Children Under 5 Years Old Mortality and Associated Factors

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ABSTRACT

A Mortality of a child, also defined as under-5 years mortality or child death, indicates the death of children under five or the ages between one month to four years. Many deaths in developing countries go unreported since many low-income families cannot afford to register their babies in the official government registry. A cross-sectional study was conducted in this study for the period of study. This study was carried out from 24/12/2021 to 11/ 3/2021 in two governmental hospitals: AL Zahra teaching hospital and the Al Hakeem hospital in Al Najaf AL Ashraf province. The study sample was children under five years old who were diagnosed with death and living in Al-Najaf province.

This study's findings show that the highest numbers of respondents, 50%, were married at age 13-18 years. 64% of the total number were from rural areas, and according to family income, 60% of respondents had a family income range from 501- 1.000.000 IQD. According to obstetrical history, 93% of women had died fetus 59% of them died in the third trimester. 30% of women had died children under five years of age. 63% of these events happened for different reasons. In addition, 61% of mothers had a medical history. However, 55% of fathers had the same medical history except for liver diseases. Also, there was 16% of parents had an incompatible blood group. According to history using medications, 73% of mothers have a history of medication use.

Keywords: Mortality, Children, Under-five years, Al-Najaf

INTRODUCTION

Mortality of a child, also defined as under-5 years mortality or child death, indicates the death of children under five or the ages between one month to four years. Many deaths in developing countries go unreported since many low-income families cannot afford to register their babies in the official government registry. A child's death is emotionally hard on their parents and their relationship as a couple. 6.3 million live-born children were estimated in 2013 worldwide to die before five years (Liu et al., 2017) [1]. This estimated number decreased from 9.9 million in 2000, despite an increase in the number of live births, showing that countries have made significant progress in improving child survival since the millennium turn. Nevertheless, Millennium Development Goal 4 to reduce estimated child mortality by two-thirds from 1990 to 2015

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will possibly only be accomplished by a few nations (You et al., 2010) [2].

The reasons for children's mortality rate differed from one place to another; in 2016, the annual number of deaths from diarrhea reported among Chinese children <5 years from all-cause diarrhea was 42%. Of the 53.5 rotavirus diarrhea deaths, it is estimated that 92.7% (49.6) occurred in rural areas (Zhang et al., 2015) [3]. In East Delhi, one study was conducted on children aged six months to 5 years admitted to the pediatric emergency department during the study period from February 2012 to March 2013; this study found that 36% of children had clinical features of vitamin deficiency, and 51.1% of children were underweight (Sakshi Sachdeva et al. 2016) [4]. In 2015, among the 5.941 million children who did not live to age 5, 2.681 million (45.1%) died in the neonatal period (figure 1). The leading causes of death in children under 5 were preterm birth complications (Li Liu et al., 2015) [5]. This study aims to describe children's sociodemographic characteristics, determine the causes of mortality of children under five years old and determine the associated factors causes of mortality of children under five years old.

METHODOLOGY

Study Settings

A cross-sectional study was conducted in this study for the period of study. This study was carried out from Mar. 2021 to Des. 2021; two governmental hospitals are AL Zahra Teaching Hospital and the Al Hakeem Hospital in Al Najaf AL Ashraf province. The study sample was women who died of children under five years old living in Al-Najaf province.

Study Sample

One hundred cases were selected by using simple random sampling. The p in the sample size calculation is taken from the previous study (Ibadi, 2019) [6], with a confidence interval of p = 0.05 and a power of study 1.645.

Data Collection

A structured questionnaire form was applied to gather data to elicit information from the study participants. The questionnaire included the following information.

1. Sociodemographic data: These include five information items on the children, mothers', fathers', and parents' educational levels and occupations.

2. Current baby status and background information: These include weight, height, type of feeding, weaning age, and information about helminth infections.

3. Medical Family history: Includes history of anemia among family members, anemia during the pregnancy period, taking supplementary drugs, and chronic diseases.

4. Obstetrical history: Include information about the mother if she had a bad obstetrical history.

Statistical Analysis

Statistical Package for the Social Sciences (SPSS) version 21 was used to analyze the data. Descriptive statistics were calculated for selected numerical and categorical variables for descriptive data.

Ethical Consideration:

Al-Najaf Health Directorate was permitted to do this work. Written consent was taken from all participants.

RESULTS

Table 1: Sociodemographic features of respondents

Items		Freq.	%		
Mother age group at marriage	13-18 Y	50	50.0		
	19-24 Y	49	49.0		
	25 and more	1	1.0		
Geographic distribution	Rural	36	36.0		
	Urban	64	64.0		
Family income*					
	200-500	35	35.0		
	501-1.000.000	60	60.0		
	1.001.000 -1.500.000	2	2.0		
	1.501.000 -2.000.000	3	3.0		
Education level		Mother		Father	
	Never been to school	22	22.0	7	7.0
	Primary level	26	26.0	14	14.0
	Secondary level	28	28.0	21	21.0

	Tertiary level	11	11.0	16	16.0
	Diploma	9	9.0	26	26.0
	Bachelor	4	4.0	14	14.0
	Master degree	0	0	1	1.0
	D, degree	0	0	1	1.0
Job		Mother		Father	
	Not work	84	84.0	4	4.0
	Legislator, senior official manager	3	3.0	16	16.0
	Technicians and associate professionals	6	6.0	13	13.0
	Clerks	4	4.0	7	7.0
	Skilled agriculture and fishery workers	1	1.0	18	18.0
	Plant and machine operator assemblers	2	2.0	23	23.0
	Service workers. shop, market sales workers	0	0	3	3.0
	Skilled agriculture and fishery workers	0	0	7	7.0
	Craft and related treads workers	0	0	2	2.0
	Plant and machine operator assemblers	0	0	7	7.0

*IQD (Iraqi Dinar)

Table one shows that the most significant number of respondents, 50%, were married at age 13-18 years. 64% of the total number were from rural areas, and according to family income, 60% of respondents had a family income range from 501- 1.000.000 IQD. 28% of women had a secondary education level; however, 26% of husbands had diplomas. Finally, 84% of women were housewives, and 23% of men were working as plant and machine operators' assemblers

Table 2: Obstetrical history of mothers.

Items		Freq.	Percent
Have fetus died during pregnancy			
	No	7	7.0
	First **trimester**	16	16.0
	Second **trimester**	18	18.0
	Third **trimester**	59	59.0
Have the child died under five years			
	No	70	70.0
	Yes	30	30.0
What reasons			
	Unknown	63	63.0
	Accident	11	11.0
	Rubella	13	13.0
	Hepatitis	7	7.0
	Deformities	6	6.0
Reviewing of health center during pregnancy			
	No	8	8.0
	Yes	92	92.0
Bad obstetrical history			
	No	40	40.0
	Abortion	39	39.0
	Neonatal death	16	16.0
	Stillbirth	5	5.0
	Unexpected fetus death	44	44.0

According to obstetrical history, 93% of women had died fetus 59% of them died in the third trimester. 30% of women had died children under five years of age. 63% of these events happened for different reasons, 63% were unknown, accidents caused 11%, infectious diseases caused 20%, and 6% caused deformities. The ordinary bad obstetrical conditions were 39% abortions, 16% neonatal death, 5% stillbirth, and 44% unexpected fetus death.

Table 3: Medical history of mothers.

Medical history	Father		Mother	
Medical Conditions	Freq.	%	Freq.	%
No	45	45.0	39	39.0
Hypertension	18	18.0	21	21.0
Diabetics	11	11.0	11	11.0
Anemia	9	9.0	12	12.0
Kidney diseases	3	3.0	7	7.0
Liver diseases	2	2.0	0	0
Asthma	9	9.0	8	8.0
Heart disease	3	3.0	2	2.0
Different blood type				
No	84	84.0		
Yes	16	16.0		
Using of medications				
No	27	27.0		
Yes	73	73.0		
Hereditary disease				
No	72	72.0		
Yes	28	28.0		
Take vitamins during pregnancy				
No	44	44.0		
Yes	56	56.0		
Take vaccines during pregnancy				
No	18	18.0		
Yes	82	82.0		
What is medication				
No	27	27.0		
NSAIDS	29	29.0		
Antimicrobial drugs	20	20.0		
Vit. A	12	12.0		
Anti-depressant	3	3.0		
Hormones	5	5.0		
Laxative	4	4.0		

Table three shows 61% of mothers had a medical history (hypertension, diabetes, anemia, kidney diseases, liver diseases, asthma, and heart diseases). However, 55% of fathers had the same medical history except for liver diseases. Also, there was 16% of parents had an incompatible blood group. According to history using medications, 73% of mothers have a history of medication use (NSAIDS, antimicrobial drugs, Vit. A, anti-depressant, hormones, and laxatives).

Table 4: Medical history of current children.

Feeding of child		Freq.	%
	Breastfeeding	31	31.0
	Artificial feeding	33	33.0
	Both	36	36.0
Have malnutrition			
	No	82	82.0
	Yes	18	18.0
Had previous abnormalities			
	No	87	87.0
	Yes	13	13.0
Had infection diseases			
	No	39	39.0
	Yes	61	61.0
Type of infectious diseases			
	No	39	39.0
	Scarlet fever	16	16.0
	Diphtheria	16	16.0
	Whooping cough	14	14.0
	Polio	1	1.0
	Measles	2	2.0
	Smallpox	2	2.0
	Hepatitis	10	10.0

Table four's findings reveal that 31% of children depended on breastfeeding, and 33% depended on artificial feeding. In addition. 18% had malnutrition, 13% had abnormalities, and 61% suffered from infectious diseases.

Table 5: Correlations between mortality of children and other factors.

Items		Have a child under 5 years	Infected with diseases	Medical history of the mother	Taken medication	Bad obstetric history
Dose the family have been died child under 5 years	Pearson Correlation	1	.744**	.116	.259**	.335**
	Sig.		.000	.250	.009	.001
Infected with diseases	Pearson Correlation	.744**	1	.053	.185	.201*
	Sig.	.000		.600	.066	.045
Medical history of the mother	Pearson Correlation	.116	.053	1	.012	.077
	Sig.	.250	.600		.906	.445
Taken medication	Pearson Correlation	.259**	.185	.012	1	-.044-
	Sig.	.009	.066	.906		.666
Bad obstetric history	Pearson Correlation	.335**	.201*	.077	-.044-	1
	Sig. (2-tailed)	.001	.045	.445	.666	

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

This table shows a significant correlation between the death of children under five years with infected children by diseases, the medical history of the mother, taking medications during pregnancy, and the bad obstetric history of mothers.

DISCUSSION

Table one shows that the greatest number of respondents 50%, were married at age 13-18 years. 64% of the total number were from rural areas, and according to family income, 60% of respondents had a family income range from 501- 1.000.000 IQD. 28% of women had a secondary education level; however, 26% of husbands had diplomas. Finally, 84% of women were housewives, and 23% worked as plant and machine operators' assemblers. Paul P. (2019) [7] confirmed this result in India; he found that the prevalence of morbidity and mortality were crucially higher among the births of women who married before 18 years of age, and there was a positive association (Paul, 2019) [7]. Many developing nations, particularly South Asian countries and Africa, could not reach the goal of MDG 4. moreover, the mortality of children under five years remains pervasive among lower-middle-income countries (Liu et al., 2016) [1]. Moreover, about 10 million reductions in under-five mortality are required to meet the Sustainable Development Goals (SDGs) target between 2018 and 2030 (Hug et al., 2018) [8]. Morbidity and mortality of under-five children are determined by a complex interplay of socioeconomic and environmental conditions (Bates et al., 2004; Eisenberg et al., 2007) [9,10]. Previous studies have indicated that socioeconomic and ecological vulnerabilities and adverse maternal health status increase the risk of early delivery and low weight at delivery (Imdad and Bhutta 2012; Ganchimeg et al. 2014) [11,12].

According to obstetrical history, 93% of women had died fetus 59% of them died in the third trimester. 30% of women had died children under five years of age. 63% of these events happened for different reasons, 63% were unknown, accidents caused 11%, infectious diseases caused 20%, and 6% caused deformities. The common bad obstetrical conditions were 39% abortions, 16% neonatal death, 5% stillbirth, and 44% unexpected fetus death. This result was very near to the finding by Singh and Sidhu in 2010; they found that 50-60% of all first-trimester pregnancy losses harbor a chromosomal abnormality, which leads to abnormal growth and development of the pregnancy. Most abnormal pregnancies fail in the first trimester (Singh and Sidhu, 2010) [13]. Many studies have also found multiple bad obstetric issues associated with under-5 child mortality (Uthman et al., 2008; Olusanya, 2011; Alam, Van Ginneken & Bosch, 2007) [14-16].

Tables three and four findings show that 61% of mothers had a medical history (hypertension, diabetes, anemia, kidney diseases, liver diseases, asthma, and heart diseases). However, 55% of fathers had the same medical history except for liver diseases. Also, there was 16% of parents had an incompatible blood group. Moreover, 31% of children depended on breastfeeding, and 33% relied on artificial feeding. In addition. 18% had malnutrition, 13% had abnormalities, and 61% suffered from infectious diseases. This result is similar to some researchers' findings; they found that children's mortality rate increases relatively with women's risk of having a chronic disease (Jølving et al., 2016) [17]. Moreover, other studies confirm this result by other studies; they said that chronic diseases might have different risk factors and clinical features, and therefore, the influence on pregnancy outcomes may differ (Ahmad & Samuelsen, 2012) [18].

According to history using medications, 73% of mothers have a history of medication use (NSAIDS, antimicrobial drugs, Vit. A, anti-depressant, hormones, and laxatives). Congenital disabilities significantly contribute to infant mortality (World Health Organization, 2020) [19]. This result is similar to the Stock & Norman study conducted in 2019; they found that using medication's potential impacts include increasing rates of miscarriage, stillbirth, fetal growth perturbations, and preterm birth. Thus, the evaluation of pregnancy treatments needs to be broad, including women whose pregnancies have not continued past the first trimester, and be of sufficient scale to recognize severe but rare events (Stock & Norman, 2019) [20].

CONCLUSIONS

The findings of this study show that

1. A high number of respondents 50% were married at age 13-18 years.

2. 64% of the total numbers were from rural areas.

3. 60% of respondents had a family income range from 501- 1.000.000 IQD.

4. According to obstetrical history, 93% of women had died fetus 59% died in the third trimester. 30% of women had died children under five years of age. 63% of these events happened for different reasons.

5. 61% of mothers had a medical history. However, 55% of fathers had the same medical history except for liver diseases. Also, there was 16% of parents had an incompatible blood group.

6. 73% of mothers have a history of medication use.

RECOMMENDATIONS

According to this study's findings, a high percentage of respondents had bad obstetric history and a bad prognosis of pregnancies, so this group of women needs to make a particular screening program to survey risks to keep them and their babies safe.

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