*Mediterranean Journal of Pharmacy & Pharmaceutical Sciences*
*www.medjpps.com ISSN: 2789-1895 online ISSN: 2958-3101 print*

***Opinion***

# Libyan cause of death report: Analysis of cause of death data for two years, 2016-2017: A book review

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**Received:** 13-01-2022, **Published:** 31-03-2022



***HOW TO CITE THIS***
*Elkalmi RM (2022) Libyan cause of death report: Analysis of cause of death data for two years, 2016-2017: A book review. Mediterr J Pharm Pharm Sci. 2 (1): 4 - 7. https://doi.org/10.5281/zenodo.6397714*

***Keywords:*** Epidemiology, Libya, mortality study, pharmacy practice, public health

**Abstract:** This report on Mortality in Libya, with a particular emphasis on causes of death in the country for two years, 2016 - 2017, comes when there is a shortage of mortality studies in this country and in the developing world. The importance of death studies lies on the fact that they map out the hidden features of a community's health program. Unfortunately, there are no robust death studies in most developing countries, most of which are descriptive studies of statistical report or public survey. This study aims to read and review this report scientifically and impartially critically and to shed more light on this report. This report is the first of its kind in Libya. It discusses the causes of death in Libya for two years, 2016 - 2017. The report issued in English and Arabic languages. The report relied basically on medically documented death certificate for the death cases in hospital or home in Libya. The report indicated that there were 25 478 deaths in Libya in 2016 and 27 167 deaths in 2017, with crude death rate of 4.0 / 1000 of the population for 2016 and 4.1 / 1000 inhabitants for the year 2017. Furthermore, cardiovascular disease was the leading cause of death at all ages and sexes during the two years covered by the study. There is an urgent need for well-designed meta-analytical studies on mortality in Libya.

A recently published report on the causes of death in Libya from 2016 - 2017 was issued by the Health Information Centre (HIC) of Ministry of Health (MOH) of Libya [1]. The report assesses, analyses and provides a comprehensive overview of the mortality and cause of death data in Libya for the years 2016 and 2017. Nationwide mortality studies allow the assessment of premature, preventable deaths and major disease risk factors and also provide a practical way to monitor progress towards the Sustainable Development Goals [2]. The importance of mortality studies lies in the fact that they provide indicators and measures of the health status of the community in general. In addition, these studies act as an early warning system for imbalances and weaknesses in one of the components of the public health process. There was no comprehensive or actual community census in Libya before the early 20$^{th}$ century. There are limited studies and surveys in the history books or orientalist studies exploring and describing the death status of certain cities or a limited geographical region.

Contrary to what was mentioned in the current report, the first population census in Libya dates back to 1931 during the Italian occupation, followed by a population census in 1939 [3]. Despite the potential errors and shortcomings in the 1931 and 1936 population censuses, the basic features of pattern of population

distribution, composition and growth were evident in the general census in 1954. Essentially, the first comprehensive census was conducted in 1954 during the era of the Kingdom of Libya of 1951 - 1969. These population censuses are accused of not being comprehensive, complete and not featuring many types of vital community indicators. Previous studies indicated that during that period, it was difficult to determine death rates in the Libyan community due to incomplete registration and reporting of health and death cases [4 - 7]. Numerous population censuses were conducted in the contemporary period from 1969 - 2011. The survey of this period is rich in information but they were reproached, chauvinistic and influenced by the prevailing political situation during that period.

To the best of my knowledge as a researcher devoted to epidemiological research and public health, no population census has been conducted in Libya since 2006 [8]. As a clinical pharmacist, I have long been interested in public health in Libya. It gives me a great pleasure to encounter a new report specialized in the study of deaths in Libya and it is perhaps the first of its kind in the country. The main objectives of this report are to gather information about the mortality patterns in Libya by cause, age and gender. The book begins with an introduction by the ex-Minister of Health in Libya, followed by a preface by the Director of the HIC-MOH of Libya, and in which thanks and appreciation are expressed to those who contributed to the completion of the report. It must be noted here that this important report is a cooperation between the HIC-MOH of Libya and the World Health Organization (WHO) office in Libya. The book is set in 54 large-sized pages. This report was completed by specialists in epidemiology and information engineering. However, the data in this report were obtained from the paper forms of death certificate and the vital registration database.

In Libya, all deaths occurring in hospital are documented and medically certified by the attending physician, along with the cause of death. However, the quality of cause of death is poor and recent actions were taken to train physicians and medical students in certifying death according to the recent WHO recommendations. Deaths occurring in homes and other places outside hospitals are transferred to hospitals or forensic departments and eventually certified by a physician. This step is a legal obligation and must be completed by the civil registration authority before burial is permitted. Further, the uniqueness of this report is its status of being the first mortality statistical study in Libya carried out and published according to the underlying causes of death using the International Classification of Diseases. The report indicated there are 25 478 deaths in Libya in 2016 and 27 167 deaths in 2017, with crude death rates (CDRs) of 4.0/1000 of the population for the year 2016 and 4.1/1000 inhabitants for the year 2017.

The last decade (2010 - 2020) witnessed a remarkable relative increase in the CDR in Libya compared to previous decades (1960 - 2009). In 2020, the CDR for Libya was 5.12 deaths per thousand population. This mortality rate is comparatively high in relation to the size of the population, and relatively low according to WHO indicators related to global death rates. In 2020, it is estimated that the global CDR would be 7.7 deaths per 1 000 persons in a population per year [9]. In general, these rates are lower than the United Nations reports regarding death rates in Libya for the years 2006 - 2017, as the United Nations indicated that the CDRs in Libya for the years 2016 and 2017 were 5.079 and 5.074, respectively [10]. This increase might be attributed to many factors; the most important of which is the internal strife that has recently befallen Libya. The armed conflicts in Libya during 2012 and 2017 caused a total of 16 126 deaths, with an overall mortality rate of 2.7/1000 of the population [11]. However, the CDR of Libya fell gradually from 23.970 deaths per thousand population in 1960 to 5.12 deaths per thousand population in 2020. The apparent gradual decrease in the death rate throughout the last decades (1931 - 2021) can be attributed to the general improvement of overall health conditions, clearly reflected in an increase in live births, live expectancy and declining mortality rate.

It must be noted that there is a difference and discrepancy in the data contained in this report and some other previous annual statistical reports. It is stated in the current report that the death numbers for the years 2016 and 2017 were 25 478 and 27 167, respectively; however, the annual statistical report for the year 2018 indicated that the deaths for those years was 23 950 and 25 396, respectively. This discrepancy might be attributed to the difference in the methods of data acquisition, in general. However, discrepancies were observed in the annual statistical report itself, which urgently calls for more accuracy during data collection and matching data verification methods. Among the important vital statistical indicators mentioned by the

report is that cardiovascular disease was the leading cause of death at all ages and both sexes during the two years covered by the study. External causes of death (suicide, accidents, poisoning or falls) contributed to 1.7% of deaths in 2016 and 7.4% of all deaths in 2017. Further, lung cancer was the main cause of cancer-related deaths in men, while breast cancer was the main cause of cancer-related deaths in women. This report is unique in the field of mortality studies in Libya. The report contained many important vital statistical indicators and the data contained in this report can be used as a guide for future studies, despite the limitations mentioned in the report. The researcher was aware of the challenges in recruiting a team for data collection from various Libyan cities, as well as the painstaking work of coding and analyzing death certificates, performing data entry and other administrative support tasks, as well as, reporting of the study findings.

Technically: In general, the report can be described as a descriptive study of the causes of death in Libya. Despite the report's richness in tables and charts and its reliance on descriptive statistics, I would have liked to see a more inferential analysis to give a clearer and deeper picture of the reality of the causes of death in Libya. Furthermore, the reference list is comprehensive and up-to-date and has served the report well and efficiently. I hope there will be a new, comprehensive, well-planned study with specific goals carried out at the national level. The book will serve as an informative resource for academicians, researchers, graduate degree graduates and policymakers interested in mortality studies.

**Conflict of interest:** The author declares absence of any commercial or financial relationships that could be construed as a potential conflict of interest.
**Data availability statement:** The data that support the findings of this study are available from the corresponding author upon reasonable request.
**Ethical issues:** Including plagiarism, informed consent, data fabrication or falsification and double publication or submission have completely been observed by author.

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