

decrease over the study period. The peak seasonal index of U5MR is in December followed by summer months, those of NMR and CMR are in summer and PNMR is mainly in winter. Maximum index of U5MR due to ARI is in winter while rates related to congenital malformations are in autumn while deaths due to perinatal conditions are mainly in May and June, and external causes of injury are mainly in summer. Though the picture is promising special emphasis is still needed for ARI, congenital anomalies and perinatal conditions.

INTRODUCTION

For decades, the focus of international public health concern has been on reducing child mortality. In 2000, about 10.5 million children under the age of five years died, representing 30% of all deaths worldwide and up to half of all deaths in many countries. The vast majority of these deaths are preventable with current technology, as evidenced by the extremely low child mortality risks prevailing in rich countries.⁽¹⁻³⁾

Two indicators are widely used to assess the levels and trends of childhood mortality, namely infant mortality rate (IMR) and under-five mortality rate (U5MR). The infant mortality rate expresses the probability of dying below age one year, per 1000 live births. Likewise, the under-five mortality rate indicates the probability of dying below age five per 1000 live births.

The under-five mortality rate is widely recognized as the most appropriate indicator of the cumulative exposure to the risk of death during the first five years of life.⁽³⁾

The 1990s have seen a remarkable fall in under-5 mortality in most of the developing countries.⁽⁴⁾ In Egypt, under-five mortality rate declined rapidly since the 1980's. The rate of decline indicates that by 2015, Egypt will have achieved by far, the Millennium Development Goal of reducing under-five mortality rate by 2/3 between 1990 and 2015.⁽⁵⁾

The U5MR in Egypt is estimated to be 81 per 1000 live births per year (Demographic and Health Survey (DHS) Egypt 1995).⁽⁶⁾ The WHO reported

mortality under five to be 46 per 1000 live births in year 2001,⁽⁷⁾ while USAID reported that the U5MR is 43.3 per 1000 live births in 2002.⁽⁸⁾ Mortality rates are higher in rural Upper Egypt, where rates are roughly double those in the urban areas, as the average infant and U5 mortality rates are 97.2 and 130.8 per 1000 live births respectively.^(9,10)

Causes of death vary considerably among children of different ages (neonatal, postneonatal and 1-4 years mortality).⁽¹¹⁾ In many developing countries (in the year 2000) infectious diseases cause 70% of under-five mortality. Pneumonia, septicemia, meningitis and diarrhoeal diseases account for more than 4 million deaths in children under five.⁽¹²⁾ Neonatal deaths occur in developing countries, mostly at home, and largely attributable to infections, birth asphyxia and injuries, consequences of prematurity, low birth weight and congenital anomalies. The leading causes of postneonatal mortality and 1-4 years mortality are acute respiratory infections, mostly pneumonia, followed by diarrhea and other infections.⁽¹³⁻²¹⁾

In rural Egypt (in the year 2000) the leading causes of under-five mortality were: diarrhoeal diseases (39.4%), acute respiratory infection (26.8%), or combined episode of both (5.1%), febrile illnesses including meningitis (10.6%), neonatal causes (12.6%), and accidents (2.5%). Diagnosis was not determined in 3.0% of the cases.⁽⁹⁾

This research aims at exploring the pattern and seasonality of under five mortality and if the trend is still decreasing or not by applying different statistical equations to select the best-fit one and to predict future trends.

MATERIALS AND METHODS

Study setting and design

This study is a retrospective study where the target population was the registered under five deaths and live births available at the Health Information Center and CAPMAS in Alexandria from 1996 to 2001.

Data collection

Data about under-five deaths including the date of birth, sex, residence, date of death, cause of death and data about live births from 1996-2001 are