# Introduction

Giving every child the best start in life is crucial to reducing health inequalities across the life course. The foundations for virtually every aspect of human development-physical, intellectual and emotional are laid in early childhood. What happens during these early years has long effects on many aspects of health and well-being **(NHS, 2013).**

Ensuring child health is an investment for the future. It embraces various aspects of comprehensive child care with emphasis on preventive social and cultural aspects of child life. Total child care in its own environment is the concept of well-baby clinics (under five clinics). These clinics offer curative, preventive and promotive health service within the resources available. It is economical and reaches large number of children in the community. Well-baby clinics focus on the downward extension of its services to under five children and emphasize early identification of developmental delay in the infants below five years **(Kumar, 2013).**

Providing comprehensive medical care for children is an integral and enjoyable part of family medicine that defines a critical distinction between the family physician

and other medical specialists. The provision of well child care through a series of periodic examinations forms the foundation for the family physician to build lasting relationships with entire family and their community and to establish the patient's medical home **(Srinivasan et al., 2011).**

Better nutrition, safety methods, and immunizations have significantly improved the health of US children, but serious childhood health problems persist. Inadequate or delayed prenatal care, childhood obesity, failure to optimize intellectual potential, and poor management of developmental delay are examples of remaining critical issues. Barriers to health care such as insufficient health literacy and lack of insurance coverage compound these issues. One of the key reference guides for pediatric health promotion is the third edition of Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents, which was funded by the US Department of Health and Human Services. Bright Futures outlines a system of care that addresses basic concerns of child rearing such as nutrition, parenting, safety, and infectious disease prevention with focused attention on evidenced-based health components and interventions **(Srinivasan et al., 2011).**

Every year approximately 10 million children under 5 years of age die throughout the world, mostly in developing countries. Of every 1000 children born in sub-Saharan Africa, approximately 170 die, compared with less than 10 of those who are born in developed countries. The fourth Millennium Development Goal is to reduce child and infant mortality in the world by two-thirds by 2015, yet current estimates suggest that at least 44 developing countries have less than a 20% chance of achieving the goal. An understanding of the risk factors associated with child mortality and the design of appropriate interventions are urgently required **(WHO, 2016).**

According to the **Egypt Demographic Health Survey (2008),** there is considerable rate of stunting among Egyptian children, 29% of children under five are stunted (<-2 Z score) and 14% are severely stunted (<-3 Z score),7% are wasted and 3% are severely wasted then 6% of children under five years old are underweight with 1%being severely underweight **(EDHS, 2008).**

High quality child care can have a positive influence on children's development and school readiness by providing valuable educational and social experiences. High quality child care is characterized as: Having well-

qualified, well-paid, stable staff, low child-adult ratios, and efficient management.

Offering a program that covers all aspects of child development (physical, motor, emotional, social, language and cognitive development).

Research shows also that only high quality provision can deliver well-being and appropriate development to young children with an increasing number of mothers in the workforce and most children ages 3 and older now attend a child care facility on a regular basis, it has become critical that young children from all backgrounds should have access to high-quality child care and early education **(Bennett, 2016).**

# Aim of the Work

## Goal:

Improve the quality of health services addressed to under 5 children in El-ghonimy primary health care center.

## Objectives

1- Evaluate a newly established well baby clinic in term of attendance rate and job performance.

2- To identify obstacles against utilization of a well baby clinic service.

Input, process and output and outcome will be assessed

**Outcomes to be measured**

- Attendance rate of under five children before and after intervention

- Score of nurses' job performance.

# CHAPTER I

# Epidemiology of Child Health

## Burden of diseases in under-five children worldwide

Neonatal care is receiving more attention as greater progress is made in reducing the burden of disease among older children and as more information is available on the burden of neonatal disease and interventions that can effectively reduce this burden. Most interventions aimed at decreasing neonatal mortality are linked to prenatal and maternal care interventions. The interventions that are aimed at reducing childhood mortality beyond the neonatal period are typically delivered via public health programs that we generally think of as more classic public health delivery methods e.g. immunization clinics and well baby clinics **(Denno, 2013).**

**Figure (1):** Contribution of under nutrition to child mortality **(Denno, 2013).**

Globally about 25 to 35 million under-five children have severe acute malnutrition (SAM) and 13 million of these children live in sub-Saharan Africa and of these children one million will die every year **(UNICEF, 2012).**Severe acute malnutrition, is characterized by wasting (marasmus), edema (as a result of kwashiorkor), or both (marasmic kwashiorkor), and occurs mostly in children **(Bhan et al., 2003).**

Marasmus is diagnosed when subcutaneous fat and muscle are lost because of the body's process of mobilizing

energy and nutrients. Clinical features usually include a triangular face, extended abdomen (from muscular hypotonia) and anal or rectal prolapse (from loss of perianal fat). Features such as oedema, changes to hair and skin colour, anaemia, hepatomegaly, lethargy, severe immune deficiency and early death characterise kwashiorkor **(Bhan et al., 2003).**

These and many other complications partly explain why malnutrition continues to be a major cause of disease burden especially in low-income countries killing millions of children **(Bhutta et al., 2008; Deconinck et al., 2008).**

There is evidence illustrating how substantial investments have been implemented to avert associated negative effects **(Black et al., 2008).** However many developing countries continue to experience poor child growth rates, high morbidity and mortality with about three million child deaths due under nutrition every year **(Black et al.,2013).**

A vast majority of children suffering from acute malnutrition are found in Sub Saharan Africa (13 million, 9.4% of all under fives in the region). The worst affected in Africa are west, central and eastern Africa **(UNICEF, 2012).**

However, a nation-wide increase in the levels of admission for children with SAM was noticed in the last quarter of the year 2008 in a study by the Nation Food and Nutrition Commission NFNC in 2008 .This was despite the promotion of community therapeutic care for treatment of uncomplicated severe malnutrition and improvements in early identification of malnutrition and reduction of congestion in hospitals. The University Teaching Hospital (UTH) recorded up to 50% mortality rates in the last quarter of 2008 **(WHO,2013).**

Similarly, **Trehan et al. (2012)** also revealed that at UTH, case fatality rates were about 40%. Irena et al. conducted a cohort study involving children 6–59 months old with SAM admitted to the UTH as in-patients. The study revealed that overall mortality rate was at 40% while at 48 hours after admission it was 30.6% and 65% at 1 week of admission. This information clearly suggests there might exist unexplored dynamics that could explain in part or in full the reasons for this high burden. Although this could be multi-factorial, one expects that at hospital level, there exists an environment that should be examined easily when such questions arise **(Irena et al., 2011).**

## Child Mortality in under-five children in Egypt

Information on child mortality levels in Egypt for three successive five-year periods prior to the 2014 EDHS ,showed that the rates are estimated directly from the information on a child's birth date, survivorship status, and the age at death for children who died collected in the birth histories from EDHS respondents (Table 1) **(Egyptian Ministry of Health and Population,2014).**

**Table (1):** Trends in Early Childhood Mortality, Egypt 2008

| Years preceding the survey | Neonatal mortality (NN) | Postneonatal mortality (PNN)1 | Infant mortality (1q0) | Child mortality (4q1) | Under-five mortality (5q0) |
|---|---|---|---|---|---|
| 0-4 years | 14 | 8 | 22 | 5 | 27 |
| 5-9 years | 19 | 11 | 30 | 3 | 33 |
| 10-14 years | 19 | 13 | 33 | 7 | 39 |

During the five-year period prior to the survey (i.e., roughly the period April 2009-March 2014), the infant mortality rate was 22 deaths per 1,000 births and the neonatal mortality rate was 14 deaths per 1,000 births. A comparison of these rates with the overall level of under-five mortality (27 deaths per 1,000 births) indicates that almost 80 percent of early childhood deaths in Egypt take place before a child's first birthday, with half occurring during the first month of life,(Figure 1) compares the child mortality levels from the 2014 EDHS to the levels reported

for the five-year period prior to the 2008 EDHS. The differences that are observed are minor, suggesting that both the levels and age patterns of early childhood mortality have remained largely unchanged in Egypt since 2008**(Egyptian Ministry of Health and Population, 2014).**
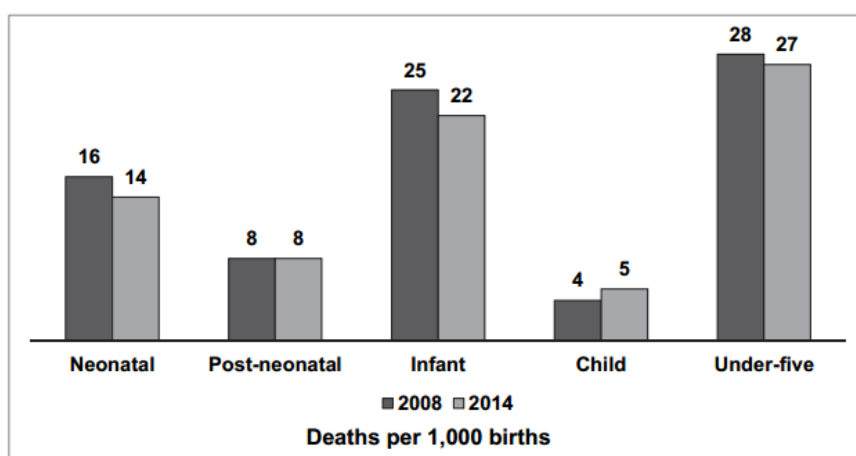


**Figure (2):** Trends in Early Childhood Mortality, Egypt 2008-2014.

## Growth Problems in Children

### Growth problems

A growth problem means that a child falls either below or above the average range of growth for a child's age, sex, family history, or racial background **(Judith et al., 2016).**

## Causes of growth problems

Growth disorders can have many causes. Causes usually fall into one of the following groups:**(Judith et al., 2016)**

- **Familial short stature.** This means a child is part of his or her family's pattern of inherited short height

- **Familial tall stature.** This means a child is part of his or her family's pattern of inherited tall height.

- **Constitutional delay of growth and pubertal development.** This means a child tends to be shorter than average and to enter puberty later than average, while growing at a normal rate. This may be inherited. These children tend to catch up in time and reach their normal adult height.

- **Illnesses that affect the whole body (systemic diseases).** This includes constant malnutrition, digestive tract diseases, kidney disease, heart disease, lung disease, diabetes, or chronic severe stress. Any of these conditions can cause growth problems.

- **Endocrine (hormone) diseases.** Growth can be affected by some conditions that disrupt hormones. Thyroid hormone is essential for normal bone growth. The pituitary gland at the base of the

brain secretes several hormones, including growth hormone. Growth hormone deficiency can result from injuries to the pituitary gland or brain. Cushing syndrome can impair height but cause weight gain. Precocious puberty is a condition caused by hormone problems. It often causes fast growth and tall height compared with other children of the same age. But growth stops at an early age. As a result, children with precocious puberty may be short as adults.

- **Intrauterine growth restriction (IUGR).** This means growth of a baby in the uterus is slowed. This can be caused by many factors, such as smoking during pregnancy or not enough prenatal care. The baby is born smaller in weight and length than normal.

- **Genetic disorders.** This includes Turner syndrome, Down syndrome, and achondroplasia. Turner syndrome is when having too many, too few, or disrupted chromosomes result in health problems. It's a common genetic disorder that occurs only girls. It causes poor growth and delayed or no puberty. Turner syndrome occurs in 1 in 2,500 girls. It's caused by one missing X chromosome. Down

syndrome is another common genetic disorder causing poor growth and short stature. It results from an extra 21st chromosome. Achondroplasia is the most common genetic bone disease. It causes a child's arms and legs to be short. It also causes a large head and other features.

**Developmental Delays in Young Children**

There are many different types of developmental delays in infants and young children. They include problems with: **(Bhandari, 2016)**

- Language or speech
- Vision
- Movement -- motor skills
- Social and emotional skills
- thinking -- cognitive skills

Sometimes, a delay occurs in many or all of these areas. When that happens, it is called "global developmental delay." Global developmental delay may occur for any of the following reasons: **(Bhandari, 2016)**

- A genetic defect, such as Down syndrome
- Fetal Alcohol Syndrome, caused by a mother drinking alcohol during pregnancy

- Fragile X Syndrome, an inherited type of cognitive impairment

- Severe medical problems developing soon after birth, often associated with prematurity

- Often no cause can be found

**Periods of childhood**

It classified to:

1. **Infancy period**: it lasts from birth to 12 months

Infancy is divided into neonatal and infancy.

-Neonatal period: it begins from birth of the baby and lasts by 28 days

-Infancy lasts from 1 to 12 months.

2. **Early childhood** includes the children in age from 1 to 6 years.

It is divided into toddler and preschool periods

- Toddler period lasts from 1 to 3 years

- Preschool period begins from 3 years and ended at 6 years

3. **Middle childhood** includes prepubertal period: it begins from 10 years and completes at 12 years.