

Article

Overview of the Cause of Death of the Forensic Section of DR M.Djamil Hospital, Padang in 2019

Mega Miftahul Rizka¹, Rika Susanti², M. Fadil³

¹ Profession of Doctor, Faculty of Medicine, Andalas University

² Forensic Department of Dr. M.Djamil Hospital, Padang

³ Cardiology Department, Dr. M.Djamil Hospital, Padang

SUBMISSION TRACK

Received: January 04, 2021

Revised: June 05, 2021

Available online: June 28, 2021

KEYWORDS

statistical data of death, cause of death

CORRESPONDENCE

Phone: +6281372593763

E-mail: ricaseanti@med.unand.ac.id

A B S T R A C T

Backgrounds: Death eventually occurs in all living things. Statistical data of deaths are needed to determine policies, priorities, and development of health programs in order to improve health service provisions.

Objectives: This research implemented a retrospective descriptive design. Samples were selected using total sampling technique. Samples were taken from data recorded in the death registration form in RSUP M. Djamil Padang from January to December 2019. Data analysis was carried out univariately.

Results: Characteristic of corps in the Forensic Unit of RSUP DR M.Djamil Padang in 2019 was found that more deaths occurred in men (53.9%) and elderly age (> 45 years) groups. The most common causes of death based on the ICD-10 classification were symptoms, signs, and other abnormalities (31.9%), disease of the respiratory system (14%) and the circulatory system (16%). On 125 of 212 corpses with unnatural death (59%), external examinations were performed.

Conclusion: The number of death is higher in male and elderly age with the most common cause of death group is symptoms, signs, and other abnormalities.

I. INTRODUCTION

Death is an event that will happen to all living things. In simple terms, death is defined as a condition where there is a permanent cessation of cardiac function and/or respiratory function.¹ The process of death in a person can be recognized clinically through changes that occur in the body of the corpse. The definition of death is also stated in the Law of the Republic of Indonesia Number 36 of 2009 concerning health, article 117 which reads: "A person is said to be dead if the function of the heart, circulation, and respiratory system is proven to have stopped permanently, or if there is brain stem death has been confirmed. proved."²

According to data from the Central Intelligence Agency (Badan Intelijen Pusat) in 2017, Indonesia's crude death rate stands at 6.5 deaths per 1000 population per year.³ In the 2015 health profile, the province of West Sumatra shows the crude death rate at home. illness was 2.77 per 100,000 discharged patients.⁴ For RSUP DR M.Djamil in 2016, the Net Death Rate (NDR) or pure mortality rate was 87.44%. This high figure is due to the fact that RSUP DR M.Djamil Padang is the last referral hospital so that the patients referred are patients with high-level complications. decreased and the death rate increased.

Data from The Institute for Health Metrics and Evaluation (IHME) in 2016 showed that the largest cause of death from disease in the world was cardiovascular disease (32.26%), followed by cancer (16.32%), respiratory disease (6.48%). %), and diabetes (5.83%).⁷ Meanwhile in Indonesia, data from the Indonesian Ministry of Health in 2014 showed that the ten leading causes of death in Indonesia were cardiovascular disease, tuberculosis, diabetes mellitus, hypertension, stroke, cancer, lung disease. chronic diseases, diarrhea, respiratory infections, and HIV/AIDS.⁸ In addition to deaths from disease, deaths from accidents are also quite high in Indonesia. According to the WHO report in The Global Report on Road Safety in 2015,

In addition, it is important for a doctor to determine the manner of death (manner of death), that is, natural or unnatural. Natural death is defined as death due to a disease or from the aging process. While unnatural death is defined as death not due to a disease, for example as a result of homicide (criminal), suicide, and accidents.¹⁰ If the body is suspected of having died in an unnatural way, it is necessary to examine the corpse to help determine the cause of death of the corpse. that.

In Indonesia, data on mortality and causes of death are needed by the government to formulate policies, priorities, and develop health programs in order to improve health services. However, the problem that arises is that data on deaths and causes of death cannot be obtained accurately and in a timely manner. So that the government has issued a Joint Regulation of the Minister of Home Affairs and the Minister of Health Number 15 of 2010 which regulates reporting of deaths and causes of death.¹¹ In preparing death statistics, ICD-10 is used as the basis for determining the cause of death and must be followed by member countries. WHO. WHO has compiled death certificates which are the main source of mortality data and are used as the basis for making reports on causes of death.

For the sake of statistical data on deaths and causes of death, the Forensic Section of the Central General Hospital DR M.Djamil Padang has started to carry out a complete recording of registered deaths since 2018. The data recorded includes name, gender, age, registration number, diagnosis, action. done, and so on. However, research on the number and description of deaths recorded in the forensics department is still very minimal. Based on this background, this study was conducted to determine the characteristics of the corpse, description of the cause of death of the corpse, as well as description of the examination of the corpse by way of unnatural death in the Forensic Section of DR M.

II. METHODS

This type of research is descriptive research, which is a study that provides an overview of the causes of death of bodies that enter the Forensic Section of RSUP DR M.Djamil Padang from January to December 2019. The study was conducted from June 2020 to January 2021 and this research was conducted in Forensic Department of DR M.Djamil Hospital, Padang.

The population in this study was all death data in the Forensic Department of DR M.Djamil Padang Hospital and the sample was mortality data in the Forensic Department of DR M.Djamil Padang Hospital from January to December 2019 which met the inclusion criteria. The inclusion criteria in the study were complete death records in the Forensic Department of DR M.Djamil Padang Hospital from January to December 2019, while the exclusion criteria were incomplete death records in the Forensic Department of DR M.Djamil Padang Hospital from January to December 2019.

The data collected is secondary data that comes from the registration of deaths in the Forensic Department. Samples were taken using a total sampling technique, which took all subjects who met the inclusion criteria and were used as samples. Furthermore, the data will be analyzed univariately.

The ethical review permit number in this study is No: 345/KEPK/2020, which was issued by the Health Research Ethics Committee of RSUP DR M.Djamil Padang.

III. RESULT

The number of bodies that entered the Forensic Department in 2019 was a total of 4,350 deaths. A total of 274 data were obtained incomplete, namely on the sex of the corpse, the age of the corpse, and on the diagnosis of the cause of death. The number of deaths recorded in the death register form of the Forensic Section of RSUP DR M.Djamil Padang ranged from 300 to 400 deaths per month in 2019. The highest number was in July 2019 which was 402 deaths and the least was in January, which was 327 Dead. In that one year period, there were 4,076 complete death registration data with details presented in Table 1.

From a total of 4,076 mortality data, 2,198 (53.9%) were male and 1,878 (46.1%) were female. So it can be concluded that mortality in men is higher than women in the death data recorded at the Forensic Section of the RSUP DR M.Djamil Padang in 2019.

In the table, it can be seen that the most deaths occurred in the late elderly, namely the age range of 56 years to 65 years. Then followed by the early elderly age group and the elderly age group. From the table it can also be seen that the incidence of death increases with increasing age. In addition, mortality in children under five or in the age range 0-5 years is also relatively higher than other age groups.

In the form of the Forensic Section of RSUP DR M.Djamil Padang, it has been written about the diagnosis of the cause of death from the corpse. Furthermore, the data on the diagnosis of the cause of death are classified according to the ICD-10 by the researcher and are presented in Table 2.

From the total corpse data of 4,076 complete data on the register form for the Forensic Section of RSUP DR M.Djamil Padang in 2019, the most causes of death based on the ICD-10 classification were symptoms, signs, and other abnormalities, which was around 31.9% of the total data. . The most common diagnoses in this classification were septic shock and MODS (Multi Organ Dysfunction Syndrome). Next, the most common causes of death were diseases of the respiratory system and diseases of the circulatory system with the percentages of 16.0% and 14.0%, respectively. The most common diagnosis in the classification of respiratory system diseases is pneumonia. As for the classification of circulatory system diseases are ACS (Acute Coronary Syndrome) and stroke. Other than that,

Table 1. Number and Characteristics of Bodies of Forensic Section of RSUP DR M.Djamil Padang in 2019

Month	Gender		Age of the Body (years)									Total
	Man	girls	0-5	5-11	12-16	17-25	25-35	36-45	46-55	56-65	>65	
January	161	161	22	8	3	14	16	35	75	74	75	322
February	191	143	31	3	8	17	25	33	69	72	76	334
March	199	148	31	3	7	21	25	40	63	85	72	347
April	178	136	14	4	8	9	12	32	63	82	90	314
May	176	162	28	7	7	14	23	38	68	89	64	338
June	167	159	28	1	8	11	20	32	63	79	84	326
July	199	156	20	4	4	17	16	51	68	91	84	355
August	174	173	19	8	5	11	29	46	72	76	81	348
September	194	144	23	6	3	15	31	41	58	87	74	338
October	206	164	23	5	7	17	24	39	85	82	88	370
November	176	172	22	7	1	9	20	46	56	96	91	348
December	178	159	21	8	7	14	17	34	63	87	86	337
Total	2198 (53.9%)	1878 (46.1%)	282 (6.9%)	64 (1.6%)	68 (1.7%)	169 (4.1%)	258 (6.3%)	467 (11.5%)	803 (19.7%)	1000 (24.5%)	965 (23.7%)	4076

Table 4. Description of the Group of Causes of Death by Age of the Body Entering the Forensic Section of Dr. M.Djamil Hospital, Padang in 2019

Classification of Causes of Death	Age of the Body (years)									Total
	0-5	5-11	12-16	17-25	26-35	36-45	46-55	56-65	>65	
Infectious and parasitic diseases	20	2	6	22	29	26	45	38	38	226
Neoplasm	22	15	10	13	32	75	107	95	74	443
Diseases of the blood and blood-forming organs, including immune system disorders	5	4	1	1	1	2	3	5	4	26
Endocrine, nutritional and metabolic disorders	3	2	1	2	3	5	7	9	13	45
Mental and behavioral disorders	0	0	0	0	0	0	0	0	2	2
Diseases of the nervous system	10	4	6	7	14	15	29	17	16	118
Diseases of the eye and adnexa	0	0	0	0	0	0	0	0	0	0
Diseases of the ear and mastoid	0	0	0	0	0	0	0	0	0	0
Diseases of the circulatory system	5	3	6	15	19	46	101	174	200	569
Diseases of the respiratory system	20	12	4	20	34	75	120	181	187	654
Diseases of the digestive system	5	0	1	1	5	14	28	27	27	108
Diseases of the skin and subcutaneous	0	0	0	0	1	2	2	1	0	6
Diseases of the musculoskeletal and connective tissue	0	1	1	2	2	1	0	0	1	8
Diseases of the genitourinary system	1	0	3	5	3	16	39	39	20	126
Disorders of pregnancy and birth	1	0	0	0	4	0	0	0	0	5
Perinatal disorders	88	0	0	0	0	0	0	0	0	88
Congenital malformations, deformations, and chromosomal abnormalities	40	1	0	1	1	0	0	0	0	43
Symptoms, signs, and other abnormalities	49	8	11	40	77	145	276	366	337	1309
Injuries, poisoning, and the consequences of external causes	8	6	10	33	20	27	19	26	23	172
External causes of morbidity and mortality	0	4	3	3	5	3	1	0	1	20
Factors affecting health status and contact with health services	7	2	5	4	7	14	26	22	20	107
Total	282	64	68	169	258	467	803	1000	965	4076

Table 2. Description of the group of causes of death of bodies that entered the Forensic Section of the RSUP Dr. M.Djamil Padang in 2019 based on the ICD-10 classification

Classification of Causes of Death	<i>f</i>	%
Infectious and parasitic diseases	226	5.6
Neoplasm	443	10.9
Diseases of the blood and blood-forming organs, including immune system disorders	26	0.6
Endocrine, nutritional and metabolic disorders Gangguan	45	1.1
Mental and behavioral disorders	2	0.1
Diseases of the nervous system	118	2.9
Diseases of the eye and adnexa	0	0
Diseases of the ear and mastoid	0	0
Diseases of the circulatory system	569	14.0
Diseases of the respiratory system	654	16.0
Diseases of the digestive system	108	2.6
Diseases of the skin and subcutaneous	6	0.1
Diseases of the musculoskeletal and connective tissue	8	0.2
Diseases of the genitourinary system	126	3.0
Disorders of pregnancy and birth	6	0.1
Perinatal disorders	92	2.3
Congenital malformations, deformations, and chromosomal abnormalities	44	1.0
Symptoms, signs, and other abnormalities	1302	31.9
Injuries, poisoning, and the consequences of external causes	174	4.2
External causes of morbidity and mortality	20	0.5
Factors affecting health status and contact with health services	107	2.6
Total	4076	100%

Table 3. Description of the group of causes of death based on the sex of the bodies that entered the Forensic Section of the Dr. M.Djamil Padang Hospital in 2019

Classification of Causes of Death	Gender		Total
	Man	girls	
Infectious and parasitic diseases	150	76	226
Neoplasm	193	250	443
Diseases of the blood and blood-forming organs, including immune system disorders	16	10	26

Endocrine, nutritional and metabolic disorders Gangguan	22	23	45
Mental and behavioral disorders	1	1	2
Diseases of the nervous system	68	50	118
Diseases of the eye and adnexa	0	0	0
Diseases of the ear and mastoid	0	0	0
Diseases of the circulatory system	327	242	569
Diseases of the respiratory system	365	289	654
Diseases of the digestive system	67	41	108
Diseases of the skin and subcutaneous	1	5	6
Diseases of the musculoskeletal and connective tissue	1	7	8
Diseases of the genitourinary system	67	59	126
Disorders of pregnancy and birth	2	4	6
Perinatal disorders	50	42	92
Congenital malformations, deformations, and chromosomal abnormalities	24	20	44
Symptoms, signs, and other abnormalities	633	669	1302
Injuries, poisoning, and the consequences of external causes	131	43	174
External causes of morbidity and mortality	16	4	20
Factors affecting health status and contact with health services	64	43	107
Total	2198	1878	4076

From Table 3 it can be seen that there are quite specific differences between the patterns of causes of death for men and women in several classifications of causes of death. As in diseases of the respiratory system, mortality in men is much higher than in women. In the cause of death due to diseases of the circulatory system also found death in men is higher than women. Likewise in the classification of infections and injuries and external causes of mortality, higher mortality was found in the male sex. On the other hand, the cause of death due to neoplasms is more common in women than men.

Table 4 presents the frequency distribution of the cause of death groups based on the age of the body. In general, the distribution of the frequency of causes of death by age group shows the same trend in almost all classifications of causes of death, namely that the mortality rate increases with increasing age.

In this study, there were 212 bodies (4.8%) with suspected unnatural deaths, such as deaths due to traffic accidents, work accidents, burns, and DOA (Death on Arrival). The following diagram illustrates the examination of the corpse by way of unnatural death

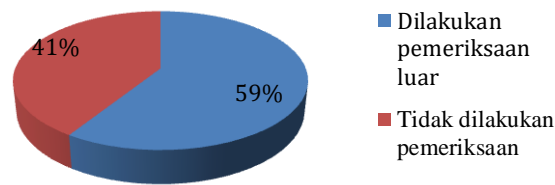


Figure 1. Overview of Examination on Unnatural Dead Corpses

From a total of 212 bodies suspected of having died unnaturally, only 125 bodies (59%) were examined externally. Meanwhile, the other 87 bodies (41%) suspected of having died unnaturally were not examined due to refusal from the family. In the 2019 data, no internal examination of the bodies was found.

IV. DISCUSSION

Number of Deaths and Characteristics of Bodies

The number of deaths that occur in hospitals can be an indicator that reflects the quality of services in hospitals. The indicators commonly used to assess the quality of hospital medical services are Gross Death Rate (GDR) and Net Death Rate (NDR). GDR is the crude mortality rate for every 1000 patients discharged, either alive or dead. Meanwhile, NDR or also called the pure mortality rate, is the death rate 48 hours after being treated for every 1000 patients who are discharged either alive or dead. The Indonesian Ministry of Health has also set ideal standards for these two indicators, namely 45% or 4.5% per year for GDR and 25% or 2.5% per year for NDR.¹³

In recent years, the hospital mortality rate of RSUP DR M.Djamil Padang still does not meet national standards. Based on the data in the Annual Report of RSUP DR M.Djamil Padang, the mortality/blindness rate 48 hours at the RSUP DR M.Djamil hospital in 2016-2019 ranged from 7-8%.^{14,15} However, the data is combined between the mortality rate and the rate of blindness after 48 hours of hospitalization and the net mortality rate in hospital have not been clearly stated.

Often the mortality rate in hospitals does not meet the ideal standards set nationally. Several factors, such as the severity of a disease, the dexterity and alertness of care services, and the accuracy of therapy or medication, are factors that greatly influence the mortality rate in hospitals.¹³

In this study with a total sample of 4,076, there were 2,198 death data (53.9%) with the sex of the male corpse and 1,878 data (46.1%) representing the death data with the female body sex. So from these results it can be concluded that the mortality rate in males is higher than females.

Based on population data by the Central Statistics Agency of West Sumatra Province, in 2019 the number of population with male gender in West Sumatra Province was 2,711,772 people and the number of population with female gender was 2,729,425 people.¹⁶ This shows that the male population in West Sumatra Province in 2019 was less than the female sex. However, in this study, the mortality rate for men was higher than for women. So that the number of deaths by gender is inversely proportional to the population in West Sumatra Province in 2019.

In a study conducted by Sulistiyowati regarding the pattern of causes of death, there were several factors that contributed to the increasing mortality rate in men. This is related to work and the higher level of mobility of men than women causes traffic accidents as a cause of death to be higher in men.¹⁷ In addition, data from the 2018 Basic Health Research (Riskesdas) shows that the proportion of smoking in men are much higher than women, as many as 47.3% of men have the habit of smoking every day. Meanwhile, only 1.2% of women have the habit of smoking every day.¹⁸ This smoking habit will certainly have an impact on one's health.

For the number of deaths by age group, the highest number of deaths occurred at the age of 46 years, starting from the early elderly age group (46-55 years), the late elderly (56-65 years), and the elderly (≥ 65 years). The results of this study also show a trend of increasing mortality in proportion to increasing age, ranging from the childhood age group (5-11 years) to the elderly age group (≥ 65 years). However, mortality in the under-five age group (0-5 years) was also found to be quite high compared to other age groups. If we look at the data from the Central Statistics Agency for West Sumatra Province in 2019, it shows a lower proportion of the population at the age of 45 years than the younger age.

Of course, the high mortality rate in the elderly age group cannot be separated from the aging process and the decline in the function of the body's organs. The main health challenge for the elderly or elderly is non-communicable diseases. The impact of this condition is two to three times greater for parents in low- and middle-income countries than for parents in high-income countries. Even in the poorest countries, the greatest health burden for the elderly comes from diseases such as heart disease, stroke, visual impairment, hearing loss, and dementia. The highest mortality rate in the age group 55 years and over is circulatory system disease,

In addition to the high number of deaths in the elderly age group, this study also found a fairly high number of deaths in the under-five age group (0-5 years). According to the results of a study by Putri in 2017 regarding the analysis of factors that affect the health status of children under five in the Regency/City of West Sumatra, there are three influencing factors, namely, economic growth, health services for children under five, and the level of education of parents. These three factors together have a significant effect on the under-five mortality rate in districts/cities in West Sumatra.²⁴

Overview of Causes of Death

In this study, data on the causes of death were taken from the corpse diagnosis data on the register form of the Forensic Section of the Dr. M.Djamil Hospital, Padang. The researchers then grouped these diagnoses into disease classifications based on the ICD-10. There are 21 classifications that are used as a reference in grouping the diagnosis of the cause of death. From the results of the study, it was found that 31.9% of the data on the diagnosis of the cause of death included the classification of symptoms, signs, and other disorders, which were not included in other classification groups. The diagnoses include shock, MODS (Multi Organ Dysfunction Syndrome), DOA (Death on Arrival), decreased consciousness, and fever. The most common diagnoses were septic shock and MODS. Related to this, A study by Tambajong in 2016 stated that the sepsis mortality rate would increase when sepsis progressed to severe sepsis and septic shock. Where the mortality rate for sepsis is 20%, then increases to 30-50% in severe sepsis and increases again to 50-80% in septic shock.

MODS, which is also the most common cause of death diagnoses, is the leading cause of morbidity and mortality in patients admitted to the intensive care unit (ICU).⁵¹ In addition, MODS is also the leading cause of mortality in patients who survive within hours of trauma.²⁶ Furthermore, the classification of the second most common cause of death (16.0%) In this study is respiratory system disease. The most common diagnoses were pneumonia, both Community

Acquired Pneumonia (CAP) and Hospital Acquired Pneumonia (HAP). In the 2011 Indonesian Health Profile report, pneumonia itself has a case fatality rate (CFR) of 7.6%.²⁷ However, the mortality rate for HAP is higher than that of CAP, which is 20-50%.²⁸

In addition to diseases of the respiratory system, classification of diseases of the circulatory system is also the next most common cause of death, which is 14.0%. Most diagnoses included in this classification are stroke. In Riskesdas 2007, it was stated that stroke was the most common cause of death in Indonesia for those aged > 5 years. Several factors, such as increasing age, gender, and low education, have been investigated as risk factors for death from stroke in one district in West Sumatra.²⁹

Neoplasms are also quite a cause of death, amounting to 10.9%. Most diagnoses in this classification are breast cancer and lung cancer. In the 2013 Riskesdas data, breast cancer itself is indeed the most common cause of cancer death in women and also ranks first in hospitalized patients in Indonesia.³⁰ Not only breast cancer, the mortality rate for lung cancer is also quite high. Of course, this cannot be separated from smoking habits in the community, where the prevalence of smoking nationally reached 28.8% in the 2018 Riskesdas data.¹⁸ The danger of smoking will not only have a direct impact on active smokers, but also be dangerous for passive smokers.

From the results of the study, it was found that there were quite specific differences between male and female mortality patterns in the classification of certain causes of death. In the classification of respiratory system diseases, there are quite specific differences in numbers between sexes, where the mortality rate is higher in men. Smoking habits which are much higher in men are certainly one of the risk factors that play a role in respiratory system diseases, especially pneumonia and chronic obstructive pulmonary disease (COPD).

In the classification of diseases of the circulatory system also found a higher mortality rate in men. Men are more likely to be at risk of cardiovascular disease associated with unhealthy lifestyles such as smoking habits and higher alcohol consumption than women.³² Meanwhile, women have a sexual hormone, namely estrogen which plays a role in protecting blood vessels so that the tendency for vascular diseases such as stroke becomes lower.²⁰ In the blood vessels there are estrogen receptors that function as estrogen stimulation to prevent fat accumulation and injury to the smooth muscle cells of blood vessels, thereby reducing the formation of atherosclerotic plaques. However, when women are menopausal, Women have the same risk as men for cardiovascular disease.³³

In the classification of infectious diseases also found a higher mortality rate in men. In this classification of infections, the most common diagnosis is tuberculosis. TB disease also has risk factors, one of which is smoking. Smoking has implications for an increase in the number of TB cases, relapses, treatment interruptions, and increased mortality in pulmonary TB patients.³⁴ Furthermore, the classification of injuries and external causes of mortality also found a much higher mortality rate in men. This is related to work and the higher level of mobility of men than women causes traffic accidents as a cause of death to be higher in men.¹⁷

While the distribution of the frequency of causes of death by age group generally shows the same trend in almost all classifications, namely the mortality rate increases with increasing age. This of course becomes natural if it is associated with the aging process and the decline in the function of body organs in the elderly or elderly.

Overview of the Examination of Unnatural Dead Corpses

Most of the bodies that entered the Forensic Section of the RSUP DR M.Djamil Padang in 2019 were corpses with a natural way of death. In unnatural deaths, sometimes it is necessary to examine the body to determine the cause of death and also for the sake of medico-legal aspects. Of the 212 bodies suspected of having died unnaturally, only 125 bodies were subjected to external examination or only about 59%.

Several other bodies with unnatural deaths were not examined because the family refused or were also referred to as returning home at their own request (APS). Research by Fitria in 2020 shows an illustration of the reasons for refusing autopsies on corpses, namely, because they are not appropriate or religious prohibitions with most of the community's education levels being low.³⁵ In another study by Eriko in 2019 also provided an overview of the motivation for refusing to examine corpses, especially in cases of traumatized. From the results of the study, there were several reasons why the family refused to carry out an examination of the corpse. Among them are because the family feels there is no need to sue or sue for an alleged trauma to the corpse, the family accepts that the incident is purely an accident,

V. CONCLUSION

In recording death data from the Forensic Section of the DR M.Djamil Padang Hospital in 2019, the mortality rate was higher for men than women and the most elderly people (≥ 46 years). The most common cause of death group based on the ICD-10 classification were symptoms, signs, and other abnormalities with the most diagnoses being septic shock and MODS. The next most common cause of death is followed by respiratory system diseases, circulatory system diseases, and neoplasms. Deaths from respiratory diseases, circulatory diseases, infections, and injuries and external causes were higher in men, while deaths from neoplasms were higher in women. In general, the mortality rate increases with increasing age in almost all classifications of causes of death. Not all corpses suspected of having died are unnatural for external examination due to refusal from the family

REFERENCES

- Dimaio VJ, Dimaio D. Forensic Pathology. 2nd ed. London: CRC Press, 2001.
- RI Law No. 36 of 2009 concerning health. State Secretariat. Jakarta. Downloaded at <http://www.depkes.go.id/resources/download/general/Law%20Number%2036%20Year2%20009%20about%20Health.pdf>
- Central Intelligence Agency. Crude Death Rate 2017
- Artati M, Febriyanti D. Health Profile of West Sumatra Province 2015. Padang: Central Bureau of Statistics of West Sumatra Province, 2016.
- RSUP DR. M. Djamil Padang. Definitive RBA 2018. Padang : 2017
- National Development Planning Agency. Indonesian Population Projection 2010-2035. Jakarta : Central Bureau of Statistics, 2013. Downloaded at <https://databoks.katadata.co.id/datapublish/2018/03/20/2010-2035-angka-kelahiran-turun-seangkan-angka-kematian-naik>
- The Institute for Health Metrics and Evaluation. Cause of Death. 2016. Downloaded at <http://www.healthdata.org/results/data-visualizations>

- Indonesian Ministry of Health. 10 Disease Causes of Death in Indonesia. 2014. Available at <https://lamongankab.go.id/dinkes/10-disease-gebab-kematian-terbanyak-di-indonesia/>
- WHO. 2015. Global Status Report on Road Safety 2015. Geneva: Management of Noncommunicable Diseases, Disability, Violence, and Injury Prevention (NVI). Available in http://www.who.int/violence_injury_prevention/road_safety_status/2015/GSRRS2015_Summary_Final2.pdf?ua=1
- Yang KM, Lee S., Kim YS, Seo JS, Lee YS, Seo JW. Guideline for forensic assessment of natural unexpected cardiovascular death. *Basic and applied Pathology* 2008; 1: 155-63
- PeJoint Decree of the Minister of Home Affairs and the Minister of Health No. 15 of 2010 and No. 162/MENKES/PB/I/2010 concerning Reporting of Death and Causes of Death. Downloaded at <http://pdk3mi.org/file/download/PBM%20Menteri%20dalam%20Negeri%20dan%20MENKES%20No.%20162%20ttg%20Pelaporan%20Kematian.pdf>
- KEPMENKES RI NUMBER 50/MENKES/SK/I1998 concerning the Implementation of the International Statistical Classification of Diseases in the Tenth Revision. Jakarta: Indonesian Ministry of Health, 1998
- Rustiyanto E. *Hospital Statistics for Decision Making*. Yogyakarta: Graha Ilmu. 2010:52-9
- Dr. M. Djamil Hospital, Padang. 2017 Annual Report. Padang: 2018
- Dr. M. Djamil Hospital, Padang. 2019 Annual Report. Padang: 2020
- Central Bureau of Statistics of West Sumatra Province. Total Population by Regency/City and Gender in West Sumatra Province 2010-2019. Available in <https://sumbar.bps.go.id/dynamictable/2019/06/20/328/sum-penresident-menurut-kabupaten-kota-dan-tipe-kelamin-di-provinsi-sumatera-barat-2000-2018.html>
- Sulistiyowati N, Felly P. Patterns of Causes of Death in Productive Age (15-54 Years) (Advanced Analysis of "Development of Death Registration and Causes of Death in Regencies/Cities in Indonesia in 2012"). *Indonesian Journal of Reproductive Health*, vol. 5, No. 1, 2014
- Agency for Health Research and Development. *Basic Health Research 2018*. Jakarta: Indonesian Ministry of Health, 2018
- Setyanda YOG, Sulastris D, Lestari Y. The Relationship of Smoking with Hypertension Incidence in Men Aged 35-65 Years in Padang City. *J Health Andalas*. 2015;4(2):434-40
- Handayani F. The incidence of stroke in women is lower than men. *Surgical Med Nursing*. 2012;1(1):75-9
- Central Bureau of Statistics of West Sumatra Province. Population by Age Group and Gender in West Sumatra Province 2010-2019. Available in <https://sumbar.bps.go.id/dynamictable/2019/06/20/329/penresident-according-group-age-dan-tipe-kelamin-di-provinsi-sumatera-barat-2010-2018.html>
- WHOa, Good Health Adds Life To Years. Global brief for World Health Day 2012. April 2012, WHO Reference number: WHO/DCO/WHD/2012.2. Downloaded from http://www.who.int/ageing/publication/whd2012_globalbrief/en/indexhtml
- Djaja, Sarimawar. "Analysis of the Causes of Death and the Challenges Faced by the Elderly Population in Indonesia According to Basic Health Research 2007. *Health System Research Bulletin*, vol. 15, no. 4, Oct. 2012

- Putri P. Analysis of Factors Affecting the Health Degree of District/City Toddlers in West Sumatra. 2017. PhD Thesis. Padang State University
- Tambajong RN, Lalenoh DC, Kumaat L. Profile of patients with sepsis in the ICU Prof. RSUP. Dr. RD Kandou Manado Period December 2014 – November 2015. *e-Clinic*. 2016;4(1).
- Mengyar AE, Thani HA, Zakaria ER, Zarour A, Tuma M, Abdulrahman H, et al. Multiple organ dysfunction syndrome (MODS): Is it preventable or inevitable? *Int J Clin Med*. 2012;3:722-30
- Center for Data and Information of the Ministry of Health of the Republic of Indonesia. Indonesian Health Profile 2011. Jakarta: Ministry of Health RI, 2011. Downloaded from: <http://www.depkes.go.id/folder/view/01/structure-publikasi-pusdatin-profil-health.html>
- Wibisono, M. Jusuf. Textbook of Lung Disease. Surabaya: Faculty of Medicine UNAIR, 2010
- Konadi L, Bisara D, Ghani L, Pangaribuan L, Teja T, Irianto J, et al. Death Rate and Stroke Risk Factors as Basic Causes of Death in Padang Pariaman Regency, West Sumatra Province. *Health Research Bulletin*. 2016;44(4):227–36
- Agency for Health Research and Development. Basic Health Research 2013. Jakarta: Ministry of Health, 2013
- Ernawati Y, Ermayanti S, Herman D, Russilawati R. Risk Factors for Lung Cancer in Women Treated in the Lung Department of Dr. RSUP. M. Djamil Padang and RSUD Solok: Case Control Research. *Andalas Health Journal*. 2019;8(2S):1
- Kusumawaty J, Hidayat N, Ginanjar E. The Relationship between Sex and Hypertension Intensity in the Elderly in the Working Area of the Lakbok Health Center, Ciamis Regency. *Mutiara Medika Journal*. 2016;16(2):46–51
- Rilantono, Lily I. 5 Secrets of Cardiovascular Disease (PKV). Jakarta: Publishing Agency, Faculty of Medicine, University of Indonesia; 2012
- Goddess of Parliament. Systematic Study: Relationship between Smoking and Smoking Behavior on the Incidence of Pulmonary Tuberculosis. *PANNMED Scientific Journal (Pharmacist, Analyst, Nurse, Nutrition, Midwifery, Environment, Dentist)*. 2020;15(2):206–10
- Handayani FR, Harjadi NT. Description of reasons for refusal and approval and level of knowledge of forensic autopsies in the people of Bangko and West Bangko Districts. *Tarumanagara Medical Journal*. 2020;3(1):63–72. Available in <http://journal.untar.ac.id/index.php/tmj/article/view/972>
- Prawestiningtyas E, Kurnia E. Motivation for Refusal of Forensic Examination Actions as a Result of Increase in Self-Demand Returns (APS) in Forensic Medicine Installation at RSUD Dr. Saiful Anwar Malang. *Indonesian Forensic and Legal Medicine*. 2019;1(1):29–32