

# **The Effect of Gender Inequalities on Infant and Child Mortality in Turkey\***

## **I. INTRODUCTION**

It is a well-known fact that although the early age mortality rates have been declining globally the differentials by geographical regions, wealth, ethnicity/race, access and use of gender have been experienced within developed and developing countries as well as within the countries. The aim of this paper is to discuss the importance of gender inequalities as well as other socio-economic effects in infant and child mortality rates in Turkey. "Girls' disadvantage in early childhood mortality persists in all regions of the world and in the majority of countries with available data" and Yount<sup>1</sup> (2001) pointed out that although the literature focuses on South and East Asia, excess mortality of girls has been unexpectedly high in the Middle East. For example, El Badry (1969) estimated high sex ratios among children aged 0-14 years in the United Arab Republic, Turkey and Syria in 1969.

This paper focuses on gender differentials in infant and child mortality in Turkey, as a part of PhD thesis, which aims to expose the importance of cultural factors beyond the high early age mortality – that can not be exposed by conventional demographic methods- by using anthropological techniques.

In this paper, I will analyse the effects of mother's education level and wealth status of the family on the level of female and male children's mortality rates in Turkey by using the Turkey Demographic and Health Survey 2003 (TDHS-2003).

## **II. LITERATURE ON INFANT AND CHILD MORTALITY IN TURKEY**

Although Turkey has a long history of civil registration system, due to it is not well-establishment, surveys and censuses are used to estimate for early age mortality levels. Infant and child mortality rates have gradually declined in turkey according to the survey results mainly conducted by the Hacettepe University Institute of Population.<sup>2</sup> The above surveys were nationwide and covers urban/rural and regions of the country. The results of these surveys indicated the urban and rural residence is important for the country for

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<sup>1</sup> Yount, K. (2001), "Excess Mortality of Girls in Middle East in the 1970s and 1980s: Patterns, Correlates and Gaps in Research", *Population Studies*, 55, 291-308.

<sup>2</sup> 1968 Social Survey on Family Structure and Population Problems in Turkey; 1978 Turkish Fertility Survey (TFS); 1983 Turkish Fertility and Contraceptive Prevalence and Family Health Status Survey; 1988 Turkish Population and Health Survey; 1993 Turkey Demographic and Health Survey (TDHS), 1998 TDHS and 2003 TDHS

the survey periods. The rural mortality rates have been still continuing to relatively high to the urban areas. One of the important results of these surveys was the regional differences where east region is the highest mortality rates for children.

The infant mortality rate is called as 'Turkish puzzle' in the demographic literature due to its high levels when compare the adult mortality or child mortality of the other countries<sup>3</sup>. Most of the researchers emphasize this high level contradicts with the other socio-economic development indicators<sup>4</sup> for a country which has a rapid economic growth and modernisation process. Gürsoy<sup>5</sup> (1992) states that " *while infant mortality rate seems to be a simple health statistics that reflects material culture and environmental conditions, it is also a silent but meaningful indicator of a country's (or communities') life-style, of the value given to different generations, age groups and genders, and of many unspoken balances of power in that culture*".

Behar<sup>6</sup> (1999) mentioned that the reason of high early age mortality may be the result of un-internalisation of modernisation process or traditionally paid attention to children in the culture. Some authors<sup>7</sup> emphasised the importance of the power relations between age groups and generations, cultural norms, parents' lack of skills and ignorance or in some cases neglect of children. It is also pointed out that in some cultures child mortality can be in the realm of taboo.

The literature on the levels and trends of early age mortality in Turkey has mainly comes from the demographic surveys which are carried out by HUIPS between 1968 and 2003. The main reports of these surveys contain a section on infant and child mortality<sup>8</sup> and by using these data sets further analysis, master/PhD thesis, and working papers were conducted<sup>9</sup>. According to the results of surveys mentioned above, there is no differential

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<sup>3</sup> Gürsoy-Tezcan, A. (1992), "Infant Mortality: a Turkish Puzzle", Health Transition Review, 2(2).

Behar, C., Courbage, Y. and Gürsoy, A. (1999), "Economic Growth or Survival? The Problematic Case of Child Mortality in Turkey", European Journal of Population 15.

<sup>4</sup> Tunçbilek, E. Üner, S. and Ulusoy, M. (1988), "Breastfeeding in Turkey: The Demographic, Socio-economic Aspects and Relationship with Infant-Child Mortality", Turkish Journal of Population Studies, 4, pp.7-39.; Bulut, A. Gökçay, G. Neyzi, O. and Shorter, F. (1991), "Perinatal, neonatal and under-5 mortality in Istanbul based on representative samples of Burial Records" in Seminar on Measurement of Maternal and Child Mortality, Cairo.

<sup>5</sup> Gürsoy-Tezcan (1992)

<sup>6</sup> Behar C. (1999)

<sup>7</sup> Scrimshaw, S. (1978), "Infant mortality and behaviour in the regulation of family size", Population and Development Review, 4(3),383-403.; Akşit, B. (1993), "Rural Health Seeking: Under Fives in Sivas, Van and Ankara", in Stirling P (ed.) Culture and Economy: Changes in Turkish Villages, pp.156-171, The Eothen Press, England.; Behar C. 1999,

<sup>8</sup> HUIPS, 2004; HUIPS, 1999; UIPS 1994, HUIPS, 1989; HUIPS, 1987; HUIPS, 1979

<sup>9</sup> Hancıoğlu and Türkyılmaz, 2001; Türkyılmaz, 1998; Wunsch and Hancıoğlu, 1997; Riddle, 1997; Hancıoğlu and Akadlı-Ergöçmen, 1992, Hancıoğlu, 1991, Akadlı and Tunçbilek, 1987; Tunçbilek, Üner and Ulusoy, 1982

between female and male children. Akşit<sup>10</sup> (1997) stated that although the existing data on sex differential in infant mortality indicate that there is no discrimination against female infants in turkey, the absence of the discrimination seems problematic. In her analysis, she revealed a weak but statistically significant relationship between sex and nutritional status of infants in the favour of male child. She pointed out the need further research for meaningful discussion for the absence/presence of discrimination against female infant and children.

After analysing the neonatal and post-neonatal mortality rates, Cerit and Akadlı (1988) declared the post-neonatal mortality rates were higher than the neonatal one for the 1979-82 periods. They showed that 142 male infants die for every 100 female infants in the neonatal period and 126 male infants die for every 100 female infants. The authors indicates the results can be explained by a greater number of sex-linked diseases for male infants are higher than female infants and also cultural factors such as underreporting of female infants deaths. This difference is higher in the urban areas and it can be considered as relatively high underreporting of female infants. They also pointed out that there is no significant difference in having medical treatment before death between female and male infants. However, it differs according to the neonatal and post-neonatal periods. Male infants had more medical treatment than female infants during post-neonatal period and vice versa. (Tunçbilek, 1988).

## **II. DATA AND METHODS**

Turkey Demographic and Health Survey 2003 (TDHS-03) were conducted under the DHS umbrella and were nationally representative. In this survey, the information on infant and child mortality, family planning, maternal and child health were collected. In order to provide information on levels and trends on fertility, infant and child mortality, family planning and maternal and child health the THDS-03 was conducted at the national level, by urban-rural residence, and for each of the five regions in the country. The child mortality rates were calculated by using the birth history data obtained from the women's questionnaire.

### ***Excess female mortality index***

In order to measure the sex differences in childhood mortality, empirical standard based population where the discrimination against girls appears have been small, are used to develop an index of excess female mortality by Hill and Upchurch. The authors aimed to

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<sup>10</sup> Akşit and Akşit (1997)

measure the gender differences in infant and child mortality by using the DHS data and they developed an index for based on the child mortality by sex. "Differences between the observed ratios of female to male child mortality, and standard level given the observed male under-5 mortality as the entry variable provide an index for female disadvantage in child mortality. Thus, for country  $i$ , age range  $x, x+n$ , the index  $I_{i,(x, x+n)}$  of female disadvantage is given by

$$I_{i,(x, x+n)} = ({}_nq_x^f / {}_nq_x^m) - (({}_nq_x^f / {}_nq_x^m)^s | {}_5q_0^m)$$

where  $(({}_nq_x^f / {}_nq_x^m)^s | {}_5q_0^m)$  is the standard ratio form expected sex ratios of infant, young child and under-5 mortality for specified levels of male under 5 mortality from the historical experience of north western Europe, 1820-1964. The selection of these life tables is based on their quality, long time series and cover a wide range of overall mortality levels. Under-5 mortality is used as a control variable for the index.

A positive value of  $I$  indicates a female disadvantage (higher female to male mortality than expected given the overall level of male under-5 mortality) and negative value indicates a female advantage. In their analysis, they used the DHS data for 35 countries and calculated index for female advantage. The results indicated that according to the DHS data girls, have a widespread advantage. They also pointed out that the girl disadvantage is largest for the young children (1-4) age group and added that in this age range, care of the child is more important than the genetic factors in determining mortality risks, suggesting the importance of 'gender' as opposed to 'sex' factors in the girl disadvantage. It is also emphasised that the disadvantages are largest in the Middle Eastern Crescent.

Table 1 shows the infant and under-five mortality by gender and observed mortality rate ratios (females versus males) for 1993,1998 and 2003 for Turkey. Hill and Upchurch in their study where they compare the female and male mortality rates stated that girls have a widespread advantage according to the DHS data. However, they found the opposite pattern by using the standard historical level of female advantage for a given level of male under-5 mortality. Similar results have experienced in Turkey within 10 years period by using the index of female excess mortality. The findings show that all the values of  $I$  for three age groups are positive and excess female mortality is highest in the 1-4 age groups within the 10 years period. In the literature it is pointed out in the 1-4 age groups child care is more important than the genetic factors in determining mortality risks. Although there are some variations by years, the 1-4 age groups have the highest index value for each survey for each survey periods. Hill and Upchurch also suggest the

importance of gender as opposed to sex factors in the girls' disadvantage (Hill and Upchurch, 1995)<sup>11</sup>.

### **Child Mortality Index**

Child mortality index is the ratio of the proportion dead among children of a woman to the same proportion among children of all women in the same marital duration. This index is a crude indicator of early age mortality rather providing information on the net risks of dying. But, it reflects the relative prevalence of mortality among children of women in different marital duration.

The mean of child mortality index for all children by age groups of mother shows that index is high for the younger mothers. Although these values for both female and male children reduce while the age of mother increase, the reductions by age of mother for female children are lower than male children.

In the literature most of the studies for child mortality are mainly concentrates on the level of development and education level of mothers. In this study, the results of child mortality index were analysed according to the education level of mothers and wealth index. The calculated child mortality index for all, female and male children by wealth index and education level of mothers is given in Table 2 and 3.

However, the differences are not seen as significant, the important point from the table is the difference between the categories of wealth. The highest value for both sexes is the poorest one, while female children have continued for disadvantage for the second group. It is expected that the increase in the welfare status of the family reduce the child mortality index. But the results of the table pointed out the effects of the improvement are different for female and male children. For example, the lowest value of the index is in the richest group for both sexes but female children are still disadvantaged in comparing to male children. These results can be taken as an evidence of the importance of the gender of the children.

The same pattern is seen for the relation between the child mortality index and education of mothers. The increase in the level of education of mothers differently affects the CMI for different sexes (Table 3).

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<sup>11</sup> Hill and Upchurch (1995), Population and Development Review 21(1).

It should be noted that these differences of CMI for all children found that they are statistically significant<sup>12</sup> for wealth index categories and education categories, but not significant by gender.

The studies on the mortality rates mainly related with the economic development. Caldwell (1986)<sup>13</sup> showed that the correlation between level of female education and infant mortality and low correlation between average income and health indicators. Obermeyer emphasises the variation of women's position and demographic change within the region, since she labelled that attributing the poor health conditions in the Middle East to women's position is not appropriate because it overlooks crucial factors of variability and ambiguities inherent in the normative structure of a society (Obermeyer,1992)<sup>14</sup>. The research from Middle East countries has been overlooked and the assertions that the biased allocation of food contributed to girls' excess mortality in the region (Waldron, 1987) but the main consensus is that the parental bias in the allocation of preventive and curative care rather than the allocation of food is the major cause of girl's excess mortality globally.

### **Nutritional status, preventive and curative care for children**

The DHS data give information about the living children's health status and use of health services it can be argued that female disadvantage is eliminated by selection effect. Nutritional status, food intake, preventive and curative care were used as a proximate determinants of girls' excess mortality. GEM is attributed to the parents' behaviour against girls and boys and nutritional status is the most common measure of the bias of parents. According to WHO recommendation, three indices are used for the evaluation of nutritional status of children: *stunted* (short for their age), *wasted* and *underweight*. Children, who are more than two standard deviation below the median of the reference population in terms of height-for-age are considered as stunted or chronically malnourished. It reflects the outcome of the failure to receive adequate balanced nutrition over a long period of time and is also affected by recurrent and chronic illness. Children who are more than two standard deviations below the median reference population in terms of their weight-for-height are considered as too thin or wasted or acutely malnourished. Children whose weight-for-age is below minus two standard deviations from the median of the reference population are classified as 'underweight'. The results of the three indices are related to the economic condition of the family and

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<sup>12</sup> ANOVA test and T test are considered.

<sup>13</sup> Caldwell, J.C. (1986), "Routes to Low Mortality in Poor Countries", Population and Development Review, 12 (2).

<sup>14</sup> Obermeyer, C.M. (1997), "Qualitative Methods: A Key to Better Understanding of Demographic Behaviour?" Population and Development Review, 23(4).

also can be read as ignorance of children. Table shows the preventive and curative care by gender from TDHS-2003. Although the differences in immunisation are small, the coverage for individual vaccination was slightly lower for female children than male children.

Table 4 shows female and male percentage of stunted, wasted and under weight. The ratios of percentages close to 1 may not represent real differences. The ratio of female to male children pointed out that stunted and underweight ratios are higher than 1 indicating the disadvantage for female children.

### **Having an identity card**

Information from the data related to gender differences in Turkey is the percentage of having an identity card. The percentages for female and male children are not different for the first year of life, but differ for the following years indicating an advantage for male children. These percentages are higher in the rural areas and the East region of the country (Table 6).

### **III. CONCLUSION AND DISCUSSION**

According to the economic theories children are seen as investment goods. The return mainly is child labour services to the household and transfers of resources and care for old aged parents. The work opportunities of girls and boys within and outside of house and the marriage arrangements affect the investment of girls and boys differently. Therefore, in the societies the investment of girls can be low if they settle with husband's family and care for their in-laws while sons and their wives care for parent (Klasen,1999)<sup>15</sup> In the case of the societies with dowry payments, poor female economic opportunities and strong family obligations for old age support the gender bias in mortality among children is higher than the other societies.

In most of the analysis about excess female mortality (EFM) concentrated on the urban rural area and particularly pronounced in rural areas. Apart from the type of place of residence and regional differences the class differences have important information about EFM. Family structures and demographic characteristics are also one of the important determinants of gender bias in mortality. For example, the higher parity of girls or boys can affect the EFM. Another point is the role of state to decrease the EFM by some

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<sup>15</sup> Klasen, S. (1999), "Gender Bias in Mortality in a Comparative Perspective", a paper presented for Geröam Conference, September 20-24, Toronto, Canada.

intervention programs such as support of families, less discriminating support programs etc (Klasen, 1999).

Most of the studies on early age mortality have focussed on the mother's education and these studies show the negative relation between mother's education and childhood mortality. These studies overlooked the social relations within the household, and labelled women as the main responsible for survival of child (Caldwell, 1979).<sup>16</sup>

Hill and Upchurch suggest that the health related variables do not capture the societal processes that contribute to the continuation of gender based mortality differentials in the developing countries. They suggest exploring the effects of socio-cultural and health factors should be explored by further studies, and these studies have to employ individual-level analyses and make use of information on individual outcomes particularly cause of death data (Hill and Upchurch, 1995).

The health care, type of facility visited, type of treatment and provider, time to first treatment, number of treatments are important indicators for preventive and curative care for children. The duration of breastfeeding, the allocation of culturally preferred foods affect the differences in nutritional status and risk of mortality of the children. It is not an easy task to identify the gender differences in breastfeeding by using data. The existing customs related to breastfeeding practices for boys and girls are important factors.

Many demographic studies on infant and child mortality emphasised the importance of cultural factors which are not captured by the demographic data. The behaviour of parents to their children, mother's and father's conceptualisation of their children diseases, health seeking behaviour and the effects of grand parents and communities' on health seeking, the factors affecting to take treatment for diseases children, family relations and women's status are important to explain the differences between female and male children. The findings of this paper using the data indicates that education level of mothers and welfare status of the family affect the child survival, but it is not sufficient to explain how these factors affect female and male children.

In the following step of this study, the in-depth interviews with the families will be conducted to expose is there are difference or not for gender. The perceptions of household members for children's value and health; women's status are important

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<sup>16</sup> Caldwell, J.C. 1979, "Education as a factor in mortality decline: An examination of Nigerian data", *Population Studies*, 33 (3), 395-413.



factors for child survival. The draft version of the guideline for in-depth interviews is given in the appendix. When we think about the economic theories for children, the women's status is also an important factor for the families to have a female child. According to the TDHS-2003 data, 27% of women were working during the survey period, and 39% of women explained that they accept one justification for husband's beating. Therefore, it should keep in mind that in a country where women's status is lower, there is a question for female children's survival rates.

**Table 1: Infant, 1-4, and under-five mortality by sex, observed and standard F/M mortality ratios and (O-S) 'female mortality disadvantage' Turkey 1988, 1993-1998-2003**

	infant			child			under-5			F/M infant	F/M child	F/M under-5	I (0,1)	I (1,4)	I(0,5)
	male	female	F/M	male	female	F/M	male	female	F/M						
1993	70,5	66	0,94	12,4	13,6	1,10	82	78,7	0,96	0,788	0,882	0,814	0,148	0,215	0,146
1998	51	45	0,88	10,4	13,4	1,29	60,9	58,3	0,96	0,781	0,862	0,802	0,101	0,426	0,156
2003	39	36	0,92	9	9	1,00	48	45	0,94	0,777	0,849	0,793	0,146	0,151	0,144

**Table 2: Child Mortality index according to the wealth index for all, female and male children, THDS-2003**

Mean value of wealth index	Total children	Female children	Male children
Poorest	1,2360	1,6167	1,6046
Poorer	0,7514	1,1171	0,9152
Middle	0,5634	0,7765	0,8163
Richer	0,5316	0,6869	0,7863
Rishest	0,3270	0,4307	0,3446
Total	0,6239	0,8665	0,8356

**Table 3: Child Mortality index according to the education of mothers for all, female and male children, THDS-2003**

Mean value of wealth index	Total children	Female children	Male children
No education	1,1914	1,4667	1,4438
Primary education	0,6862	0,9276	0,8961
Secondary education	0,3929	0,4604	0,4344
Higher education	0,2821	0,4838	0,4465
Total	0,6892	0,9301	0,9001

<b>Table 4: Preventive and Curative Care by Gender, TDHS 2003</b>			
	Male	Female	F/M
BCG	89,0	86,4	0,971
DPT 1	87,4	89,6	1,025
DPT2	78,0	73,5	0,942
DPT3	66,3	62,4	0,941
Polio 1	95,8	93,6	0,977
Polio 2	85,1	80,4	0,945
Polio 3	73,9	64,0	0,866
Measles	80,0	78,8	0,985
All	57,7	50,6	0,877
None	27,0	29,0	1,074
among children with symptoms of ARI and/or fever, percentage for whom treatment was sought from a health facility/provider	43,8	37,9	0,865
percentage breastfeeding within 1 hour of birth	53,7	54,2	1,009
percentage breastfeeding within 1 day of birth	83,2	84,0	1,010
percentage ever breastfed	96,4	97,3	1,009
mean number of day feeds	6,2	6	0,968
mean number of night feeds	5,1	4,7	0,922
percentage breastfed 6+ times in last 24 hours	92,5	88,5	0,957

<b>Table 5: Percentage of Girls versus Boys Stunted, Underweight and Wasted, TDHS-2003</b>			
height for age (percentage below -2sd) stunted	10,9	13,6	1,248
weight for height (percentage below -2sd) wasted	1	0,4	0,400
weight for age (percentage below -2sd) underweight	3,2	4,7	1,469

**Table 6 :Percentage of having an identity card for children according to the gender and age, 2003 TDHS, Turkey**

<b>Age of child</b>	<b>Sex of child</b>	<b>No</b>	<b>Yes</b>
0	Male	0,52	0,52
	Female	0,48	0,48
1	Male	0,48	0,52
	Female	0,52	0,48
2	Male	0,42	0,53
	Female	0,58	0,47
3	Male	0,52	0,53
	Female	0,48	0,47
4	Male	0,59	0,48
	Female	0,41	0,52

Appendix:

## **GUIDELINE FOR IN-DEPTH INTERVIEW FOR INFANT AND CHILD MORTALITY**

### **Personal characteristics**

- Age
- Education
- Work/occupation
- Marriage

### **Household characteristics**

- Family structure
- Household facilities
- Environment conditions
- Health conditions
- Relation to health facilities
- Economic conditions of the household
- Decision making process in the household

### **Children' value**

- Registration of child's birth and death
- Value of children
- Preference of son and daughter
- Expectations from children (male and female children)
- Schooling and working for children

### **Children's health**

- Perception of diseases for family
- Prevalent diseases for children
- Recognition of diseases
- Perception of family for diseases
- Traditional and religious treatments
- Taking medical treatment
- Decision for medical treatment
- Vaccination for children
- Nutrition for children
- Breastfeeding practices

### **Women's status**

- Perception for women's education
- Perception for women's labour force participation
- Perception for marriage (early marriage etc.)
- Violence against women