*, 2002;**31**(4):520-528. | II-18.1 |
| Arabic version of EULAR questionnaire was administered to a random sample of general population (n= 1003) of 50 years of age. Mean age 61.3 years and F/M sex ratio 0.9 Osteoporosis was identified by the presence of any type of fractures occurring after 50 yeas of age | -Mean age 61.3 years -F/M ratio 0.9 -Prevalence of osteoporotic fractures: 11.1 % (8.7% in males; 13.4% in females) -increased prevalence with age only with hip and vertebral fractures Lifetime risk of hip fractures for 50 years or more 2% -low prevalence of osteoporotic fractures | Baddoura R, Okais J, & Awada H. Incidence of fractures after the age of 50 years in the Lebanese population and implications in terms of osteoporosis. *Rev Epidemiol Sante Publique*, 2001;**49**(1):27-32. | II-18.2 (available online) |
| Bone mineral density measured on a sample of 1023 individuals (165 males and 858 females) aged 20-79 years to assess BMD levels of the Lebanese and compare it with European and US standards | Spine BMD values of Lebanese women were generally lower (by 8% for ages 20-59, and by 5-6% for ages 60-79). Height was not significantly associated wit BMD. Prevalence of osteoporosis is overestimated when using US/European standards. | Maalouf G, Salem S, Sandid M, et al. Bone mineral density of the Lebanese reference population. *Osteoporosis Int*, 2000;**11**:756-764. | II-18.3 |
| 39 osteoporosis patients on Fosamax therapy.11 healthy Lebanese women at menopausal age, contacted by phone. Total sample 50. | The majority of patients (78%) continue on taking their medication after 11 months. 87% of them have complied with the prescription and the conditions of intake. | Atik M. Evaluation de la compliance a l'Alendronate dans le traitement de l'osteoporose. These, USJ, 1997-1998. | II-18.4 |

## 19. DEPRESSION

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| Prospective follow-up study based on questionnaires and done 24 hrs and 3-5 months postpartum done with 396 women in maternity wards in 9 selected hospitals in Beirut. | An association was found between smoking in pregnancy and Post Partum Depression Odds Ratio 1.2 (95%CI:1.05-1.445) | Yazbeck JC, Yahya F, and Tarrabay M, et al. Postpartum depression: another reason to quit. *SPM project*, AUB, 2002. | II-19.1 |
| 93 subjects (33 victims of explosions and two non-victim control groups of 30 each) were assessed for stressors experienced, and depression among other things. | 39 % met the PTSD diagnostic criteria, 51% of them were depressed. These results were significantly higher than in the controls. | Farhood L, and Noureddine S. PTSD, depression, and health status in Lebanese civilians exposed to church explosion. Paper presented at the first international nursing conference in Lebanon, AUB, 1999. | II-19.2 |
| 438 families chosen at random | Perceived war and non-war stressors were associated with less effective family adaptation in terms of increased symptomatology in depression and other psychiatric conditions. | Farhood L. Testing a model of family stress and coping based on war and non-war stressors, family resources and coping among Lebanese families. *Archives of Psychiatric Nursing*, 1999;**13**(4):192-203. | II-19.3 |
| ٣٨٠٠٠ community subjects from 10 countries from which Lebanon is one. Dr. Elie Karam led the study in Lebanon 526 subjects (18-65 years) from 4 areas in Lebanon (Achrafieh, Ain Remmaneh, Kornet Chehwan and Beijjeh) in 1988-1989 The diagnosis of depression as made | Lifetime prevalence of depression in the Beirut sample<br><br>| Total | Male | Female |<br>\|---\|---\|---\|<br>\| 27.8% \| 20% \| 30% \| | Karam EG, Howard DE, Karam AN, et al. Major depression and external stressors: the Lebanese wars. *Eur Arch Psych and Clin Neurosc*, 1998;**248**:225-230. | II-19.4 |

| | | | |
|---|---|---|---|
| using the Diagnostic Interview Schedule (DIS) and Hamilton Depression Scale | | | |
| ٦٥٨ Lebanese subjects selected at random from 4 areas in Lebanon. Similar to the one above. | Major depression is very high. Depression in the four communities studied was higher than 20% (both after 1 year and lifetime depression) | Karam E, Howard D, Chaaya M, et al. Les guerres du Liban: comorbidite de la depression et troubles post-traumatiques. | II-19.5 |
| ٦٥٨ Lebanese subjects selected at random from 4 areas in Lebanon. Similar to the one above. | Lifetime risk of depression: <br><table><tr><td>Males</td><td>14.7</td></tr><tr><td>Females</td><td>23.1</td></tr></table> F/M ratio=1.6 <br><br>Lifetime rate for major depression was 19.0 cases per 100 adults in Beirut. | Weissman MM, Bland RC, Canino GC, et al. Cross-national epidemiology of major depression and bipolar disorder. *JAMA*,1996;**276**:293-299 | II-19.6 |
| ٥٤٠ Lebanese families chosen by random from West Beirut in 1987 Depression diagnosed using the Beck Depression Inventory (having at least 4 symptoms for at least one month) | Prevalence: 9.9% Highest rate in the 40-59 year age group. | Farhood L, Zurayk H, Chaya M, et al. The impact of war on the physical and mental health of the family: the Lebanese experience. *Soc Sci Med*, 1993;**36**:1555-1567. | II-19.7 |
| ٢٢٤ children (88% of them Lebanese) from 8 schools in Lebanon (Beirut, Southern suburbs of Beirut, Saida). Depression Symptoms were elicited using the child Behavior Inventory (CBI) (unpublished project for the Center for the study of Human Rights at Columbia University) | Children experiencing separation from their parents had more symptoms of depression than those experiencing other war-related events. | Macksoud M, and Aber JL. The war experiences and psychological development of children in Lebanon. *Project on children and war (draft)*. Center for the study of human rights. Columbia University, 1991. | II-19.8 |
| ١٩٢ women (20-53 yeas old) selected at random for being mothers of 152 | Interviewed mothers were on average mildly depressed scoring 11.31 on Becks Depression Inventory scale with a range of 0 to | Bryce J, Walker N, Ghorayeb F, et al. Life experiences, responses, styles, and mental health | II-19.9 |

| | | | |
|---|---|---|---|
| children from 3 schools (1985-1986) Mothers interviewed and depression diagnosed using the Beck Depression inventory | 33. | among mothers and children in Beirut, Lebanon. *Soc Sci Med*, 1989;28(7):685-695. | |
| Description of 4636 patients who constituted 95% of the patients seen by 20 out of the 21 psychiatrists and 3 out of the 3 psychiatric hospitals in Lebanon in 1964 Patients were reported to the authors by these psychiatrists based on their diagnosis of depression. | -Point prevalence = 3 per 100,000 Males (2.2 per 100,000) and Females (3.7 per 100,000). - The 6-month incidence rate= 9.5/100,000 8.4 (Males) and 10.6 (Females) | Katchadourian M, Racy J. The diagnostic distribution of treated psychiatric illness in Lebanon. *Brit J Psychiatry*, 1969;**115**:1309-1322. | II-19.10 |
| Follow-up of 12 students from AUB 12 days before and 8, 37 and 316 days after exposure to significant war event Diagnosis of depression using the Beck Depression Inventory | High level of depression 8 days after trauma. Level of depression decreases with time (at 37 and 316 days after trauma). | Saigh P. Anxiety, depression and assertion across alternating intervals of stress. *Journal of Abnormal Psychology,* 1988;**97**:338-341. | Journal not found |

## 20. SCHIZOPHRENIA

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| The medical charts of 230 patients admitted at Al-Fanar hospital (South) between 1971 and 1986 for the first time and diagnosed as schizophrenics. 40 were selected at random and interviewed. | 76% were unemployed. 69.5% were single. | Yaktin US, and Labban S. Traumatic war. Stress and schizophrenia. *J Psychosoc Nurs Ment Health Serv*, 1992;**30**(6):29-33. | Original source not found<br><br>Abstract provided<br><br>II-20.1 |
| The purpose was to assess the prevalence rate, profiles, and subtypes of schizophrenia in Lebanon. For this purpose the medical charts of 6988 patients admitted to Deir as-Salib Hospital (1980-1990) were reviewed. | Out of 276 schizophrenics:<br>-45.5% of all admissions.<br>-55% had paranoid schizophrenia<br>-82% were single<br>-Age at onset 20.5 years<br>-M/F =2.44 | Hachem DG (1996). Data published in Nuwayhid I, and Sibai A. Epidemiological review of selected disease, injuries and risk factors in Lebanon: Background information for the national burden of disease study, FHS, AUB, Jan 2002.Pp:168-169. | Original source not found<br><br>II-20.2 |
| February 1964 – August 1964: A survey of all 4636 patients seen by 20 out of the 21 psychiatrists and 3 out of the 3 psychiatric hospitals in Lebanon. Schizophrenia diagnosed clinically by the participating psychiatrists. 'Schizophrenia', 'paranoia', and 'paranoid states' were lumped into one category called 'schizophrenic reactions'. | 837 patients were identified.<br>Overall prevalence= 39.2 per 100,000<br>73% in lowest income group<br>67% unmarried, 24% married | -Katchadourian HA, Sutherland JV. Schizophrenic disorders in Lebanon. *J Med Liban*, 1975;**28**(1):143-157.<br>-Katchadourian HA, Sutherland JV. Affective psychosis in Lebanon. *J Med Liban*, 1975;**28**(1):159-167. | II-20.3 |

## 21. SUBSTANCE ABUSE

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| A complete assessment of substance abuse in different at risk populations (especially university students from AUB, LAU, LU and USJ), provided as part of the report on Rapid Assessment Survey done in Lebanon by the organization IDRAC as asked by the UNODC. | Prevalence of ever use as reported by freshmen and sophomore students in AUB Beirut was 12% for illegal drugs, 10.2% for sedatives, 66.5% for alcohol. | IDRAC and UNODC. Substance use and misuse in Lebanon, the Lebanon Rapid Situaion Assessment and Responses Study. *Final Report*, May 2003. | II-21.1 (original publication provided) |
| 119 patients underwent surgery for gallstones disease. 79 patients included in analysis. | 15 different antibiotics were used and 56% of patients were prescribed oral antibiotics on discharge. Erratic use of antibiotics. | Khalifeh N, Kanafani Z, Araj G, et al. Antibiotic use in acute cholecystitis: retrospective review of 79 cases. *Leb J Med Sciences*, 2003; **no.10**:21-23. | II-21.2 |
| Secondary multivariate analysis on the National Household Health Expenditure and Utilization Survey 1999 population, carried out on two of the frequently used medications. | 72.2% reported the use of any medication. 60.4% reported using analgesics and 15.2% antibiotics. | Makhlouf Obermeyer C, Schulein M, Kasparian C, et al. Medication use, gender, and socioeconomic status in Lebanon. Analysis of a national survey. *LMJ*, 2002;**50**:216-225. | II-21.3 |
| Of all 1643 charts in the psychiatry and psychology inpatient unit at Saint Georges Hospital, which was founded in 1979, 222 (13.5%) who had a past/present history of substance abuse were reviewed. | 64.9% had comorbid psychiatric disorders with specific relations between individual substances and psychiatric diagnoses. | Karam E, Yabroudi P, and Melhem N. Comorbidity of substance abuse in acute general psychiatric admissions. A study from Lebanon. *Comprehensive Psychiatry*, 2002;**43**(6):463-468. | II-21.4 |

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| A survey of 954 students newly entering the American University of Beirut in Fall 1998 (Age 16-19 + with 64% 18 years) (M/F: 1.15) Self-administered questionnaire. | Prevalence of ever use as reported by freshmen and sophomore students in AUB Beirut was 12% for illegal drugs, 10.2% for sedatives, 66.5% for alcohol. More females reported ever use of sedatives, and more males reported ever use of illegal drugs and alcohol. | Shediac-Rizkallah M, Afifi-Soweid R, Farhat T, et al. Adolescent health-related behaviours in postwar Lebanon: findings among students at the American University of Beirut. *Int'l Quarterly of Comm Health*, 2001;**20**(2):115-131. | II-21.5 |
| ١٨٥١ Students selected at random from USJ and AUB In 1991. Students completed the D.I.S. (diagnostic Interview Schedule) Arabic Version. Inquired about alcohol and several illicit and prescription drugs. | 49.7% of the students are alcohol users, and10.2% use tranquilizers, 8.4 % barbiturates, and 3.2% codeine. | Karam E, Melhem N, Mansour C, et al. Use and abuse of licit and illicit substances: prevalence and risk factors among students in Lebanon. *Eur Addict Res*, 2000;**6**:189-197. | II-21.6 |
| ١- Review of medical charts of 222 patients admitted to SGH psychiatric unit in the period of 1980-1992. inclusion criteria were Lebanese origin and present 2- Interview with 208 subjects selected at random from Achrafieh and Ain el Rummaneh. The composite International Diagnostic Interview (CIDI) was used. | Mean age of onset of substance abuse was 24.6 for males and 28.9 years for females. | Yabroudi P, Karam E, Chami A, et al. Substance use and abuse: Lebanese females and the Lebanon wars. In: <u>Women and War in Lebanon.</u> Shehadeh LR (ed.). Florida: University of Florida Press, 1999. | Not found Refer to review by Karam in II-21.1 |
| A household survey of Beirut conducted in 1992-1993 by the Faculty of Health Sciences. A follow-up of the population surveyed in the Beirut | 61% of males reported occasional alcohol consumption and 19% a frequency of 3 times or more per week, as compared to 89% and 6%, respectively, in females. | Nuwayhid I, Sibai A, Adib S,Shaar K. Morbidity, mortality, and risk factors. In <u>Beirut: A Health Profile 1984-1994</u>. Deeb M, (ed). Beirut: AUB, | II-1.12 |

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| 1983-1984 survey. Information on 2017 households (8,940 individual). | | 1997.Pp123-182. | |
| A random sample of sampling units (70) based on a two-stage sampling design using the sampling frame of schools from the Ministry of Education 100 students were selected randomly from each sampling unit. Five public schools and nine private schools located mainly in administrative Beirut. Students aged between 15-24 years. | School students reported 41.8% ever use of alcohol, and 2.4% for hashish/marijuana. 40.6% reported ever smoking a cigarette | Sibai A and Kanaan N. Youth health risk behaviour survey among secondary students inLebanon: prevalence and clustering of risk behaviors 1997. *Report*, WHO/UNICEF, 1998. | II-21.9 |
| Cross-sectional study was done to check the prevalence of drug abuse in 1994. All psychiatrists were contacted. | 804 drug abusers are know in Lebanon. Majority of abusers are 25 years of age and above representing 55.8% of known abusers. 78.8% use opiates. | Antoun F. Drug abuse in Lebanon. Final report, MOPH, 1995. | II-21.10 |
| ٣١٨٠ students selected at random from Lebanese University in Bekaa and in Beirut and from LAU. Inquired about illicit drugs. | The prevalence of ever use of illicit substances were: 2.6% for hashish/marijuana, 0.7% for opium and 0.9% for cocaine. | Makki A and Houri M. No for addiction. Beirut, a report for the Lebanese association for Family Planning, 1995. | II-21.11 |
| Review of the medical charts of 852 patients admitted to SGH and the Hospital of the Cross with the diagnosis of substance abuse in the period of 1980-1993. | 16.7% reported using drugs intravenously and 71.48% of the sample were heroin users. 46.52% of the sample of heroin users reported injecting themselves with drugs. | Zaarour R. La toxicomanie au Liban. *These*, USJ, 1994. | II-21.12 |
| Review of the medical charts of 990 patients admitted to the Hospital of the Cross | Heroin is the most commonly used substance among those who seek treatment. Average age of patients treated for | Baddoura C. Toxicomanie au Liban. *Bull acad Natle Med*, 1992;**176**:1505-1515. | Not found. Refer to review in II-21.1 |

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| with the diagnosis of substances abuse in the period of 1973-1991. | substance abuse is approximately 30 years. | | |
| Same as Baddoura (1992) but on 622 patients (1973-1987) | 16.7% reported using drugs intravenously | Abdel Malak N. Evolution de la toxicomanie a travers les annees de guerre. *These*, USJ, 1989. | Refer to II-21.1 |
| Description of "addicted" patients among all 4624 psychiatric patients seen by 20/21 psychiatrists and 3/3 psychiatric hospitals in Lebanon in 1964 ('addicts' in jail were included) | Age at onset of substance abuse in Lebanese psychiatric institution patients was as follows<br><br>| Age | Males | Females | Total |<br>|---|---|---|---|<br>| <=24 | 54 | 4 | 59 |<br>| 25-29 | 56 | 0 | 56 |<br>| 30-39 | 139 | 3 | 142 |<br>| >=40 | 58 | 1 | 59 |<br>| Total | 307 | 8 | 315 | | Katchadourain HT and Sutherland VJ. Psychiatric aspects of drug addiction in Lebanon. *The International Journal of the Addictions*, 1975;10:949-962. | Refer to II-21.1 |
| ٤٣٦ students selected at random from AUB 1972-1973 part I Use). Inquired about sue of LSD, amphetamines, and marijuana. | Lifetime rate of non-medical use of amphetamines was 8% and that of LSD was 2%. | Nassar N, melikian L, and Der Karabetian A. Studies in the non-medical use of drugs in Lebanon: the non-medical use of marijuana, LSD and amphetamines by students at the American University of Beirut. *LMJ*, 1973;**26**:215-232. | II-21.16 |
| Out of 874 admissions, there were 211 drug addicts treated in the prison hospital | Prevalence of drug addiction in the newly imprisoned is 24% | Puzantian VR. Problem of drug addiction in Lebanon. *LMJ*, 1973;**26**:211-213. | II-21.17 |
| ٤٣٦ students selected at random from AUB 1972-1973 (part II: personal correlates). | The lifetime rates of non-medical use of marijuana/hashish, tranquilizers and sleeping pills were 17%, 17% and 15%, respectively. | Melikian L, Nasser N, Der Karabetian A, et al. Studies in the non-medical use of drugs in Lebanon: some personality correlates of marijuana users at the American University Beirut. *LMJ*, 1973;**26**:233-240. | II-21.18 |

# CHAPTER FIVE:

# Injuries

**UNINTENTIONAL INJURIES**

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| MOPH visa billing data during Jan 2004-Nov 2004. | 4,958 cases of injury, poisoning and other consequences of external causes out of 93,672 cases, were admitted to hospitals in 11 months. | MOPH, Department of Statistics. Unfinished report, 2004. | Part of the main report |
| Road accidents victims who were treated by MedNet network providers Seven years collection (mid year 1997- mid year 2004) | 1878 persons were victims of road crashes. Data collected involves 801 victims. 48% were drivers and 25% were pedestrians. 63% were males. Age distribution: <table><tr><td>Age</td><td>percent</td></tr><tr><td>0-9</td><td>7%</td></tr><tr><td>10-19</td><td>13%</td></tr><tr><td>20-29</td><td>31%</td></tr><tr><td>30-39</td><td>18%</td></tr><tr><td>40-49</td><td>11%</td></tr><tr><td>50+</td><td>20%</td></tr></table> 1% of accidents led to death and 33% led to major injuries; majority involves the head (20%) followed by knee (15.6%) and face (12.6%) | El-Zein S. Road accidents, causes and outcomes. *MedNet Liban*, Bulletin no.22, June 2004. | III-2 |
| Data obtained from the Directorate General of the Internal Security Forces. | The number of car traffic accidents was: 2499 in 2001 and 2145 in 2002. Number of injured decreased by 17% ( from 3865 in 2001 to 3206 in 2002) However, the number of deaths increased from 323 in 2001 to 334 in 2002. 79.4% of deaths are males. Age range mostly affected 18-40 years comprising 33.4% of injured and 21.3% of deaths. | Direction generale de la securite interieure. Accidents de la voie publique (2001-2002). In : Recueil National des Statistiques Sanitaires au Liban. Edition 2004.Pp :191-194. | III-3 |
| I- Retrospective study data on 8 hospitals in greater Beirut to have a sample of 100 nurses to assess | I-Incidence of exposure to blood during 2001=14% 94.6% were due to needle pricks. II- 10.4% of emergencies were later hospitalized | -UL- Accidents d'exposition de l'infirmiere au sang. In: Recueil National des Statistiques Sanitaires au Liban. Edition 2004. | III-4 |

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| accidental exposure to blood. II- Study on 55,176 emergency admissions between 1987 and 1996 for children 0 to 18 years in 4 hospitals. III- 11658 admissions to emergencies by children (0-18 years) in 2 hospitals (HDF and ND du Liban for 1994 and 1995) | 1% of emergencies are due to intoxication, 11.4% of admissions are due to detergents<br><br>III- 34.3% due to accidents. 1.4% due to intoxication, 54% of which are due to medicines. 41.9% are due to falls. | -USJ- Accidents domestiques. In : <u>Recueil National des Statistiques Sanitaires au Liban.</u> Edition 2004. | |
| Review of all 5918 childhood injuries (< 16 years old) presented to the emergency services of AUBMC, SGH, and Makassed in 1992 | 55409 emergency cases were recorded. 16580 (30%) were less than 16 years of age. 36% of the 16580 were injuries of which 6% (354) were hospitalized. 68% were males. 90% had single injury 1% were less than 1 year of age. Open wounds especially head and neck constituted 44 % of cases. 19 deaths were recorded, with falls being the leading cause of fatal injuries (32%) | Nuwayhid I, Al-Kouatly kambris M, and Mahfoud M. Childhood injuries in the city of Beirut: the experience of three major emergency services. *Lebanese Science Journal*, 2002;**3**(2):29-48. | III-5 |
| A total of 354 home injuries among children (< 19 years) were identified from selected hospital emergency rooms and fire stations in four of the five Mohafazat (governates) of Lebanon: Beirut, North, South, and Bekaa. Homes were visited for on site observations of the place where the | Majority (54.2%) were of the age 1-4 years. Falls most common (37.9%) followed by burns (32.2%) | Afifi-Souweid R (1999). In: Nuwayhid I, and Sibai A. Epidemiological review of selected disease, injuries and risk factors in Lebanon: Background information for the national burden of disease study, FHS, AUB, Jan 2002. | Original reference not found. |

| injury took place. | | | |
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| National Household Health Expenditure and utilization Survey (NHHEUS) in 1999: A total of 6544 households representative of Lebanon were included (a weighted sample of 32000) | The incident of accidents in 1999 was 1% of which Burns are 7.7%.<br><br>Age-sex distribution of outpatients seeking medical care for injuries:<br><br>| Sex | <5 | 5-14 | 15-59 | >60 | Total |<br>|---|---|---|---|---|---|<br>| M | 1.5 | 5.3 | 5.7 | 2.1 | 4.3 |<br>| F | 1.2 | 2.2 | 1.6 | 1.4 | 1.6 |<br><br>Age sex distribution of one-day surgery cases due to injuries:<br><br>| Sex | <5 | 5-14 | 15-59 | >60 | Total |<br>|---|---|---|---|---|---|<br>| M | 7.8 | 21.6 | 23.2 | 1.4 | 17.6 |<br>| F | 15.8 | 29.8 | 7.4 | 8.7 | 9.3 | | Ministry of Public Health (MOPH). National Household Health Expenditure and Utilization Survey (NHHEUS). 1999. | Full publication provided |
| A household survey of Beirut conducted in 1992-1993 by the Faculty of Health Sciences. A follow-up of the population surveyed in the Beirut 1983-1984 survey. Information on 2017 households (8,940 individuals) information on type, place, and outcome of injury was collected. | Deaths due to accidents and injuries comprised 10% of all deaths in 1992-1993 period. 196 injuries were reported. Incidence rate was 44.3 injuries per 1000 person years.<br>Incidence rate by age:<br><br>| Age | Incidence rate |<br>|---|---|<br>| <1 | 0.0 |<br>| 1-4 | 60.0 |<br>| 5-14 | 46.1 |<br>| 15-24 | 52.5 |<br>| 25-34 | 24.5 |<br>| 35-44 | 25.7 |<br>| 45-64 | 51.0 |<br>| >=65 | 63.8 |<br>| Total | 44.3 | | Nuwayhid I, Sibai A, Adib S,Shaar K. Morbidity, mortality, and risk factors. In Beirut: A Health Profile 1984-1994. Deeb M, (ed). Beirut: AUB, 1997.Pp123-182. | II-1.12 |
| A household survey (PAP child survey) examined 4600 households (2156 children < 5 years) information was gathered on type, place and outcome of injury. | 28% reported long life disability associated with injury. | PAPCHILD. The Lebanon Maternal and Child Health Survey, Pan Arab Project for Child Development, League of Arab States (LAS), Ministry of Social Affairs, Ministry of Public Health, 1996. | III-10 |
| Review of 1671 children (< 18 years) who visited the emergency department of | 0.5% of children died upon arrival<br>Minor traumas constituted a little less than half of the cases, followed by falls (21.3%) and road traffic accidents (8.9%) | Gerbaka B, Rassi P, Chaib-Ghosn A, et al. Accidents chez l'enfant. Etude retrospective de 1671 | III-11 |

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| HDF in 1987-1988. | | observations recueillies a l'Hotel Dieu de Beyrouth. *J Med Liban*, 1996;**44**:209-214. | |
| 43 children over 10 years and aged 10 years or more who were examined in emergency services at HDF for carbohydrate ingestion. | 62.8% are boys.<br>Kerosene was found in 35.8% of cases.<br>Chest X-Ray was abnormal in 48.8% of cases.<br>All children survived but with varying lengths of stay in hospital | Gerbaka B, Hakme C, and Akatcherian C. Carbohydrate intoxication in children. *2nd world congress on pediatric intensive care*, 1996. | III-12 |
| Study involving 100 pediatricians all over Lebanon. | 55% of intoxications were due to medications.<br>Every pediatrician receives on average 20 to 30 cases of intoxication per year. | Gerbaka B, Sfeir R, Azoury-Tannous H, et al. Intoxications chez l'enfant Libanais: enquete aupres de 100 pediatres. *LEA, 2nd Annual Review Meeting*, October 1996. | III-13 |
| Questionnaire administered to clients of gas stations. The use of seat belts among drivers population for a total sample size of 311. In addition to information on car accidents from police records. | 93% of cars had seat belts and 91% of them were functional.<br>44% of drivers never use the seat belt and only 14% always do.<br>In police records for the year 1993, 230 deaths due to car accidents and 2000 injuries were recorded. | Abul Khoudoud H, Moussa H, Nakad T, et al. Automobile accidents and the use of seat belts in Lebanon. *Medical Students Project*. AUB, 1994 | III-14 |
| 299 patients who sustained penetrating ballistic trauma to the abdomen (133 in Group A: shells from motor artillery, and 166 in Group B: bullets from rifles and weapons) | In group A: injuries were mainly to the colon (42%), liver (22%), bowel (20%).<br><br>In group B: injuries were mainly to the colon (50%), small bowel (41%) and liver (33%) | Georgi B, Massad M, and Obeid M. Ballistic trauma to the abdomen: shell fragments versus bullets. *The Journal of Trauma*, 1991;**31**(5):711-715. | III-15 |
| Review of 2410 injuries admitted to | The top injury admitted was trauma with 29.5 % followed by Falls (19.2%) and | Abou-Daoud K. Accident morbidity as | III-16 |

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| the emergency room (ER) of AUBMC over 6 months (January – June 1971) Information was extracted from a carbon copy of the emergency room admission sheet. | road traffic accidents (15.8%). | seen in the emergency services of the American University Medical Center in Beirut. *J Med Liban*, 1974;**27**:575-582. | |
| Examination of death certificates as reported to the registry of the Health Department of the municipality of the City of Beirut. Review of 297 fatal accidents that occurred in the city and its neighboring areas in 1968 and 1969. Deaths due to suicide and homicide were not included. | 4.75% of all deaths are due to accidents. From the deaths due to non-transport accidents, accidental falls formed 29.5% of all deaths followed by accidental poisoning (16.2%) | Abou-Daoud K. Accident mortality in Beirut and suburbs. *J Med Liban*, 1970;**23**:571-581. | III-17 |

# CHAPTER SIX:

## Risk Factors

**RISK FACTORS: 1. Hypertension**

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| The YMCA (Young Men Christian Association) is a Non-Governmental Association covering 398 health centers with chronic disease medication. 2003 annual statistics | 26,392 patients (10,174 Males, and 16,218 females) were treated for hypertension in 2003. | YMCA report, 2003.(unpublished data) | II-9.2 |
| 2846 community members aged 25-64 years were interviewed at their households. 1208 had undergone physiological measurements and blood tests. | Prevalence of diagnosed hypertension was 13%; 52% of them have a family history of hypertension. Prevalence of high systolic BP (>=140mmHg) and/or high diastolic BP (>=90 mmHg) was 30.9% in males and 18.2% in females. | Khogali M. Dar El-fatwa community-based cardiovascular disease intervention project. Report presented to WHO, NCDP, Beirut, 2002. | IV-1.2 |
| National Household Health Expenditure and utilization Survey (NHHEUS) in 1999: A total of 6544 households representative of Lebanon were included (a weighted sample of 32000) | 5.5% reported hypertension confirmed by a physician (4.5 % in males; 6.6% in females). | Ministry of Public Health (MOPH). National Household Health Expenditure and Utilization Survey (NHHEUS). 1999 | Original publication is provided |
| Chart audit was performed to enhance recording of | Improvement in recording of hypertension from 9% to 98% after audit. | Major S, Salti I, Masri A, et al. Managing diabetes mellitus in a | IV-1.4 |

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| cases of diabetes and hypertension. | | primary care center. *LMJ*, 1998;**46**(4):182-188. | |
| A household survey of Beirut conducted in 1992-1993 by the Faculty of Health Sciences. A follow-up of the population surveyed in the Beirut 1983-1984 survey. Information on 2017 households (8,940 individuals) information on type, place, and outcome of injury was collected | Prevalence of hypertension by age and sex among Beirut residents:<br><br>| Age group | Males | Females |<br>|---|---|---|<br>| 0-9 | 0 | 0 |<br>| 10-19 | 0 | 0 |<br>| 20-29 | 0.3 | 0.7 |<br>| 30-39 | 1.8 | 1.0 |<br>| 40-49 | 5.3 | 7.9 |<br>| 50-59 | 13.4 | 17.2 |<br>| 60-69 | 19.1 | 29.5 |<br>| >= 70 | 18.7 | 29.9 |<br>| All ages | 4.7 | 6.9 | | Nuwayhid I, Sibai A, Adib S,Shaar K. Morbidity, mortality, and risk factors. In <u>Beirut: A Health Profile 1984-1994</u>. Deeb M, (ed). Beirut: AUB, 1997.Pp123-182. | II-1.12 |
| A cross-sectional study of 2518 Lebanon are subjects (1138 males, 1380 females) older than 30 years from 3 communities: Aisha Bakkar (Beirut), AUB, and Hammana (Mt. Lebanon). Screening between November 1994 and September 1995. Interview and examination. | Prevalence among males and females in sample:<br><br>| **Males=812** | | **Females=990** | |<br>|---|---|---|---|<br>| High Systolic | High diastolic | High Systolic | High diastolic |<br>| 1.5 | 5.7 | 3.3 | 6.3 |<br><br>High systolic (>=165mmHg)<br>High diastolic(>=95mmHg) | Salti I, Khogali M, Alam S, et al. Epidemiology of Diabetes mellitus in relation to other cardiovascular risk factors in Lebanon, *EMHJ*, 1997;**3**:462-471. | II-9.8 |
| Questionnaire distributed to 600 medical | Reno-vascular hypertension is the most frequent cause of secondary Hypertension. | Farhat F, Jazra C, Ali M, et al. Profil de gestion de | IV-1.7 |

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| doctors concerning the case of a 40 year old apparently healthy man who had his blood pressure elevated. | | l'hypertension arterielle, enquete aupres des medecins Libanais. *JML*, 1997;**45**(4):240-243. | |
| 889 individuals were interviewed and their blood pressures recorded. | Significantly higher proportion of hypertensive mothers and fathers living at demarcation lines in Beirut. | Shaar K, AbdelNour A, Birbari A. Prevalence of hypertension among demarcation line population in Beirut. Abstract of paper presented at te 2nd LEA annual meetin, 1996. | IV-1.8 |
| Assessment conducted in a convenience sample of primary health care centers of the MOPH. 1-23 PHC centers in various regions of Lebanon 2-8-year review of the experience of the department of family medicine at the AUB. | In 1993, the majority of visits (30%) to PHC centers was due to hypertension. But, it was the fourth frequently seen disease at the AUH family medicine facility with 2.3 % of visits. | Adib S, Nuwayhid I, Hamadeh G. Most common diseases treated in primary health care facilities in Lebanon. *LMJ*, 1995;**43**:17-22. | IV-1.9 |
| Cross-sectional study: 50 taxi drivers working in Beirut (Dora station) compared to 50 individuals from several villages and towns (Ras Baalbeck, | 66% hypertension in taxi drivers in Beirut, 20% in those living in villages. | Naba TS. Possible contributing factors to hypertension in Lebanese urban and rural communities. *Thesis*, AUB, 1989. | IV-1.10 |

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| Bekfaya, Bkaatouta, Baskinta, Hrajel). Subjects completed a questionnaire and BP measures. | | | |
| A study of 477 employees at AUB to investigate the association between snoring and hypertension. | Prevalence of hypertension among those who snored was 35% and 16% among those who don't snore. | Armenian H, Issa J, Shahakian V, et al. Smoking and hypertension in a study sample from Lebanon. *JML*,1986;**36**:25-27. | IV-1.11 |
| A cross-sectional survey of 1121 Lebanese males and females aged 25-64 working as full time bass at AUB. Information on height, weight and blood pressure was collected. | Prevalence of hypertension by age and sex:<br><br>|  | Males | Females | Total |<br>|---|---|---|---|<br>| 25-34 | 298 | 185 | 483 |<br>| 35-44 | 280 | 78 | 358 |<br>| 45-54 | 115 | 55 | 170 |<br>| 55-64 | 75 | 37 | 110 |<br>| Total | 766 | 355 | 1121 | | Abou Daoud K. Blood pressure, height and weight status of a group of Lebanese. *LMJ*, 1969;**22**:591-601. | IV-1.12 |

**RISK FACTORS: 2. Obesity**

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| To estimate the prevalence of obesity and examine associated covariates. The anthropometric measurements and dietary assessments of 2104 individuals (900 males and 1204 females) 3 years of age or older were done. | For children 3 to 19 years of age, prevalence of obesity was 3.2% for girls and 7.5% for boys. In contrast, obesity (BMI>=30) was higher in women (18.8%) than men (14.3%). Mean BMI by age and sex:<br><br>|  | Males | Females |<br>|---|---|---|<br>| 3-9 years | 16.1 | 16.0 |<br>| 10-19 | 20.5 | 20.5 |<br>| 20-29 | 24.5 | 22.9 |<br>| 30-39 | 25.9 | 25.0 |<br>| 40-49 | 26.8 | 27.2 |<br>| 50-59 | 27.2 | 28.8 |<br>| 60-69 | 26.2 | 29.7 |<br>| 70+ | 25.5 | 27.6 | | Mehio-Sibai A, Hwalla-Baba N, Adra N, et al. Prevalence and covariates of obesity in Lebanon: findings from th efirst epidemiological study. *Obesity Research*, 2003;**11**(11):1353-1360. | IV-2.1 |
| Review paper. Referring to a poster presentation of a study on 234 Lebanese children, between the ages of 6 and 8 years old. | 56% of boys and 31% of girls were overweight. | Shehady E. Adolescent obesity. *Presentation*, April 2003. | IV-2.2 |
| 2846 community members aged 25-64 years were interviewed at their households. 1208 had undergone physiological measurements and blood tests. | 36% of males and 39% of females were obese. | Khogali M. Dar El-fatwa community-based cardiovascular disease intervention project. Report presented to WHO, HCDP, Beirut, 2002. | IV-1.2 |
| A cross-sectional study of 2518 Lebanese subjects (1138 males, 1380 females) older than 30 years | -Obesity was found to be the 1st risk factor in the study sample. | Salti IS, Khogali M, Alam S, et al. Epidemiology of diabetes mellitus in relation to other risk factors in Lebanon. *East Med Hlth J*, | II-9.8 |

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| from 3 communities: Aisha Bakkar (Beirut), AUB, and Hammana (Mt. Lebanon). Screening between November 1994 and September 1995. Interview and examination. | | 1997;**3**:462-471. | |

**RISK FACTORS: 3. Smoking**

| Resource/Study Population | Summary findings | References | Appendix |
|---|---|---|---|
| To determine the prevalence of smoking and correlates among university students. Random sample of students was selected during spring semester academic year 2000-2001 in four Private universities in Beirut with more than 500 students enrolled, in addition to six faculties randomly selected from the Lebanese university. | Total number of students 1964. Average age 21 years. 41% were males. Overall prevalence of smoking was 40% with 11.3% of students smoking both cigarettes and Narguile. Narguile smoking was significantly higher in males who drank excessive alcohol. | Tamim H, Terro A, Kassem H, et al. Tobacco use by university students, Lebanon, 2001. *Addiction*, 2003;**98**:933-939. | IV-3.1 |
| 2846 community members aged 25-64 years were interviewed at their households. 1208 had undergone physiological measurements and blood tests. To assess the correlation between smoking and blood lipid levels: A household survey of 2846 adults (25-64 yeas) residing in | Prevalence of smoking in males was 42% and 31% in females. Among them, 42% of males and 20% of females are heavy smokers. Significantly lower HDL and higher triglycerides levels were observed in smokers as compared to non-smokers. 59% are current smokers (61%M, 57% F). | -Khogali M. Dar El-fatwa community-based cardiovascular disease intervention project. Report presented to WHO, HCDP, Beirut, 2002. -Hajjar T. Comparison: smokers versus non-smokers. *Preliminary draft* concerning same subjects. Jan 2000 | IV-1.2 |

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|---|---|---|---|
| Aicha Bakkar-Beirut in 1999. (response rate 80%) (M/F: 0.77). Only 42% completed blood and screening tests. | | | |
| A survey of 954 students newly entering the American University of Beirut in Fall 1998 (Age 16-19 + with 64% 18 years) (M/F: 1.15) Self-administered questionnaire. | 13.16% (14.25% M, 12% F) 18% of non-Lebanese were smokers compared to 9.6% in Lebanese. Percent smokers decreased with increased strength of religiosity (from 23.3 % in weak religiosity to 7.2 % in strong religiosity category) | Shediac-Rizkallah M, Afifi-Soweid R, Farhat T, et al. Adolescent health-related behaviours in postwar Lebanon: findings among students at the American University of Beirut. *Int'l Quarterly of Comm Health*, 2001;**20**(2):115-131. Khawaja M, Salem M, and Sibai A. religious identity and smoking behaviour among adolescents: evidence from entering students at the American University of Beirut. *SIBER survey*, 1998. | IV-3.3 |
| To determine the causes of death in a cohort of men and women: Vital status and cause of death were respectively ascertained and obtained by verbal autopsy or 1567 men and women (> = 50 years old) who participated in the | Total mortality rates were 33.7 per 1000 for males and 25.2 per 1000 for females. The leading causes of death were circulatory disease and cancer with 60% and 15%, respectively. Both are smoking related diseases. | Sibai AM, Fletcher A, Hills M, Campbel O. Non-commuicable disease mortality rates using the verbal autopsy in a cohort of middle-aged and older population in Beirut during wartime, 1983-1993. *J Epidemiol community Hlth*, | II-10.6 |

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| cross-sectional survey of Beirut (1982-1983. Verbal interviews were conducted (June 1993-august 1994). Causes of death assessed through interviews. | | 2001;**55**:271-276. | |
| Oral health of smokers was studied by selecting 400 Lebanese adults between 16 and 64 years of age. | There exists a relation between the daily usage of sugar in tea or coffee and the smoking habits. There exists a negative association between dental brushing and smoking. Number of lost teeth in smokers was higher than in non-smokers. | Diab A, El-Khoury and Doughan. Tabac et sante bucco-dentaire. *Revue Dentaire Libanaise*, 1999;**37**:63-69. | IV-3.5 |
| National Household Health Expenditure and utilization Survey (NHHEUS) in 1999: A total of 6544 households representative of Lebanon were included (a weighted sample of 32000) | Prevalence of smoking in Lebanese population: 25.8% (33.7% M; 18.3% F) | Ministry of Public Health (MOPH). <u>National Household Health Expenditure and Utilization Survey (NHHEUS)</u>. 1999 | Publication provided |
| Random sample of households allover Lebanon based on a multi-stage sampling using data from the 1996 MOSA survey. Individuals selected randomly. A total of 727 adults interviewed in 1998. (> = 20 yeas old, mean age: 40.1 years) (M/F: 0.95). | Prevalence of smoking in Lebanese population: 53.6% (60.7% among Males; 46.9% among Females) Age of initiation of smoking 19.7 years. | -Chidiac C. The profile of the Lebanese smoker: prevalence, characteristics and risk factors. *Thesis*, USJ, 1998. -Baddoura R, and Chidiac C. Prevalence of tobacco use among Lebanese adult population. *Report*, WHO, Beirut, 1997. | IV-3.7 |

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| Response rate: 88.12%. | | | |
| Random sample of households all over Lebanon based on a multi-stage sampling. From the selected sample. 306 secondary students (15-19 years old; mean 17.1) are surveyed randomly proportionally to the structure of the student population. (M/P: 1) (Beirut 34%; Mount Lebanon 26.8%; North 13.1%; south 13.1% Bekaa: 13.1%) questionnaires. Response rate: 46% | 16.4% in secondary level students | Chidiac C. The profile of the Lebanese smoker: prevalence, characteristics and risk factors. *Thesis*, USJ, 1998. -Baddoura R, and Chidiac C. Prevalence of tobacco use among Lebanese adult population. *Report*, WHO, Beirut, 1997 | |
| A total of 380 adolescent girl scouts in Beirut and suburbs (age 11-15 yeas/mean 13.6). Questionnaires administered in 1998 during an information session after brief explanations. Response rate: 92.7% | 4.7% prevalence in scout girls | Chidiac C. The profile of the Lebanese smoker: prevalence, characteristics and risk factors. *Thesis*, USJ, 1998. -Baddoura R, and Chidiac C. Prevalence of tobacco use among Lebanese adult population. *Report*, WHO, Beirut, 1997 | |
| Random sample of households all over Lebanon | 36% in secondary level with 45 % male prevalence and 19% female prevalence. | Chidiac C. The profile of the Lebanese smoker: | |

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| based on a multi-stage sampling using data from the 1996 MOSA survey. Individuals selected randomly. A total of 75 secondary teachers interviewed in 1998. (Age: 23-62 years) (M/F: 1.88). Self-administered questionnaires. | | prevalence, characteristics and risk factors. *Thesis*, USJ, 1998. -Baddoura R, and Chidiac C. Prevalence of tobacco use among Lebanese adult population. *Report*, WHO, Beirut, 1997 | |
| To examine the association between narghile smoking, cigarette smoking, and low birth weight and other pregnancy outcomes: 895 pregnant women (106 narghile smokers, 277 cigarette smokes and 512 non-smokers) delivering in hospitals throughout Lebanon (1993-1995). Interviewed about their smoking habits before and during pregnancy, exposure to passive smoking, and other variables. From the medical | Smoking during pregnancy is associated with low birth weight Narguile smoking is associated with low Apgar score and respiratory distress. | Nuwayhid I, Yamout B, Azar G, et al. Narguile (huble-bubble) smoking, low birth weight, and other pregnancy outcomes, *Am J Epidemiol*, 1998;**148**(4):375-383. | IV-3.8 |

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| record weight of the newborn, weeks of pregnancy, I-minute and 5-mintue Apgar scores, head circumference, type of delivery and presence of meconium, respiratory distress, or malformation. Only singletons live births and those that competed 28 weeks of gestation were eligible of the study. | | | |
| To assess the prevalence of smoking among medical students, interns and residents at AUB-MC, 268 were approached and 238 responded. (September 1998) (Age 21-27 yeas) M/F: 1.77). | Weighed prevalence of cigarette smoking was 18% (20% in males, 9% in females), 10% of whom smoke more than 1 pack a day. 58% of current smokers agreed about restricting smoking in public places. | Nuwayhid I, et al. Smoking habits and attitudes among medical students, interns, and residents at the American University of Beirut, *SPM project*, AUB, 1998. | IV-3.9 |
| A 13-question questionnaire was addressed to 30 physicians and attending physicians at the AUBMC to assess their degree of smoking and their cessation trials. | 27 were males and 3 were females. More than 50% are smokers for more than five years, 33% smoke for pleasure and 27% because it's a habit. 77% know the risk of smoking on Coronary Artery Disease and 80% discuss smoking issues with their patients. 57% tried to quit smoking but 41% lacked the will to quit. | Nasser K, Al-Ahdab F, Obeid E, et al. Smoking in Lebanon: a physician's perspective. *SPM project*, AUB, year not indicated (after 1997) | IV-3.10 |
| A total of 31 | 30.7% (36.2 % in males and 17.3% in | -Mokdad F, Mrad | IV-3.11 |

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| hospitals through Lebanon included according to geographic distribution, presence of women practitioners, and access. Self-administered questionnaires to 635 physicians (M/F: 2.43) representing 9.6% of all doctors resident in Lebanon in 1996 (interns, pharmacologists, and dentists excluded). | females) | M, Ghorra R, et al. Tobacco consumption among physicians in Lebanon. Paper presented at the 3rd IEA in EMR scientific meeting, October 1997. -Mokdad F. Consommation du tabac au Liban parmi les medecins.*These*, USJ,1997. | |
| A random sample of sampling units (70) based on a two-stage sampling design using the sampling frame of schools from the Ministry of Education. 100 students were selected randomly from each sampling unit. Five public schools and nine private schools located mainly in administrative Beirut. Students aged between 15-24 (mean/SD: 17.5/1.36) (M/F: 0.89). Self-administered | 11.3% cigarette smoking and 23% for Narguile smoking | Sibai A and Kanaan N. Youth health risk behaviour survey among secondary students inLebanon: prevalence and clustering of risk behaviors 1997. *Report*, WHO/UNICEF, 1998. | II-21.9 |

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| questionnaires. | | | |
| A household survey of Beirut conducted in 1992-1993 by the Faculty of Health Sciences. A follow-up of the population surveyed in the Beirut 1983-1984 survey. Information on 2017 households (8,940 individuals) information on type, place, and outcome of injury was collected. | Prevalence of smoking in Beirut sample: (53% M; 35% F) | Nuwayhid I, Sibai A, Adib S,Shaar K. Morbidity, mortality, and risk factors. In Beirut: A Health Profile 1984-1994. Deeb M, (ed). Beirut: AUB, 1997.Pp123-182. | II-1.12 |
| Methodology and sample selection not stated. | Poplycyclic carcinogenic substances, found in tobacco smoke may reach the testes. It remains to be studied, whether smoking is responsible to the rising incidence in testicular cancer. | Macaron C, Macaron Z, Maalouf MT, et al. Cotinine in seminal fluids of smokers, passive smokers and non-smokers. *LMJ*, 1997;**45**:46.. | IV-3.14 |
| Spot urine samples were drawn from 48 subjects among them 16 were non smokers. | Levels of urinary nicotine metabolites (cotinine) were similar in cigarette and narguileh smokers. It is unlikely that narguileh smoking confers lesser risk | Macaron C, Macaron Z, and Maalouf MT. Urinary cotinine in narguila or chichi tobacco smokers. *LMJ*, 1997;**45**:19-20. | IV-3.15 |
| To assess the prevalence of several risk factors (including smoking) among patients with cardiovascular disease. Patients with cardiovascular | 75% of cardiovascular patients were smokers, with 57% heavy smokers (more than 20 cigarettes per day). | Abou Khalil-Sassine R. Tabac et maladies cardiovasculaires. *These*, USJ,1994-1995. | IV-3.16 |

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| disease admitted of the Cardiology Department at HDF (January-April, 1995). Self-administered questionnaire. No control group. | | | |
| ۳۱۸۰ Studies in Lebanese University (Beirut), LU (Bekaa), Lebanese American University (LAU) surveyed in 1995. No information about methodology. | 17.95% in total population. | Makki A & Houri M. No for addiction. *The association of Family Planning in Lebanon*,1995. Pp: 108-109, 130-131, 168-169. | |
| Questionnaire distributed to 200 women (Age 18-20) currently enrolled in four institutions of higher learning (AUB, LAU, Haigazian College, and Saint Joseph University). No further information is available. 1993. | 22.5% prevalence (females only) | Papazian T.Smoking and health: young Lebenese University women. *Al-Raida*, 1993;**10**:16-19. | IV-3.18 |
| To examine the association of smoking coffee, and alcohol with bladder cancer: forty-nine cases of bladder cancer treated in Beirut were matched by (age within five years, sex, | 84% of patients with bladder cancer smoked (compared to59% in control group) | Abou-Daoud KT.Cancer of the bladder and cigarette smoking, coffee, and alcohol drinking in Lebanon. *LMJ*, 1980;**31**(3):251-257. | |

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| nationality, region and treatment class) with patients admitted for other cancers in these centers. Patients having a cancer known to be associated with smoking were excluded. Patients interviewed and more information was obtained from treatment records. | | | |
| A 20% systematic random sample of students at American University of Beirut Mailed questionnaire (with reminders to non-respondents) in 1974-1975. 730 students responded (response rate: 77.7%). | 42% (43% M; 39% F) | Nassar N, Zurayk H, and Salem P. Smoking patterns among university students in Lebanon. *JACHA*, 1980;**28**:283-285. | IV-3.20 |
| Faculty, staff, and employees at AUB (25-64 years old) participating in a screening survey program for Diabetes Mellitus in 1967-1968. Direct interviews of 1,121 individuals (M/F: 2.16) (Response rate: 81.6%) | Prevalence 48% (57% M and 28.5% F) | Abou Daoud KT. Smoking habits of a Lebanese group and cancer of the lung and larynx. *LMJ*, 1970;**23**(1):11-18. | IV-3.21 |
| A sample of | 2.5% admitted they have ever smoked. | Faire Face. | IV-3.22 |

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| 12,945 students was selected and information was collected from private and public schools from 5 Lebanese provinces. (age range 15-23 years) | 90% recognized the danger of smoking, both to the smoker and the surrounding. 66% are not aware that smoking in public places is prohibited. | Incidence of smoking in secondary schools in Lebanon. Report of *a survey of high school students*. year not indicated. | |
| To assess the Transtheoretical model of change, self-administered questionnaire completed by 428 (43.5%) entering students at the American University of Beirut in Fall semester 1999. | 428 students completed the questionnaire. 13.6% are current smokers. 55.7% had lived outside Lebanon for at least 1 year in their lives. 15.3% live in on-campus dorms. All ex-smokers and 91.7% of current regular smokers completed the stages of change questions. | Major S, Afifi-Soweid R, Shediac-Rizkallah M, et al. Smoking characteristics of college entering students in Lebanon using the transtheoretical model of change. *Unpublished paper*. | IV-3.23 |

**RISK FACTORS: 4. Hyperlipidemia**

| Resource/Study Population | Summary findings | References | Appendix |
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| The YMCA (Young Men Christian Association) is a Non-Governmental Association covering 398 health centers with chronic disease medication. 2003 annual statistics | 18102 patients were distributed medication to treat high blood lipid levels (such as Lipitor and Lipostat) among them 8118 males out of 72180 males and 9984 females out of 97983 females. | YMCA report, 2003.(unpublished data) | II-9.2 |
| A cross-sectional study of 2518 Lebanon are subjects (1138 males, 1380 females) older than 30 years from 3 communities: Aisha Bakkar (Beirut), AUB, and Hammana (Mt. Lebanon). Screening between November 1994 and September 1995. Interview and examination. | 60% of men and 37% of women had a TC/HDL ratio over 5.0. | Salti I, Khogali M, Alam S, et al. Epidemiology of Diabetes mellitus in relation to other cardiovascular risk factors in Lebanon, *EMHJ*, 1997;**3**:462-471. | II-9.8 |
| A sample survey on 440 individuals on all over the Lebanese territories. | Mean triglyceridemia of 137.3 mg% (154.6 mg in men and 119.4 mg in women) 41.1% of analyzed subjects had triglyceridemia of more than 150 mg% | Hirbli K, Khoury E, and Khawam B. Profil triglyceridemic d'un echantillon libanais. *Rev Med Libanaise*, 1994;**6**:155-158. | IV-4.3 |
| High school and university | Triglycerides levels were 108 mg% and 89 mg% among outpatients and students, | Katchadourian AK. The diagnosis and | IV-4.4 |

| students and patients attending the outpatient clinics at the American university hospital | respectively.<br>Level significantly lower than in western countries | management of hyperlipidemia, a review based on 12 years' experience in Lebanon. *LMJ*, 1972;**25**:31-53. | |
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**RISK FACTORS: 5. Dietary Habits/Fiber Consumption**

| Resource/Study Population | Summary findings | References | Appendix |
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| Review of surveys done and data collected by author. | Growth retardation in low social classes is common.<br>Change in lifestyle and dietary habits caused proliferation of chronic diseases. | Hwalla-Baba N. Dietary intake and nutrition related disorders in Lebanon. *Nutrition and Health*, 2000;**14**:33-40. | IV-5.1 |
| Review of trend in food consumption and comparison between the 1960's and present. | Percentage contribution of cereals to daily caloric intake has dropped and was replaced by high fat items. In 1960's cereals formed more than half of daily energy intake. | Hwalla-Baba N. Food and dietary fiber consumption pattern in Lebanon. *International Journal of Food Sciences and Nutrition*, 1998;**49**:S41-S45. | IV-5.2 |
| Review of food consumption patterns in Lebanon and comparison between the 1960's and 1992 | Average daily caloric intake is 3144 Kcal.<br>36.4% cereals, 15% animal proteins, 14% fruits and vegetables.<br>Bread was mostly consumed item with 48% of daily intake in 1965. At present forms around 30% of energy intake. | Hwalla-Baba N. Food consumption pattern in Lebanon. *Revista Di Antropologia (Rome)*, 1998:**76S**:193-204. | IV-5.3 |

# CHAPTER SEVEN:

# Conclusion and Recommendations

## Conclusion and Recommendations:

The regular assessment of population health is a key component in monitoring the wellbeing of a country. The simplest and most widely used method for producing population health statistics is to aggregate data on individuals in order to generate statistics such as the proportion of the population suffering from a given health problem, or in a certain state of health, or even the number of individuals who die from a particular cause.

In Lebanon, measures of incidence, prevalence and mortality are lacking. The reason lies in the insufficiency of reliable estimates on population denominators, coupled with an incomplete vital registration system, which makes it difficult to correctly assess the epidemiological situation of health conditions.

In a classical report, very much place is devoted to the opinion of the authors and a certain analysis of the research findings. This, however, is a compiled literature work, which is directed to professionals in the field of health research and policy and those interested in research gaps, to derive their own conclusions. Nevertheless, I tried to add to the collection of articles, some summary of findings for quick review. This report, up to my knowledge and based on available information, is "concise" but "informative". Even so, a critique has to always emerge, especially when the research review does not stick to the opinion of prioritizing certain health problems. In that respect, some health problems, which were rated to be of priority, turned out to have low prevalence in the population samples studied. To be able to see the true burden of those health problems, in-depth studies should be undergone.

In that respect, no National Burden of Disease can be assessed without representativeness. So far, the limited, small scale research studies have proven to be, either old, or not representative for the whole population; and, very few of the pictures that were given were consistent when comparing different resources.

Two recommendations are of utmost importance and priority: The first, is that to be able to run research on selected health topics of interest, a reliable sampling frame needs to be set, so that any bit of research done will be as part of a national sample, and thus generalizability to the whole population can be done. The second crucial issue when talking about a NBOD study, is mortality data and cause of death recording. Automation of death certificates has to happen at the Ministry of Public Health. The current situation in Lebanon is that the deaths are registered in the Ministry of Interior as part of the vital registration system. This would be justified to monitor changes in population numeration as a whole. Nevertheless, cause of death, and hence the load of mortality of specific diseases and the contribution of risk factors to mortality, are primarily important from a health policy and planning standpoint; and thus, the involvement of the Ministry of Health in cause of death coding stems from its immediate realm of interests. Accordingly, coders that are to be hosted at the Ministry of health have to be trained on the proper coding system that is compatible with the Global Burden of Disease categorization. The other alternative would be to strengthen the vital registration systems in terms of cause of death recording and there are lots of efforts that were done worldwide that verse into that domain.

These two basic criteria are fundamental building blocks to be able to come up with estimates of morbidity and mortality of appropriate quality to be able to run a National Burden of Disease study, and derive reliable estimates of DALYs.

Until then, it would be a more realistic goal to run a hospital-based burden of disease study. It is realistic because hospital data are relatively small scale compared to population data, and assessment of cause of death can be even more reliable than vital registration systems. In that way, there is a potential possibility to get complete information about the tip of the iceberg, in terms of the most severe health conditions; certainly, taking into consideration matters of accessibility and availability. Accordingly, the findings will be directed at assessing the situation of policy issues relating to the need/no need of medical technologies that are proliferating at the curative side of services at a high cost, and hence jeopardizing the expenses on low cost preventive services.

Population denominators, though, remain unknown…