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Causes of Mortality in Children 1-59 Months in Yemen

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Abstract

Child mortality is a sensitive indicator of a country's development and telling evidence of its priorities and values. The study aimed to determine the common causes of death among children under 5 years of age who admitted and died in Al-Mukalla public hospitals, Yemen. This was a retrospective study. The files of all children aged 1-59 months who admitted into the pediatric wards at Mukalla City Hospital and University Hospital for Gynecology, Obstetric and pediatric and died during the study period from the 1st of January 2011 to the 31st of December 2014 were reviewed. Out of 5859 admissions on children under 5 years of age, 898 deaths (15.3%) were recorded. More than (92.3%) of child deaths occurred in the age group 1 to 11-month, the majority (60.2%) of the dead children were boys. The majority (75%) of deceased children were residents in Hadhramout governorate (coast and Al-Wadi) followed by Shabwah governorate (20.0%). Most of the deaths occurred in the year 2014. The study showed that, the most common causes of mortality were the prematurity (35.6%), followed by infectious and respiratory diseases (21.6% and 19.6%) respectively. It was concluded that, the child mortality rate in the current study is high when compared to other regions in Yemen and in developing countries. Differences were also found between causes of death in Yemen and elsewhere. An urgent need to introduce health interventions to improve essential childhood care.

Key words: Deaths - Children under five, Mukalla Public Hospitals, Yemen

Introduction:

The mortality rate of children less than 5 years old is a sensitive indicator of a country's development and telling evidence of its priorities and values [8]. Every day, more than 26,000 children under the age of five die around the world, mostly from preventable causes [14]. Nearly all of them live in the developing countries [14]. More than one third of these children die during the first month of life, usually at home and without access to essential health services and basic commodities that might save their lives [2].

The under-five mortality rate of children is the death rate of children before the age of five which is consisted of two stages; from childbirth to 1 month and since 1 month to 59 months [3].

According to the fourth Millennium Development Goals, countries of the world were committed to reduce the mortality rate of their children less than 5 years since 1990 to 2015 to 75 percent [9].

However many countries, especially in sub-

Saharan Africa and South Asia were not successful in achieving the goals for decreasing mortality rate in children [2]. The susceptibility to some diseases and differences on causes of death in this age group with others, has been caused the assessment of mortality in children younger than 5 years is being important [7].

According to WHO, in neonatal deaths, the most causes are preterm birth, intra partum related complications (birth asphyxia or lack of breathing at birth), and infections. While from the end of the neonatal period and through the first five years of life, the main causes of death are pneumonia, diarrhea and malaria. Malnutrition is the underlying contributing factor in about 45% of all child deaths, making children more vulnerable to severe diseases [14].

Prematurity and pneumonia were found the top leading causes of death in children under the age of 5 years in the Eastern Mediterranean Region in 2011, based on the WHO Global Health Observatory. Prematurity contributed to 19% of all under-5 deaths and pneumonia 18%. Prematurity was also the leading cause of death in neonates. Infections, including pneumonia (18%), diarrheal diseases (10%), infections in the newborn (6%), measles (3%) and malaria (1%) as a group remained a major cause of death in children, responsible for 38% of all deaths [14].

The statistical indicators of child health in Yemen published by the United Nations Children's Fund (UNICEF) in 2013 (the latest

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available report) indicated that the infant mortality rate was 51 per 1,000 live births and was higher among males than females (55 to 47). The infant and neonatal mortality rate was 40 and 24, respectively [12]. WHO released statistics on the distribution of causes of death among children under 5 years of age in Yemen. The result of this statistics was that, the most common cause of death among children under five years of age was pneumonia, which accounts for 22%. In the second place the prematurity constituted 18% of the results. Following these two causes the birth asphyxia constituted 13percent [15].

Diarrhea accounted for 11% of the results. The other two causes (neonatal sepsis and injury) were equal in distribution, each of which accounted for 6%. The remaining causes were with the lowest proportion: Congenital anomalies accounted for 4% while malaria accounted for 1% of the entire statistics. There were 19% of the data that was under the category of other conditions [15].

Studies on pattern of pediatric mortality in Yemen are very limited. Up to our knowledge, only one study is available on the common causes of death among Yemeni children at Al-Thawra Hospital, Sana'a, Yemen [11].

However, since each society has its own economic, social, cultural, health and geographical conditions that can directly or indirectly affect the causes of death in that society, in particular the mortality of children under the age of five. In addition the sensitivity of this period and the different causes of death in this age group with other age groups and get a measure of the health status in the region.

It is necessary to study this issue in other parts of Yemen. Thus, this study was carried out in order to determine the frequency and causes of death among children aged 1-59 months in the district of Mukalla during the period from 2011 to 2014. This analysis of deaths in children in Yemen could act as a baseline study for comparison over time in Yemen and other countries in the region.

Materials and Method:

This is a retrospective study which was carried out in two public hospitals: Mukalla City Hospital (Mukalla CH) and University Hospital for Gynecology, Obstetric and pediatric (UHGOP) in Mukalla district in Hadhramout Governorate, Yemen. These Hospitals in Mukalla city are the only pediatric medical and

training hospitals that generally provide medical services for children from the four governorates (Hadhramout [Coast and Alwadi], Shabwah , Socotra and Al-Mahrah).

All children under 5 years of age (1-59 months) who admitted into the pediatric wards at Mukalla City Hospital (MCH) and University Hospital for Gynecology, Obstetric and pediatric (UHGOP) and died during the study period from 1st

January 2011 to 31st December 2014 were included in this study. The data was collected based on the available medical records of children who died. The data was collected by using a chick list which included the number of record, child's sex, age, place of resident and causes of death.

The cause of death was determined based on WHO classification and diagnosis of diseases that classified into 9 groups as the following: (1) Respiratory diseases (2) prematurity (3) CNS diseases (4) malnutrition (5) GIT diseases. (6) infectious diseases (7) congenital abnormality (8) heart diseases (9) other causes [14].

The data was checked for completeness, coded then entered into a computer by Statistical Package for Social Sciences (SPSS v 20). Obtained data was analyzed using descriptive statistical tools (frequencies and percentages). Finally the data was presented in tables and graphs by using computer applications (Excel and word). Approval of the project was obtained from Hadhramout University College of Medicine and Department of Community Medicine.

An approval was also obtained from the health facility to take the data and our objectives were clarified to the health facility that this data will be used only for the benefits of the society and for scientific purposes.

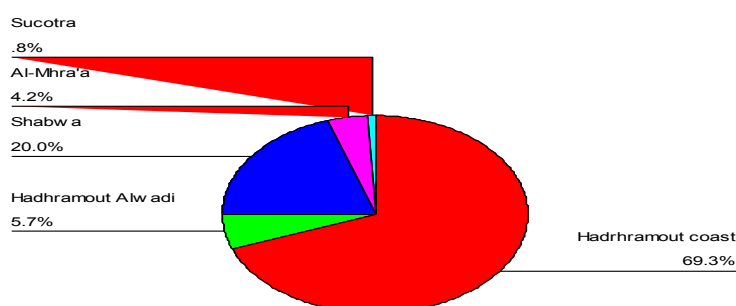
Results:

A total of 5859 admissions into the pediatric wards at (Al-Mukalla CH and UHGOP) Hospitals during the study period from 1st January 2011 to 31st December 2014.

Out of 898 deaths 15.3% were recorded among children aged (1- 59 months). There are 92.3% of child deaths in the 1 to 11-month age group, and the remaining mortality was 7.7 % in the 12-59 month age group. Males comprised 60.2% of dead children and the remaining 39.8 % were females, Table 1.

Table 1: Distribution of child deaths in relation to Age and sex

Items	Frequency	Percentage	Total	
			Frequency	%
Age Group				
1 -11 months	829	92.3	898	100
12-59 months	69	7.7		
Sex				
Males	541	60.2	898	100
Females	357	39.8		

Residence location**Figure 1: Distribution of child deaths in relation to residency**

Based on residence location the results showed that, 75% of deceased children were residents in Hadhramout governorate (coast and Al-wadi)

followed by Shabwah governorate (20.0%), Figure 1.

Table 2: Causes of death among children (1-59 months) admitted to Al Mukalla hospitals during 2011-2014

Causes of death	Frequency	Percentage
Respiratory diseases	176	19.6
Prematurity	320	35.6
CNS diseases*	66	7.3
Malnutrition	34	3.8
Gastro Intestinal Tract diseases	13	1.5
Infectious diseases	194	21.6
Congenital abnormality	16	1.8
Hearth diseases	29	3.2
Other causes**	50	5.6
Total	898	100

* CNS diseases = central nervous system

**Other causes including (anemia, burn, drug poisoning, renal failure and nephritic syndrome)

Table 2 shows that the most common causes of death were Prematurity (35.6%), followed by Infectious diseases and Respiratory diseases (21.6% and 19.6%) respectively, Table 2.

Table 3: Trends of the mortality among children aged (1-59 months) in Al-Mukalla Hospitals during the period 2011-2014

Years	Number of deceased children	Percentage
2011	202	22.5
2012	231	25.7
2013	214	23.8
2014	251	28.0
Total	898	100.0

As shown in Table 3, there is an increase in the frequency of children who admitted and died in Al-Mukalla hospitals from 22.5% in 2011 to 25.7% in 2012, with a slight decrease of 23.8% in 2013, and again in 2014 increased to 28.0%.

Discussion:

The findings of the current study showed a high mortality rate (15.3%) among Yemeni children aged (1-59 months) who attended and died in Al-Mukalla public hospitals during the study period. This rate relatively higher than that rate 14% in a previous study conducted among Yemeni children in Sana'a city [11]. It is much higher than that reported in other countries of the Region such as Oman 11% [5] and other developing countries such as Iran 11% [10], North American 8.47% [18] and Nigeria 2.8%. [6] The high mortality in the study area may reflect the poor of intensive care for children in public hospitals, beside the difficulties of transportation and referral system.

The study findings showed that, deaths among boys 60.2% was higher than girls 39.8%. Our findings are comparable to the findings of a previous study among Yemeni children [13]. Similar results were also reported from different countries [1,4,6,10] where child mortality shows higher in boys compared to girls.

It was found that the proportion of children who died increased in the studied years from 22.5% in 2011 to 28% in 2014 with the highest mortality rate (92.3%) among children aged 1-11 months. Our findings were in agreement with the findings of other studies [4,10,11], where the highest deaths were in children aged 1-11 months.

Our study showed that the most common causes of death among the study population (children under 5 years of age) were prematurity (35.6%), followed by infectious diseases 21.6%, respiratory diseases 19.6% and central nervous system (CNS) diseases 7.3%. These findings are consistent with the results of the previous study conducted in Sana'a city by Sallam [11], where it was observed that infections, respiratory problems and central nervous system diseases were the main causes of deaths among Yemeni children, as well as with the studies conducted in Oman [5] and in Egypt [13] where the main causes of death observed among children under 5 years of age were infection, prematurity, respiratory problems and congenital deformation. However according to WHO, it reports in various areas of the world, the most common causes of mortality in EMRO were diarrhea (19%), pneumonia (16%) and other causes (14%) which were not similar to common causes in our study [17].

In Africa the most common causes of mortality in children under 5 years were pneumonia (20%), diarrhea (16.3%) and malaria (15.6%) respectively [18]. These causes are not compatible with our study.

In the West Pacific region, the most common causes of mortality in children under 5 years were pneumonia (15%), non-communicable diseases (10%) and accidents and unintentional injuries (7%), respectively [19].

In the WHO European region, pneumonia is the most common cause of mortality among children under 5 years [20]. However, in South East Asia region, diarrhea and pneumonia are the most

common causes for under five mortality [21].

Conclusion and Recommendations:

The child mortality rate in the current study is high when compared with other areas in Yemen and in developing countries. Differences between causes of death were also found in Yemen and elsewhere. Specific interventions appear to be needed to achieve the Millennium Development Goals. At the same time, differences in mortality rates and the specific causes among different districts with different socio-economic conditions require a different strategy

Identifying the main causes of death as accurately as possible, as well as identifying age groups at risk of death, are essential steps in a

community diagnosis of more frequent and serious conditions that can be treated or prevented within society, and there after planning an effective program to improve child survival. A more accurate death registration system is the first step for planning in this issue

Limitations:

Little is known about the epidemiology and causes of deaths in children under 5 years of age in Yemen. The registration system includes very incomplete information on births and deaths. To our knowledge, studies in the country have not been conducted in nationally representative samples on causes of child mortality.

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أسباب الوفيات عند الأطفال 1-59 شهرا في اليمن

نور عبدالعزيز بن كروم

فوزية فرج بامطرف

مازن أحمد جواس

الملخص

معدلات وفيات الأطفال هي مؤشر حساس على تطور البلد وتقدم أدلة على أولوياته وقيمه. استهدفت الدراسة تحديد الأسباب الشائعة للوفاة بين الأطفال دون الخامسة من العمر الذين حضروا وتوفوا في مستشفيات المكلا العامة في اليمن. هذه كانت دراسة استرجاعية. تم فيها مراجعة ملفات جميع الأطفال الذين تتراوح أعمارهم بين 1-59 شهرا الذين أدخلوا في أقسام الأطفال في مستشفى مدينة المكلا والمستشفى الجامعي لأمراض النساء والتوليد وطب الأطفال وتوفوا خلال فترة الدراسة من 1 يناير 2011 إلى 31 ديسمبر 2014. من بين 5859 حالة دخول لأطفال دون الخامسة من العمر، سجلت 898 حالة وفاة (15.3%). وقد وقعت 92.3% من وفيات الأطفال في الفئة العمرية من 1 إلى 11 شهرا، وكانت الأغلبية (60.2%) من الأولاد. وكان غالبية الأطفال المتوفين من محافظة حضرموت (الساحل والوادي) (75%) تلاه محافظة شبوة (20.0%). وقد كانت معظم الوفيات في عام 2014. وأظهرت الدراسة أن الأسباب الأكثر شيوعا للوفيات كانت الخداج (35.6%)، تليها الأمراض المعدية والجهاز التنفسي (21.6% و 19.6%) على التوالي. خلصت الدراسة إلى أن معدل وفيات الأطفال في الدراسة الحالية مرتفع عند مقابله بالمناطق الأخرى في اليمن وفي البلدان النامية. ووجدت أيضا اختلافات بين أسباب الوفاة في اليمن وفي أماكن أخرى. هناك حاجة ماسة إلى إدخال تدخلات صحية لتحسين الرعاية الأساسية لمرحلة الطفولة.

الكلمات المفتاحية: وفيات أطفال دون الخامسة، مستشفيات المكلا العامة، اليمن