

Mortality of Children Under the Age of Five Years Old for the Year 2016 in the Karbala District/Iraq

Mohammad Abdulbaqi Abdulmohsin

Department of Community Health Technology, Institute of Technology/Karbala, Al-Furat Al-Awsat Technical University, Ministry of Higher Education and Scientific Research, Iraq

Abstract:

Background: child mortality is a critical measure of the wellbeing of children and a good proxy indicator of the overall level of development. Many studies showed a substantial increase in childhood mortality in Iraq during the last decade of 20th century as a direct effect of sanctions imposed and the effect of war conflicts. **Aims:** to describe the associated factors of child mortality during the year 2016 in the Karbala district. **Study design:** the study is a retrospective descriptive study, sample study is convenience sample consist of (394) a death case. **Setting:** the study was conducted in office of births and deaths and children's educational hospital - statistics unit / Karbala health directorate. **Period:** the data collection was carried out from 15th October to 15th November, 2017. **Results:** the results indicated that most of the study sample were at the age group (less than month), males, causes of death (septicemia, birth defect, neurological diseases, heart disease), months year (January, December, February). **Conclusions:** the findings show that highly significant difference between causes of death and age groups, but the relationships with gender variable was accounted with no significant difference. **Recommendations:** the most important recommendation of the study is to establish a real policy by the institutions, health centers and hospitals in the period of birth to be preventive and therapeutic and the main goal is to reduce premature deaths that can be avoided by intensive care.

Keywords: Mortality, Children, Age, death.

1-Introduction:

Deaths among children under the age of five years present one of the most serious challenges currently faced by the international community. To address this challenge, it is necessary to measure accurately the levels and causes of mortality among this population group [1]. The most common measures of mortality among these children are: (a) The under-five mortality rate (U5MR): the probability of a child dying before reaching the age of five years [1]. (b) The infant mortality rate (IMR): the probability of a child dying before his or her first birthday [1]. (c) Neonatal mortality rate (NNMR): the probability of a child dying between 0 and 28 days of age [1].

All deaths should be registered according to law. However, registration is not universal and death certification by cause is not accurate. Strengthening mortality statistics is an area that should receive a high priority in short- and medium-term plans [2].

The mortality rate of children under the age of five is a reflection of the reality of the different situations in a country. It has a significant impact on the dynamics of the population first, since mortality in this category represents a significant proportion of total deaths in both developing and developed countries. Many of these deaths also provide guidelines that can guide the preparation of public health programs [3].

Child mortality rates are a sensitive indicator of the development of a country and a clear indication of its priorities and values. Investing in the health of children and their mothers is not only a basic human rights requirement, it is a sound economic decision and it is one of the surest ways a country can move towards a better future [4].

Infant mortality rate (IMR) is defined as the ratio of infant deaths registered in a given year to total number of live births in the same year, usually expressed as a rate per 1000 live birth [5]. Rates of neonatal and infant death are expressed as rates per 1000 live birth [5].

Deaths are a demographic phenomenon that affects the growth and distribution of the population. Mortality is the second most important factor after fertility in its effect on the size of the population. Fertility is negative or positive. Where they contribute significantly to growth. The death rate is negative. It reduces population growth. Death is a different phenomenon. It varies from one geographical environment to another. It has many causes, and it also varies from age to age. Therefore, it was necessary to study mortality to determine the causes of the occurrence and try to reduce them [6].

Aims of the study

- 1-To describe the associated factors of child mortality during the year 2016 in the Karbala district.
- 2- To find out any association between causes of death according to demographic characteristics.

2-Materials and Methods

The study is a retrospective descriptive study, which determines the associated factors of child mortality (causes of death) under the age of five years old during the year 2016 in the Karbala district. Sample study is convenience sample consist of (394) a death case was documented and registered in Karbala health directorate. The study was conducted in office of births and deaths and children's educational hospital - statistics unit / Karbala health directorate. An official permission (formal approval) was obtained from Karbala health directorate to conduct this study. The data collection was carried out from 15th October to 15th November, 2017. Statistical data analysis were used in order to analyze and assess the results of the study under the application of the statistical package (SPSS ver.18.0) are as follows: descriptive data analysis (frequencies and percentages, arithmetic mean (\bar{x}), standard deviation (SD), and person's correlation coefficients), inferential data analysis (chi-square test (χ^2), probability of chance (P-value), and comparison significant (C.S.)). The comprised of significates (P-value) in any test were: HS= highly significant difference (P<0.01), S=significant difference (P<0.05), and NS= non-significant difference (P>0.05).

3-Results

Table (1) shows that the higher percentage of study sample (45.4%) were in the age group (less than month), while the lower proportion (15.2%) was within age group (1 year to less than 5 years) . The majority of the study sample of deceased children was (60.9%) males. The arithmetic mean and standard deviation of the age groups was 1.70 ± 0.719 . Table (2) stated that the highest percentage (21.8%) was septicemia, followed by (17.8%), (15.0%), (12.9%) were birth defect, neurological diseases, heart disease respectively. Table (3) demonstrated that most of the mortality (12.4%) was during January month, followed by (10.4%), (9.6%) were within December, February months respectively. The findings of table (4) shows that highly significant relationships are accounted at P<0.01 between causes of death and age groups of the study sample. Also, the results of this table presented that the majority of associated factors of death were (11.4%) birth defect and (11.2%) septicemia within age group (less than month) followed by (8.4%), (7.4%), (6.3%) were septicemia, neurological diseases, birth defect respectively at age group (1month-less than 1 year).The results of table (5) shows that weak relationships are accounted with no significant difference at P>0.05 between causes of death and gender variable for this study. The results observed that the greater number of associated factors of death were (15.0%) septicemia, (10.4%) birth defect, (9.4%) neurological diseases, (7.6%) heart disease among males. Whereas, the lowest number of these injuries were in females, which are as follows (7.4%) birth defect, (6.9%) septicemia, (5.6%) neurological diseases, and (5.3%) heart disease.

Table (1): Distribution of study sample according to age and gender.

| Age | Gender | | Total |
|----------------------------|--------------|--------------|--------------|
| | Male | Female | |
| less than month | 115 29.2% | 64 16.2% | 179 45.4% |
| 1month - less than 1 year | 95 24.1% | 60 15.2% | 155 39.3% |
| 1 year - less than 5 years | 30 7.6% | 30 7.6% | 60 15.2% |
| Total | 240 60.9% | 154 39.1% | 394 100% |
| $\bar{x} \pm SD$ | 1.70 ± 0.719 | | |

Table (2): Distribution of mortality by causes of death.

| Associated factors of death (Causes of death) | No. | % |
|--|-----|------|
| Blood diseases | 26 | 6.6 |
| Septicemia | 86 | 21.8 |
| Diarrhea | 3 | 0.8 |
| Respiratory system diseases | 31 | 7.9 |
| Neurological diseases | 59 | 15.0 |
| Liver and digestive diseases | 3 | 0.8 |
| Heart disease | 51 | 12.9 |
| Malnutrition | 0 | 0 |
| Birth defect | 70 | 17.8 |
| Respiratory distress syndrome | 36 | 9.1 |
| Jaundice | 0 | 0 |
| Perinatal asphyxia | 2 | 0.5 |
| Injuries during childbirth | 3 | 0.8 |
| Accident | 13 | 3.3 |
| Cancer diseases | 11 | 2.8 |
| Total | 394 | 100 |

Table (3): Distribution of mortality according to month's year.

| Months year | No. | % |
|-------------|-----|------|
| January | 49 | 12.4 |
| February | 38 | 9.6 |
| March | 29 | 7.4 |
| April | 31 | 7.9 |
| May | 31 | 7.9 |
| June | 32 | 8.1 |
| July | 33 | 8.4 |
| August | 25 | 6.3 |
| September | 27 | 6.9 |
| October | 25 | 6.3 |
| November | 33 | 8.4 |
| December | 41 | 10.4 |
| Total | 394 | 100 |

Table (4): Association between causes of death according to age groups.

| Associated factors of death (Causes of death) | Age | | | Total |
|--|--|--------------------------|--------------------------|-------------|
| | less than month | 1 month-less than 1 year | 1 year-less than 5 years | |
| Blood diseases | 15 3.8% | 10 2.5% | 1 0.3% | 26 6.6% |
| Septicemia | 44 11.2% | 33 8.4% | 9 2.3% | 86 21.8% |
| Diarrhea | 2 0.5% | 1 0.3% | 0 0.0% | 3 0.8% |
| Respiratory system diseases | 19 4.8% | 11 2.8% | 1 0.3% | 31 7.9% |
| Neurological diseases | 9 2.3% | 29 7.4% | 21 5.3% | 59 15.0% |
| Liver and digestive diseases | 0 0.0% | 2 0.5% | 1 0.3% | 3 0.8% |
| Heart disease | 24 6.1% | 23 5.8% | 4 1.0% | 51 12.9% |
| Malnutrition | 0 0.0% | 0 0.0% | 0 0.0% | 0 0.0% |
| Birth defect | 45 11.4% | 25 6.3% | 0 0.0% | 70 17.8% |
| Respiratory distress syndrome | 14 3.6% | 14 3.6% | 8 2.0% | 36 9.1% |
| Jaundice | 0 0.0% | 0 0.0% | 0 0.0% | 0 0.0% |
| Perinatal asphyxia | 2 0.5% | 0 0.0% | 0 0.0% | 2 0.5% |
| Injuries during childbirth | 3 0.8% | 0 0.0% | 0 0.0% | 3 0.8% |
| Accident | 0 0.0% | 5 1.3% | 8 2.0% | 13 3.3% |
| Cancer diseases | 2 0.5% | 2 0.5% | 7 1.8% | 11 2.8% |
| Total | 179 45.4% | 155 39.3% | 60 15.2% | 394 100% |
| C.S. P-value | $\chi^2=122.818, P=0.000$ (HS) | | | |

Table (5): Association between causes of death according to gender.

| Associated factors of death (Causes of death) | Gender | | Total |
|--|--|----------------------|---------------------|
| | Male | Female | |
| Blood diseases | 15 3.8% | 11 2.8% | 26 6.6% |
| Septicemia | 59 15.0% | 27 6.9% | 86 21.8% |
| Diarrhea | 1 0.3% | 2 0.5% | 3 0.8% |
| Respiratory system diseases | 18 4.6% | 13 3.3% | 31 7.9% |
| Neurological diseases | 37 9.4% | 22 5.6% | 59 15.0% |
| Liver and digestive diseases | 2 0.5% | 1 0.3% | 3 0.8% |
| Heart disease | 30 7.6% | 21 5.3% | 51 12.9% |
| Malnutrition | 0 0.0% | 0 0.0% | 0 0.0% |
| Birth defect | 41 10.4% | 29 7.4% | 70 17.8% |
| Respiratory distress syndrome | 19 4.8% | 17 4.3% | 36 9.1% |
| Jaundice | 0 0.0% | 0 0.0% | 0 0.0% |
| Perinatal asphyxia | 2 0.5% | 0 0.0% | 2 0.5% |
| Injuries during childbirth | 2 0.5% | 1 0.3% | 3 0.8% |
| Accident | 7 1.8% | 6 1.5% | 13 3.3% |
| Cancer diseases | 7 1.8% | 4 1.0% | 11 2.8% |
| Total | 240 60.9% | 154 39.1% | 394 100% |
| C.S. P-value | $\chi^2=6.324$, P=0.899 (NS) | | |

4-Discussion

Mortality is one of the best indicators of the level of development and is closely related to population health, living standards and access to health care, an important component of population change. The phenomenon of death is a non-renewable biological event, one of the most important demographic phenomena, and with birth, it constitutes the main basis for studying the population change in any country [7]. The findings of the study shows that the higher percentage of study sample (45.4%) were within age group (less than month), while the lower percentage (15.2%) was at the age group ranging between (1 year to less than 5 years) . The majority of the study sample of deceased children was (60.9%) males, whereas the lower proportion (39.1%) was females. The reason for the proportion of males more than females is normal due to the rate of births in that year. Generally, these results were coincided with a study of (Hatem S.), he found that more than half were early neonatal death and males [5], which strongly agree with the present study. Additionally, this study agrees with the findings of (Naser A.) [8]. Relative to causes of death, the results depicted that the greatest proportion of child mortality (21.8%) was septicemia, followed by (17.8%), (15.0%), (12.9%) were birth defect, neurological diseases, heart disease respectively. Whilst, the lowest proportion of them (0.5%) was perinatal asphyxia. While, the results did not record any causes of death for diseases such as jaundice and malnutrition, which was (0%) each. The cause of death of these diseases is due to several causes, including genetic, environmental, lack of health awareness in the family, lack of health and treatment services in the institutions, health centers and hospitals, in addition to the impact of wars and their consequences, which affected the environment in general. These results agree with many others studies in many countries; one of these studies was carried out in Palestine by (Abo Alrub N. and

Ahmed H.) [9], in addition to similar to study done by (Naser A.) and (Hatem S.) [5,8]. Concerning the mortality according to month's year, the results clarified that the greater number of cases (12.4%) were during January month, followed by (10.4%) December, (9.6%) February, while the minority (6.3%) was in months August and October. The high mortality rate in months of the year and its decline in other months are likely due to climate change and temperature and its impact on the health of the child, in addition to the activity of pathogens, on the one hand and on the other may be due to unknown causes. Overall, these findings were comparable with (Baradei K. and et al) and (Hatem S.), they demonstrated that most of deaths of children under the age of five years in January month of a year 2008 [10,5], these studies agreed with the results of our study. Regarding, the association between associated factors of death and age groups variable in the present study. There are a highly significant difference at $P < 0.01$ level was found between age groups with causes of death. In light of the results of the current study, we note that most deaths in children are within the age of early, as these numbers decrease as the child progresses up to five years according to this study, because the immune system of the newborn child is incomplete and weak resistance to pathogens, After the child reaches the age of about 5 years, and then be more resistant to diseases as the child progresses to age. However, this justification can be supported by evidence which was available in the work of (Sohail H.) [11], and it's strongly agreed with (Sharifzadeh G. and et al) [12]. Also, this is results similar to the finding of (Abdul Hamid C.) [13]. Eventually, relative to association between causes of death and gender variable in the current study, the results estimated that there was a non-significant difference at $P > 0.05$. This indicates that it has nothing to do with the cause of death by the sex of the child, since it is a constant state that is not changed and is different from age. Similarly, the findings of our study were supported by (Ayata S. and et al), (Gebretsadik S. and Gabreyohannes E.), and (AL Awqati and et al) [14,15,16], this result is in line with the present study.

5-Conclusions:

- 1- The results show that the higher percentage of study sample (45.4%) was at the age group (less than month) and (60.9%) males. The results stated that the highest percentage of causes of death were (21.8%) septicemia, (17.8%) birth defect, (15.0%) neurological diseases, and (12.9%) heart disease.
- 2- The results demonstrated that most of the mortality (12.4%) was during January month, followed by (10.4%), (9.6%) were within December, February months respectively.
- 3- The findings indicated that highly significant relationships are accounted at $P < 0.01$ between causes of death and age groups, while was no significant difference at $P > 0.05$ between causes of death and gender.

6-Recommendations

- 1- Establish a real policy by the institutions, health centers and hospitals in the period of birth to be preventive and therapeutic and the main goal is to reduce premature deaths that can be avoided by intensive care.
- 2- Health programs in institutions, health centers and children's hospitals should be accompanied by social and economic programs, where many children can be saved with some preventive and curative interventions such as vaccines, simple treatments for common diseases, good nutrition, and promotion of breastfeeding.

7-Acknowledgements

First of all, I would like to thank the merciful God for helping me in performing this work. Sincere thanks are extended to the staff of community health technologies department for their assistance and encouragement. I also express my deep condolences to the families of the deceased children.

References

- 1- World Health Organization (WHO) and Office of the United Nations High Commissioner for Human Rights (OHCHR). 2012-2013. Mortality among children under five years of age as a human rights concern, Paragraphs (6-8), 1-2. Available from: <https://www.ohchr.org/Documents/Issues/Women/WRGS/Health/StudyMortalityAmongChildren.pdf>
- 2- Alwan A. 2004. World Health Organization (WHO)-Health in Iraq. Mortality Trends, chapter (1), Second Edition, 19-20. Available at: http://www.who.int/hac/crises/irq/background/Iraq_Health_in_Iraq_second_edition-pdf.
- 3- Ibrahim A. 2016. Contrast the mortality of children under five years in the province of Basra in 2013. *Journal of the University of Dhi Qar*, 11(1), 65.
- 4- United Nations Children's Fund (UNICEF). 2007-2008. Status of children in the world. New York/United States of America (U.S.A), 1. Available from: <https://www.unicef.org/arabic/sowc06/files/sowc08-ar.pdf>
- 5- Hatem S. 2011. A Study on Infant Mortality in Missan Governorate/Iraq, published in university of Basrah - college of medicine- department of community medicine, 2-23.
- 6- Wafa R. 2013. Study of the mortality of children under five years during the period 1998-2008, published in university of Qasidi - college of humanities and social sciences- department of social science, 13.

- 7- Samah L. and Qawaisi A. 2009-2010. Study of the mortality of children under five years in Algeria, published in university of Haj Lakhdar / Patna - college of Islamic and social sciences- department of sociology and demography, 14-17.
- 8- Naser A. 2012. Study of the associated factors infant's mortality in Al-Risafa district (2011-2012)/ Iraq, published in Foundation of Technical Education - college of health and medical technologies/Baghdad- department of community health, 20-31.
- 9- Abo Alrub N. and Ahmed H. 2015. Level and factors affecting mortality rates in Jenin governorate during the period 2004-2013/ Palestine, published in university of An- Najah National - college of graduates studies- department of Geography, 101-130.
- 10- Baradei K., Abu Rasheed N., and Bashour H. 2008. Study the causes of mortality among children under five years. Ministry of health - primary health care directorate in cooperation with UNICEF/ Syria, 10-27.
- 11- Sohail H. 2017. Prevalence and risk factors associated with under-5 mortality: a multi-country comparative study in south asia, published in university of Tampere - college of Faculty of Social Sciences and Health Sciences- department of Global Health, 35-50.
- 12- Sharifzadeh G., Namakin K., and Mehrjoofard H. 2008. An Epidemiological Study on Infant Mortality and Factors Affecting it in Rural Areas of Birjand /Iran. *Iran J Pediatr*, 18(4), 338-340.
- 13- Abdul Hamid C. 2013. Determinants of Under-Five Mortality in Bangladesh. *Open Journal of Statistics*, 3, 215- 218.
- 14- Ayata S. and Taymaz E., and Kırdar M. 2009. Determinants of infant mortality in Turkey, published in university of Middle East Technical - The graduate school of social sciences, 51-78.
- 15- Gebretsadik S. and Gabreyohannes E. 2016. Determinants of Under-Five Mortality in High Mortality Regions of Ethiopia: An Analysis of the 2011 Ethiopia Demographic and Health Survey Data. *International Journal of Population Research*, 1-7.
- 16- AL Awqati , Fathli Y, and Lafta R . 2002. Prinatal and neonatal mortality. *Iraqi Journal of Community Medicine*, 15(1), 3- 4.