

DATA FOR DEATH REGISTRATION SYSTEM: AN ACCURACY EVALUATION OF THE DATA OF DEATH CAUSES IN ÇANAKKALE, TURKEY

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ABSTRACT

Objective: This research aims to evaluate the registration system for deaths in Turkey, starting from the death records from Çanakkale Province between 2007 and 2012.

Material and Method: This study used the death records of Çanakkale Public Health Directorate from the years 2007 to 2012. Within this period, 15,154 causes of death were re-coded using the ICD-10 Procedure Coding System. The data on deaths between 2001 and 2008 was obtained from the Turkish Statistical Institute (TSI).

Results: Among the top three causes of death were circulatory and respiratory system diseases and cancers. When the distribution of causes of death in Çanakkale province between 2001 and 2008 is examined, circulatory system diseases are in first place, with cancers in second

place. This study, generated by examining the death records of the Public Health Directorate shows that causes of the 20% of the deaths happened in Çanakkale Province between the years 2007 and 2012 are not defined anywhere. With further investigations cardiopulmonary arrest, senility and fate are observed among these causes.

Conclusion: With regulation of the death registration system in recent years, there has been some improvement; however, it is observed that there are still significant gaps. Training to develop the knowledge, skills and attitude of clinicians and health managers as regards recording deaths correctly is necessary. There is a need for death records to determine health policies in our country, and they need to be used more, especially by policymakers.

Keywords: Causes of death, mortality, death registration system, Çanakkale, Turkey. *Nobel Med* 2016; 12(3): 39-46

ÖLÜM KAYIT SİSTEMİ: ÇANAKKALE ÖLÜM KAYITLARININ DOĞRULUĞUNUN DEĞERLENDİRİLMESİ, TÜRKİYE

ÖZET

Amaç: Bu araştırmanın amacı Çanakkale ilinin 2007-2012 yılları arasındaki ölüm kayıtlarından yola çıkılarak Türkiye'deki ölüm bildirim sisteminin değerlendirilmesidir.

Materyal ve Metot: Bu çalışmada Çanakkale Halk Sağlığı Müdürlüğü'nün 2007-2012 yılları arasındaki ölüm kayıtları kullanılmıştır. Bu dönem içinde görülen 15.154 ölüm nedeni ICD-10 kodlama sistemine göre kodlanmıştır. 2001 ve 2008 yılları arasındaki ölüm verileri Türkiye İstatistik Kurumu'ndan(TUIK) alınmıştır.

Bulgular: Ölüm nedenlerine bakıldığında ilk üç sırada dolaşım ve solunum sistemi hastalıkları ile kanserler bulunmaktadır. Çanakkale ilinde 2001 yılı ile 2008 yılları

arasında meydana gelen ölüm nedenlerinin dağılımına bakıldığında dolaşım sistemi hastalıklarının birinci sırada, kanserlerin ikinci sırada olduğu görülmektedir. 2007-2012 yılları arasında görülen ölümlerin yaklaşık %20'si bilinmeyen nedenlere bağlıdır. Ölüm nedenleri arasında kardiyopulmoner arrest, senilite ve ecel gibi nedenler gözlenmiştir.

Sonuç: Ölüm kayıt sisteminde son yıllarda yapılan yeni düzenlemelerle iyileşme eğilimi olmakla birlikte ilerlemenin yavaş olduğu gözlenmektedir. Sağlık yöneticilerinden, hekimlere ve tüm sağlık çalışanlarına ölüm kayıtlarının önemi ve kullanılması hakkında bilgi ve beceri yanında tutum geliştirmeye de yönelik eğitimler gereklidir. Ölüm kayıtları ile ilgili hem ulusal hem de yerel düzeyde daha çok çalışmaya, tartışmaya ve daha da önemlisi sağlık ve sosyal politikacılar tarafından ölüm istatistiklerinin kullanılmasına ihtiyacımız vardır.

Anahtar kelimeler: Ölüm nedeni, mortalite, ölüm kayıt sistemi, Çanakkale, Türkiye. Nobel Med 2016; 12(3): 39-46

INTRODUCTION

Death historically has been a central point of reference in social life and in recent years it has become an important factor in monitoring health services.¹ According to the World Health Organization (WHO), of 56 million deaths globally, 38 million are not recorded.² Correct completion and reporting of death records is still among the most important problems for health systems.

Death records in Turkey are kept by the physicians through Public Health Offices. These forms are then sent to Turkish Statistical Institution (TSI) for statistical evaluation. TSI also monitors the death statistics through the electronic population registration system. Death cases have to be reported to the population registry offices by the institution who determine the death. TSI organizes and publishes the death statistics annually. In recent years, some progress has been made in the death registration system in Turkey; however, there are still inadequacies. For example; 390,121 deaths have been reported according to TSI's statistics; however, the number of deaths that occur in a year are estimated to be about 450,000.³⁻⁹ The inaccuracies in death records are believed to be not only quantitative but also qualitative. To prove these inaccuracies, Public Health death records should be examined thoroughly and compared to the TSI statistics. Death records have not been evaluated with this point of view in our country yet.

The aim of this research is to evaluate the death registry system in Turkey. For this purpose, the data was taken from the death registration records between the years 2007 and 2012 kept by the Public Health Directorate of Çanakkale Province located in the western region of Turkey. Also, the TSI's death statistics on the causes of death for the years 2001-2008 were used to analyse the flaws in the death records.

MATERIAL AND METHOD

Study Population

This study was conducted in Çanakkale Province located in the west of Turkey. There are 12 districts in the province, with the city of Çanakkale located in the capital district of the same name. The total population of the province was 502,328 (50.7% male and 49.3% female) in 2013. The urban population was 42.7% with 12.7% of the population above the age of 65. The total fertility rate was 1.57 with higher priority for the elderly population and their problems in towns. The infant mortality rate was 7.5‰ with a crude mortality rate of 8.3‰ in 2014.^{3,4} Life expectancy was 76.3 years for males and 79.5 years for females in 2012.¹⁰

The Organization Of Research Data And The Death Registration System

The aim of this study is to evaluate the death registration system in Turkey and for this purpose, death records in Çanakkale were examined. In order to clarify this

article, first the registration system in Turkey then how these data are organized will be explained.

Death Reporting Systems

The data regarding deaths in Turkey has been kept by the TSI since 1931. TSI and the Ministry of Health has been renewing the death registration system since 2005 to ensure compliance with the European Union. This new system has been used since 2009. The Central Civil Registration System (MERNIS) studies has been started to use in districts 2000 years and it has been expanded into 923 districts and national center as on-line since 2002. Thanks to this system, TSI has been able to keep a record of population statistics since 2007.³⁻¹¹ Death records have been kept via the electronic population database with MERNIS system since 2009 and death notifications have been made electronically since 2013.¹²⁻¹⁷

Information about deaths in Turkey are organized by death certificates filled by the physicians and through the population registration system by the TSI. Deaths must be reported to population directorates.

Death registration in Turkey covers all cases of death seen by physicians in all settlements with a physician, in addition to provincial and district centres. In villages without physicians, village headmen fill in the death certificates. Since 2013 death registration has been made electronically using the 'Death Registration System'(DRS). Death registration is completed by hospitals, family health centres, municipal physicians and forensic institutions. The death certificate includes information on cause of death, residential address, gender and age. The death certificates are communicated to the TSI under the control of Public Health Directorates. Information sent to the institute is coded according to the ICD-10 system and published yearly.¹⁴⁻¹⁷ While the data presented under the auspices of this research belongs to the old system (up until 2008), from 2009 it belongs to the new data collection system.

Data Collection

Data in this research study was obtained from two different sources. First are the death data of the years 2007-2012 of the Çanakkale Public Health Office. This information has been obtained from the death certificates filled by physicians. Death data was taken from the Public Health directorate as raw data in Excel files and was then coded according to the ICD-10 coding system by the researchers. Second source of data was the death statistics of Çanakkale between the years 2001 and 2008 published by the TSI. The death

documents prepared by the Public Health Offices are sent to the TSI for statistical evaluation in Turkey. The causes of death until 2008 are given in the database where the TSI's official website is located. The TSI prepared and printed causes of death according to ICD-8 and published the information on their website using (List of 50 causes for tabulation of mortality) 50 international disease classifications until 2008. The data after 2009 is still being organized because of the transition to the ICD-10 coding system in 2009. The causes of death, the TSI classified according to the list of 50 causes for tabulation of mortality were coded according to ICD-10 by the researchers.

Coding the death data according to the ICD-10 coding system was done by public health specialists who were also medical doctors. 15,154 causes of death between the years 2007 and 2012 were examined one by one and recoded according to the ICD-10 four-character subcategories coding system and 274 disease codes were obtained. The causes of death in four-character subcategories are grouped in (21 chapters) as main causes of death to be evaluated easier.¹⁸

At this stage, 274 causes of death were identified and these codes were grouped according to the Four-character subcategories (3-stage) and basic disease groups (21 Chapters). Final causes of death were collated as Group-1 (Communicable Diseases, Maternal Causes, Perinatal Causes, Nutritional Deficiencies), Group-2 (Non-communicable Diseases; Cardiovascular System Diseases; Respiratory System Diseases; Digestive System Diseases; Endocrine, Nutritional and Metabolic Diseases; Sense Organ Disorders; Genitourinary System Diseases; Malignant Neoplasms; Musculoskeletal Diseases and Neurologic Disorders; Neuropsychiatric Disorders; Mouth and Dental Health Disorders) and Group 3 (Injuries; intentional and unintentional injuries and External Causes).^{8,18} Causes of death such as cardiac arrest, respiratory arrest, cardiopulmonary arrest and old age were found between R00-R99 located in the disease group 'symptoms, signs and abnormal clinical and laboratory findings, not classified elsewhere'. The research presents basic causes of death and findings from disease groups.¹⁸

Statistical Analysis

Data obtained from Çanakkale Public Health Directorate were analysed using the SPSS software version 19.0. Descriptive statistics (frequencies, percentages, means, standard deviations) were used to describe groups of numerical data and the basic features of the data. Figures were designed and presented in Excel Software. The deaths that occurred in Çanakkale between the

Table 1. Distribution of deaths by age and gender, 2007-2012, Çanakkale, Turkey												
	Years											
	2007		2008		2009		2010		2011		2012	
Population ⁶	476.128		474.791		477.735		490.397		486.445		493.691	
CDR (‰)	3.8		4.0		4.3		5.3		6.8		6.9	
ASMR (‰)	4.2		4.5		4.7		5.8		7.2		7.3	
Age	Mean±SD		Mean±SD		Mean±SD		Mean±SD		Mean±SD		Mean±SD	
Both of sex	70.3±16.9		70.7±17.3		69.9±18.4		72.9±15.9		73.7±15.8		74.1±15.6	
Male	68.5±16.8		69.1±16.9		67.9±19.1		71.0±16.2		71.4±16.6		72.2±15.6	
Female	72.6±16.6		72.9±17.4		72.4±17.1		75.1±15.2		76.5±14.3		76.4±15.4	
p*	0.0001		0.0001		0.0001		0.0001		0.0001		0.0001	
Sex	n	%	n	%	n	%	n	%	n	%	n	%
Male	1020	56.1	1131	58.9	1146	55.4	1403	53.8	1813	55.0	1859	54.0
Female	799	43.9	790	41.1	921	44.6	1203	46.2	1484	45.0	1585	46.0
Cause of death												
Group 1	53	2.9	62	3.2	172	8.3	151	5.8	187	5.7	172	5.0
Group 2	1308	71.9	1349	70.2	1629	78.8	1920	73.7	2493	75.6	2587	75.1
Group 3	6	0.3	2	0.1	36	1.7	31	1.2	28	0.8	28	0.8
Unknown	452	24.8	508	26.4	230	11.1	504	19.3	589	17.9	657	19.1
Total	1819	100.0	1921	100.0	2067	100.0	2606	100.0	3297	100.0	3444	100.0

*: Independent Sample T test **Group I:** Communicable, Maternal Causes, Perinatal Causes and Nutritional Deficiencies **Group II:** Noncommunicable diseases; Cardiovascular System Diseases, Respiratory System Diseases, Digestive System Diseases, Endocrine, Nutritional and Metabolic Diseases, Sense Organ Disorders, Genitourinary System Diseases, Malign Neoplasms, Musculoskeletal Diseases and Neurologic Disorders, Neuropsychiatric Disorders and Mouth and Dental Health Disorders. **Group III:** Injuries; Intentional and unintentional injuries. **CDR:** Crude deaths rate [(Deaths number / Population number)*1000] **ASMR:** Age standardized mortality rate (‰) **SD:** Standart deviation.

years 2007 and 2012 are classified according to gender and main disease groups by year. Crude death rates according to years and age-specific standardized death rates were calculated. The 2014 population of the Çanakkale Province was taken as standard population during the calculations of the age-specific standardized death rates. The study was approved by the Çanakkale Onsekiz Mart University Clinical Research Ethics Committee dated 28.03.2013 and reference numbered 2013/40. Written permission was also obtained from the Çanakkale Public Health Directorate for scientific publishing death registration data (Ref: 30.05.2014 dated and 56135616/042-34 numbered).

RESULTS

This research covered 15,154 death records from Çanakkale Province between 2007 and 2012. Of the deaths, 55.2% applied to the male gender and 44.8% to the female gender. The average mean age of death for women is higher than for men and this difference was found to be statistically significant ($p < 0.05$). When causes of death are examined, it is observed that between 70 to 75% of deaths are linked to diseases in the second

group. However about 20% are linked to unknown causes (Table 1).

When the distribution of male and female deaths is investigated according to basic disease groups, circulatory system diseases have first place for both genders. This disease group is followed by respiratory system diseases and cancers (Table 2). Deaths with no description and unknown causes showed a decreasing trend in men and women from 2007 to 2012, from around 25% to 19%.

According to the data obtained from TSI, Çanakkale Province between 2001 and 2008, circulatory system diseases are in first place with cancers observed in second place (Table 3). This table was prepared from TSI data. For the years 2007 and 2008 in particular, there are differences for the number of deaths from the Public Health Directorate. This situation, mentioned separately in the discussion section, shows the discrepancies in data between the institutions.

DISCUSSION

In the present study, we found that circulatory system, respiratory system diseases and cancers are in the

Table 2. Leading causes of death in males and females by years and basic disease groups, 2007-2012, Çanakkale, Turkey

Cause of death	Years											
	2007		2008		2009		2010		2011		2012	
	F*	M*	F*	M*	F*	M*	F*	M*	F*	M*	F*	M*
Certain Infectious and Parasitic Diseases (A00-B99)	0.3	0.4	0.8	0.4	2.2	2.5	2.3	2.4	1.2	1.8	1.4	1.9
Neoplasms (C00-D48)	9.1	15.3	9.0	17.5	7.3	11.0	7.5	11.4	7.1	14.6	7.4	14.7
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50-D89)	0.3	---	0.5	---	0.4	0.3	0.1	---	0.0	0.1	0.1	0.1
Endocrine, Nutritional and Metabolic Diseases (E00-E90)	0.4	0.5	0.8	0.7	1.3	1.2	1.4	0.4	0.7	0.8	0.9	1.1
Mental and Behavioral Disorders (F00-F99)	0.4	0.1	0.4	---	1.6	0.1	1.5	0.1	0.9	0.2	1.4	0.5
Diseases of the Nervous System (G00-G99)	0.3	1.0	0.1	0.7	0.2	1.3	0.3	1.4	0.5	2.0	0.4	1.2
Diseases of the ear and mastoid process (H60-H95)	---	---	0.0	---	0.0	---	0.1	---	0.0	---	0.0	---
Diseases of the Circulatory System (I00-I99)	39.8	31.2	39.6	30.2	52.3	41.1	47.7	40.7	51.8	40.5	48.1	38.2
Diseases of the Respiratory System (J00-J99)	17.3	20.5	14.7	19.0	11.5	22.2	11.8	15.4	12.3	16.3	13.2	16.9
Diseases of the Digestive System (K00-K93)	1.6	1.8	1.4	1.9	3.0	2.3	1.8	2.6	1.5	1.3	1.6	1.5
Diseases of the skin and subcutaneous tissue (L00-L99)	---	---	---	---	---	---	---	---	---	---	---	0.1
Diseases of the Musculoskeletal System and Connective Tissue (M00-M99)	---	---	---	---	0.1	---	0.1	0.1	---	---	---	---
Diseases of the Genitourinary System (N00-N99)	3.6	2.5	2.0	2.3	3.8	3.6	4.5	3.0	3.0	3.0	3.6	2.9
Pregnancy, childbirth and the puerperium (O00-O99)	---	---	---	---	---	---	---	---	---	---	---	---
Certain Conditions Originating in the Prenatal Period (P00-P96)	1.3	2.0	2.0	2.1	1.3	2.6	0.9	1.3	0.9	1.5	0.8	1.1
Symptoms, Signs and Abnormal Clinical and Laboratory Findings, Not Elsewhere Classified (R00-R99)	25.2	24.6	28.2	25.2	12.9	9.7	18.5	20.0	18.9	17.0	19.2	18.9
Injury, Poisoning and Certain Other Consequences of External Causes (S00-T98)	0.4	0.1	---	---	0.9	0.9	0.9	0.7	0.8	0.3	0.8	0.3
External causes of morbidity and mortality (V01-798)	0.1	---	0.1	0.1	0.9	0.8	0.4	0.4	0.3	0.3	0.4	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*: Colon percent F: female M: male

first three leading death causes in men and women between the years 2007 and 2012. "Symptoms, Signs and Abnormal Clinical and Laboratory Findings, Not Elsewhere Classified (R00-R99)" causes of death have a share of 20% (Table 2). Circulatory system diseases and cancers are the main causes of death according to the TSI's causes of deaths between the years 2001 and 2008 (Table 3).¹⁵ When the death statistics for Çanakkale province from 2007 to 2012 are investigated, there is a similarity to global statistics.^{10,19-27}

The National Burden of Disease and Cost Effectiveness Project in our country provided similar results to this study. This study worked on the disease burden in death records from 2000; while the top three causes of death for men in 2000 were ischemic heart disease, cerebrovascular causes and chronic respiratory diseases (COPD), for women the top three causes were ischemic heart disease, cerebrovascular diseases and perinatal causes.^{8,28-30} In our country, an interesting study related to causes of death was completed in Kocaeli in 2004. In this area, where there is intense industrial activity, cancers were seen to cause 33% of all deaths in the study area.³¹ In a record-based study

in Edirne comparing premature deaths in 2004 and 2008, the leading causes of death were circulatory system diseases, cancers, undefined circumstances, accidents and respiratory system diseases. The study found undefined circumstances accounted for 14.3% in 2004 and 18.8% in 2008.³² In our study unknown causes accounted for nearly 20%. Separately addressed later, this situation leads to the conclusion that there are significant problems with death registration. However, in the last few years TSI data has been used and according to this data the most important causes of death on a national scale are circulatory system diseases, cancers and respiratory system diseases. Unknown circumstances account for 4.5% of national causes of death.⁴

In our study we consider the difference between national causes of death to be due to the coding method. In our study, while causes of death were described according to disease group, causes such as cardiopulmonary arrest, cardiac arrest and respiratory arrest were included in the category 'symptoms, signs and abnormal laboratory findings, not classified elsewhere (R00-R99)' (for example, respiratory arrest R09.2). Our reasoning was the assumption that these causes are not a basic cause of

Table 3. Distribution of causes of death by basic disease groups and years, 2001-2008, Çanakkale, Turkey

Cause of death ¹⁵	Years							
	2001 (n=989)	2002 (n=1020)	2003 (n=1126)	2004 (n=1123)	2005 (n=1052)	2006 (n=1097)	2007 (n=1103)	2008 (n=1122)
	%	%	%	%	%	%	%	%
Certain Infectious and Parasitic Diseases (A00-B99)	1.8	1.6	1.2	1.0	0.9	1.6	1.4	1.2
Neoplasms (C00-D48)	14.9	13.9	12.5	11.6	15.4	13.4	12.9	13.8
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50-D89)	0.1	0.1	0.2	0.3	0.1	0.1	0.2	0.1
Endocrine, Nutritional and Metabolic Diseases (E00-E90)	2.0	1.4	1.2	1.2	1.1	2.0	0.7	1.2
Diseases of the Circulatory System (I00-I99)	53.3	50.6	56.5	46.6	45.2	43.8	44.3	43.9
Diseases of the Respiratory System (J00-J99)	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Diseases of the Digestive System (K00-K93)	0.6	1.0	1.1	1.0	1.3	0.6	1.3	1.4
Diseases of the Genitourinary System (N00-N99)	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0
Pregnancy, childbirth and the puerperium (O00-O99)	0.4	0.4	0.1	0.0	0.4	0.5	0.5	0.2
Certain Conditions Originating in the Prenatal Period (P00-P96)	1.5	0.7	1.2	0.2	1.0	1.4	1.1	1.8
Congenital Malformations, Deformations and Chromosomal Abnormalities (Q00-Q99)	1.4	1.0	1.0	0.3	0.1	0.1	0.1	0.3
Symptoms, Signs and Abnormal Clinical and Laboratory Findings. Not Elsewhere Classified (R00-R99)	6.4	5.5	3.6	6.4	5.7	7.6	7.2	7.8
Injury, Poisoning and Certain Other Consequences of External Causes (S00-T98)	1.3	2.0	0.7	1.1	1.4	1.3	1.6	1.8
Others	16.1	21.9	21.5	30.3	27.2	27.5	28.7	26.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

death but the end result linked to a basic cause of death. In national causes of death these causes (cardiopulmonary arrest, cardiac arrest and respiratory arrest) are probably classified as circulatory or respiratory diseases.

An interesting finding among causes of death is the low rate of injuries. This situation is not the expected result. Globally about 9% of all deaths are linked to injury.²⁵ In our country this rate is about 4.5–5%.⁴ However, in Çanakkale this was below 1%. This situation leads us to question the records. There is insufficient data about why this is the case. However, this finding may be largely due to the doctors recording deaths from injury not as injury itself but as the final cause of death. It is thought that this situation may be one of the significant reasons for the high rate of unknown causes.

This study evaluated the results of the death registration system through the death records from 2007 to 2012 for Çanakkale Province. In fact, using records obtained from the TSI, causes of death were evaluated from 2001. The most significant problem with records is comprehensiveness. Before 2009 all registrations covered provincial and district centres. In villages the dead are buried without a doctor's report. This situation causes significant loss of data. Since 2009 the coverage of the system has been broadened, and with the

transfer in 2013 to a death registration system in an electronic environment, an attempt has been made to cover the whole country. The results of this change will be observed in the next few years. However, problems are not limited to coverage. There are serious problems with the causes of death. Unknown causes are too high. Since the changes to the death registration system in 2009, a reduction in unknown causes has been observed. Ozdemir et al., evaluated death registrations between 2000 and 2013 in Izmir, they concluded that ill-defined causes had been started to decrease since 2009 and these causes were being under 10% in 2013.³³

Death registration is one of the most important problems in the world. In a study investigating cause of death in Taiwan, after investigating the records with inspectors, a difference in disease coding between individuals performing the coding was discovered. It was stated that regulatory studies were required to introduce correct coding of causes of death in national registration systems and to improve the quality of registration systems.³⁴ In a study in The Netherlands investigating the reliability of death records, differences in coding causes of death were shown, and they reported the need to be careful when interpreting data from death statistics.³⁵ According to a study investigating the reliability of cause-of-death coding in Germany using ICD-10, registration of causes of death according to coding rules may lead to different

results.³⁶ In countries like Brazil, with a number of regions with various socio-economic levels, the difference in reporting causes of death may negatively affect the validity and generalizability of death records and death statistics.³⁷

However, it is still difficult to say whether death statistics are at levels to affect national and local health policies. Also, this topic is not included in scientific discussions in our country. Naturally, these events strengthen the need to create a robust death registration system. A paper by Akgün et al. published in 2007 stated that death records were low quality. They advocated regulating the death registration system, primarily in rural areas, and training programs for physicians to play a key role in programs to combat diseases.²⁸

In recent years, important regularization has been implemented by cooperation between the Ministry of Health and TSI under the auspices of the European Union accession program. The positive results of this work are visible in our research. Although there are still gaps, causes of death can be registered for the largest part of our population. However, what has been completed is not sufficient. Physicians especially are still lacking when it comes to registering deaths. If we cannot teach our physicians to write causes of death correctly, all procedures will be invalid. In our evaluation we see that physicians still write cause of death as 'fated' (=time of death, natural death) or 'old age'. Old age is coded as R54 (senility) in ICD-10. Old age is not a known disease of advanced age and corresponds to a limited number of deaths. However, in our data there are cases with 'old age' reported as causes of death for people in their 60s or 70s. This is incorrectly completed data. In our study unknown circumstances were evaluated. 'Fated' has no corresponding code in ICD-10, but it has a religious and cultural definition. In Turkey, people of all age groups are defined as 'fated'. To describe this situation as 'natural' is not scientific and does not serve our purposes. As a result, it needs to be corrected.

In conclusion, death records are insufficient. There is a trend toward improvement—however, the progress is slow. More training should be given to health managers, physicians and all health workers about the importance and use of death records. This topic should be included in education before graduation. Doctors do not appear to be sufficiently willing to write the correct cause of death on death records. There are insufficient studies on this topic; however, from results obtained from death records we can achieve this aim (but again there is a need for studies on this topic). Training for doctors on this topic should aim to develop knowledge and skills in addition to attitudes. We need more studies and discussion of death records at both national and local level. And maybe most importantly, statistics should be given more importance and be used by both national and local policymakers. Although we have insufficient information, our observations suggest that prepared reports do not leave the library and are not used enough. If all these studies are successful, they may be significant determinants in long-term programs to combat chronic disease, especially in our country.

Acknowledgements

The authors would like to thank all physicians working in Çanakkale Family Health Center, Public Health Center and Çanakkale Municipality for their support to collect the data of the current study. The authors would also like to especially thank Çanakkale Public Health Directorate Staff for their assistance with this study data conversion to Excel formation. Special thanks also go to Department Managers Ümmühan Kahyaoglu MD, Hülya Sönmezler MD, Assistant Manager Muzaffer Çalışkan MD and Public Health Manager Burhan Kütük MD, for their valuable contributions to use data for the current study.

*The authors declare that there are no conflicts of interest.



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✓	DELIVERING DATE: 07 / 12 / 2015 • ACCEPTED DATE: 11 / 02 / 2016

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