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Review Article

Epidemiological Survey of Causes of Death in the Elderly (Integrative Review)

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Abstract

With the aging of the population and the estimation of the increase of the elderly population in the world, strategies and studies are needed to improve the quality of life and well-being, increasing the average life expectancy, thus preventing or delaying the process aging. In research, the understanding of associated factors such as: gradual biological changes of aging, genetic conditions, gender, age, ethnicity, life-long habits, environment, culture, geography and the most frequent causes of death are crucial. important to support the implementation of strategic treatments and morbidity care. This work is an integrative review whose objective is to identify the major causes of death in the elderly. The following databases were searched: BVS, CLINICAL KEY and MEDLINE and used to search for the descriptors "cause of death in the elderly". More than 25.000 references were found, of which 51 were included in the study, which met the following criteria: covering publications in Portuguese or English during the period between 2012 and 2018 in several countries. Among the results, there were the highest causes of death in the elderly by origin, being in sequence: cardiac, respiratory, cerebral, physical trauma, associated with aging, sepsis and cancer.

Keywords: Cause of death; Elderly; Mortality

Introduction

In most countries there has been a continuous increase in life expectancy, which varies from individual to individual, with many elderly people living with one or more morbidities characteristic of several pathologies [1]. According to the UN, 12% of the world's population were people aged 60 years or more, a total estimated at 901 million and a life expectancy of 77 years with an annual growth rate of 3.26%. In Brazil, according to the Brazilian Institute of Geography and Statistics (IBGE), life expectancy is around 76 years, and a person is defined as elderly if they are 60 or 65 years old. It is estimated that in the United States until 2040, 1 in every 5 Americans will be over 65 years old, a forecast that led the congress of that country to forecast a budget increase for the health of the elderly population. Currently a percentage of 3.7% (2017) of the gross domestic product is forecast, which should rise to 7% in the next 30 years [2]. According to the World Health Organization (WHO) it is estimated that by 2050 the population over 60 years of age will reach 2.1 billion people and in the long term by 2100 it could reach 3.2 billion, with new challenges to global public health with chronic diseases and well-being. Aging is associated with the biological process of generalized gradual decline of all human body functions and low-grade inflammatory processes, which technically represent several changes in physiological systems [2]. The aging population deserves more and more attention, because with the decline in the birth rate and the increase in the average life expectancy, research and improvement strategies are needed to understand the subject [3].

A study in the United Kingdom concluded that older adults with obesity had their life expectancy reduced by up to 2 years, which impacted deaths from cardiovascular disease (CVD). In this study, gender was considered a differential, with cancer-related deaths in women and the endocrine system in men [4]. The inherited genetic predispositions associated to the habits that one has throughout the life are responsible for the aging and through the strategies of understanding of the degenerative process and the effects of the senescence, the knowledge of the prevention of the associated morbidities occurs and consequently, the increase of the life expectancy [3]. For healthy aging, there is a need to improve well-being in order to increase the population's life expectancy and quality [1]. The

understanding and evaluation of the causes of death are necessary for the implementation of strategic morbidity treatment and care [5]. In the hospital setting of Sichuan Province in China, causes of death were evaluated according to the International Classification of Diseases (ICD) in individuals hospitalized between 65 and 110 years. Over 80 years old respectively the three major causes of death were: lung infection, carcinoma and heart failure, differentiating between males by 45% and females by 33% in infections of the respiratory tract, which is the main risk of death, already different from younger hospitalized individuals than the major causes of death were: heart failure, coronary disease and carcinoma [5]. Considering as a hypothesis that the major causes of death related to elderly people can be associated with problems in cardiac and respiratory functions, or mental diseases, this study had as main objective, to analyze the main causes of death in the elderly, relating gender and age, location of study, comorbidities and risk factors.

Methodology

This study was carried out through the methodology of integrative literature review, where the main causes of death in the elderly were analyzed, relating characteristics such as: Gender, age, presence of comorbidities (chronic diseases, alcoholism, smoking and risk factors). The collection of literature data occurred between August 2018 and June 2019. The combination of descriptors for the article was "cause of death in the elderly", the phrase "cause of death in the elderly" used with the Bolean operator "cause of death and elderly" in the combination of descriptors with Bolean operators that according to the Virtual Health Library (VHL) "are words or groups of words can be combined in different ways to modify the result of the research", more than 25000 articles were found in the Clinical Key and 13268 articles in MEDLINE, in the Virtual Health Library (VHL) were searched for the key words: cause of death, mortality, elderly. From the total, 210 references were selected for prior reading, excluded 159 according to the exclusion criteria, being associated to works that do not contemplate the objective of this study in direct form, also: editorials, theses, dissertations, books and articles not presented in their full text. Therefore, in this study 51 references were selected for the inclusion criteria that addressed the proposed theme. The selected articles were written in Portuguese or English and were available in the international virtual library Clinical Key, published in full between 2012 and 2018.

Development

Aging

Birth, growth and aging are natural processes that, over time, stand out in the association with the individual's history and habits during life, inherited genetic conditions and interactions with environmental, cultural and geographical factors [3]. The prevalence of heart diseases was different according to geographical location, compared to rural and urban environments in India: in rural areas it was 3.4% among men and 7.4% among women, in urban areas it was 7.3% among men and 13.4% among women [6]. Advanced age is a determining factor for incidence and prevalence in most cardiovascular disorders, as well as in comorbidities and chronic deficiencies, the care of the elderly in associated changes has an impact on the physiology of the cardiovascular system and other organic systems [7]. In the central nervous system there are degenerative alterations, as well as in the spine, including herniation of intervertebral discs, formation of osteophytes and fractures, with aging having the association of increased demand for surgical intervention [8]. According to Fachine et al. [3], studies with several authors, relate the aging process to the main changes that gradually occur during age in biological/organic (cardiac system, respiratory system, musculoskeletal system and nervous system) and psychological/social, distinguish aging in two stages: primary related to genetic determination and secondary or pathological dependent on environmental influence and related diseases [3].

There are characteristics that modify the aging process, such as damage induced by free radicals, deregulation of nutrient sensing, altered intercellular communication and decreased capacity of tissue repair, dysfunction of mitochondria, atrophy of telomeres, interruption of circadian rhythms, inflammation, genomic instability, loss of proteostasis and epigenetic changes [9]. Another is the hormonal characteristic sex hormone receptors are responsible for the genomic signaling of the cerebrovascular protection of the blood-brain barrier and reduction of oxidative stress linked with degeneration by aging, where they affect the transcription of the gene located in the cytoplasm of cells in a slow process of several hours [10]. In aging in general, there are reductions in innate and acquired immune functions, called immunosenrescence, together with a high number of pro-inflammatory mediators associated with age, called low grade inflammation, which increase susceptibility to infections having potential links with morbidity and mortality [1]. Some cellular phenomena affect the aging of the human body, damage to the DNA of senescent cells or older cells may trigger a secretive phenotype of local pro-inflammatory mediators and may extend to a systemic level, the accumulation of pro-inflammatory mediators promotes inflammation and predisposes to major age-related diseases [11]. Knowledge of the mechanisms of the immune system related to aging is necessary to direct preventive policies, T cells and myeloid suppressive cells can be used as early markers of diseases associated with aging [12].

Negative influences of the aging process that increase the risk of death

Lifetime habits may be associated with degenerative disease in elderly ex-smokers, smokers and frequent drinkers, also, the history of Type 2 Diabetes Mellitus [13]. Smoking is also a strong predictor of increased risk factors for cardiovascular disease [6]. Mortality in smokers is higher than non-smokers [14]. Related to habits and care there are many unexpected sudden deaths in bathtubs among elderly Japanese adults due to cold weather or a reduction in temperature on the day [15]. An example of general

risk in hospitalized elderly is the fall [16]. In the elderly population in the United States, as in the world, the fall is an imminent risk resulting in morbidity and mortality [8]. There is a greater chance that the fall is more common in men, since in women it results more in bone fractures, although both genders have the same risk factors, the severity is related to: weakness, unstable gait, weak lower limbs, impaired limb mobility, level of consciousness and high-risk patients who insist on unassisted movements when getting out of bed [16]. Chronic pain triggered by slow degenerative processes of aging has a negative influence on quality of life in elderly people over 71 years of age regardless of gender, according to research by Ferretti et al. [17]. The use of drugs such as hypnosedatives, hypertensives and hypoglycemic agents, are correlated with fall events, which in consequence can cause injury or death among the elderly [16]. Kiyoshige et al. [18] in a research in Japan with elderly people between 80 and 90 years old, had the objective of investigating the associations between long-term care of some chronic diseases, highly classified among the causes of death (stroke, heart disease, joint pain, osteoporosis and cancer) and are related to the lifestyle considering the social factors: socioeconomic conditions, place of rural or urban residence, dependent on the public health system, among others.

There are no significant results to the long-term care regarding societal factors, except osteoporosis. Possible reasons for this difference are according to previous research by Kyoshige et al. [18], people with low schooling tend not to use public health care. Furthermore, in women, the gender difference may be a pathogenic mechanism, osteoporosis is likely due to estrogen deficiency during menopause, which causes post-menopause bone fragility. One of the world's greatest health concerns is the reduction of the treatment perspective with the use of antibiotics due to the increasing appearance of multidrug resistant bacteria, because as the age increases, susceptibility increases along with the underlying diseases and there is a prevalence of death by sepsis or septic shock, and a study showed that 95% of patients whose death was related to sepsis, occurred within 28 days after the onset of infection [19]. In the United States, sepsis is the tenth most common disease in the population, and there are few studies that establish the frequency and relationship with underlying diseases that are closely related to case fatality: advanced age, immunosuppression, diabetes and cancer are major risk factors [19].

Main diseases related to aging and possible evolutions to death

Mental illnesses: Cognitive deficits and mental illnesses can constitute behavioral risk factors for other causes of death, considering also possible undiagnosed physical illnesses, affecting the choices of ideal habits in relation to daily life and health, reducing life expectancy [20]. There is limited evidence of studies in patients between 75 and 80 years of age and practically no evidence in patients over 80 years of age, having or not multiple coexisting conditions, the main factors that hinder the orientation of therapeutic clinical decision making are physical or cognitive, disability, fragility or residence in long-term institutions [7]. Alzheimer's disease (AD) is related to dementia in the elderly and represents the sixth leading cause of death, with about 5.4 million Americans affected, and by 2050 this number could triple [21]. In Taiwan, a study of elderly patients with AD concluded that gender determination interacted with physical activity at risk, and low physical activity was found to be a risk factor for frontal lobe atrophy in men but not in women [13].

Physical fitness has been associated with decreased white matter lesions of the brain in men, but not in women, androgen and estrogen are associated with the brain, it is possible that the brain of men for hormonal reasons adapt better to activities than women [13]. There is a difference between female and male hormones, because estrogens are generally protective against cerebrovascular pathology. Thus, women have protection most of their lives until menopause, already progestogen and androgen hormones have both protective and harmful effects on the cerebrovasculature. Sexual hormones are linked to the regulation of the cerebrovascular functions and the reduction of functions can be harmful, excess and age can consequently develop stroke, cognitive impairment and dementia [10].

Another cause of death in geriatric patients is suicide, and for every 2 to 4 elderly people who attempt suicide, 1 is successful and this fact may be due to the greater isolation associated with old age and fragility, because it is believed that the elderly is less able to tolerate stress [22]. A study by Brooks et al. [22] revealed that younger people commit firearm-related suicide 46.7% of the time, while 71.4% of elderly suicides involve the use of a firearm. In addition, the elderly present changes in their anatomy, physiology, and response to trauma and critical illness that decrease their probability of recovery or survival in a suicide attempt. According to the American Suicide Association, the global incidence of suicide in the elderly is 14 in 10,000,000, compared to 11 in 100,000 in the general population, the firearm being the most used method for committing suicide among the elderly and representing 72.1% of cases. Some causes that lead to suicide among the elderly are dementia, mental illness and depression [8].

Heart diseases: With aging there are significant changes in the autonomic nervous system, considered electrophysiological disorders that lead to arrhythmias, these play an important role in arrhythmogenesis and are components in the stratification of mortality risk, with cardiovascular diseases being the main cause of death in the elderly population [23]. The differences in cardiovascular conditions increase with age in all ethnicities, studies in the United States have realized with statistical data, the relationship of ethnicity with the major causes of death in Hispanics, blacks and whites. Despite having in common heart diseases, cerebrovascular diseases and diabetes mellitus, related according to ethnicity vary the proportions of risks [24]. Thomachan et al. [25] also describe that one of the main causes of death in the world is coronary disease and advanced age being the strongest risk factor. Michael et al. [7] in his research said that cardiovascular disease

is the leading cause of death and great disability in elderly people over 75 years of age. Ke Jun et al. [14] in the study of "short-term prognosis and analysis of risk factors for acute myocardial infarction with suppression of the segments of the electrocardiogram lines, complicated by cardiogenic shock" obtained significant results, where mortality in patients aged 75 years or older is much higher than in patients under 75 years of age. The mortality of patients with late diagnosed cardiogenic shock was higher than that of early diagnosed cardiogenic shock.

In women there is a growing tendency of coronary disease along with the increase of risk factors such as overweight, abdominal obesity and diabetes, which point to the need for targeted education regarding the prevention and detection of disease. In men, there is a higher prevalence of previously diagnosed coronary heart disease, higher rates of admissions and mortality from myocardial infarction in hospital studies, but the occurrence of coronary heart disease in women is higher and diagnosed later than in men, may be a reason why women are less hospitalized and is causing deaths among elderly women before hospitalization [6]. With the few guidelines on the management of vascular disease and related interventions at the end of life, there is consequently a general lack of information on the impact of diagnostic and therapeutic interventions on patients and outcomes in the elderly, including quality of life, physical function, maintenance of independence, and also a lack of evidence to guide medicine in clinical decision making in elderly patients with diseases [7]. The work of science at the level of clinical study of the automotive nervous system and a better understanding of the relationship with age is necessary to be better managed by the medical community [23]. For laboratory diagnosis of cardiovascular disease may be used according to Lai et al. [26] results of biochemical analysis of serum potassium with a value below normal reference, which is related to cardiovascular disease and consequently low survival in elderly may also be a marker in laboratory care in Taiwan in China [26].

Respiratory illnesses: In 2015, infections of the lower respiratory tract, adjusted for disability and years of life, caused 103.0 million deaths worldwide, characteristic of regionality in countries of Africa and Somalia, due to factors of prevalence of malnutrition the largest cause of death was in children under 5 years, while in countries such as China and Japan there was a prevalence of death in adults aged 70 years or older, 34 million [27]. Over the past 25 years, in 195 countries, a global study of the burden of respiratory tract disease showed the variability of mortality related to age, gender, geography and year [27]. Between 2005 and 2015, the estimated global burden of lower respiratory tract infections decreased considerably due to a slower reduction in the mortality rate related to growth and population aging. The mortality rate from lower respiratory tract infections at all ages has increased in many geographies or localities, notably in countries with high economic development, where it can be related to exposure to air pollution, in elderly people over 70 years of age increased 18.9% in this period [27]. Aging increases the risk of infections, are directly related to influenza, pneumonia and septicaemia of the main causes of death in the elderly [2]. These respiratory tract infections may also be associated with influenza and the ability to generate fatal risks to the elderly population correlated with pneumonia may aggravate cases and lead to hospitalization or death. Rates of hospitalization for all causes and severe cardiorespiratory failure can possibly be related when there is flu with potential sequelae or complications [28]. In 2015, in the global elderly population over 70 years of age, there were almost 700,000 deaths from lower respiratory tract infections due to pneumococcal pneumonia, and research results suggest that respiratory tract infections are the second cause of death globally after cardiac ischemia [27].

Positive influences on the aging process and mortality reduction

According to the literature, high frequency physical activities have been associated with a decreased risk of dementia, as well as multiple leisure activities can provide stronger protective effects, preventing lack of memory, preventing cognitive decline, reducing stress, stimulating brain neurogenesis with synaptic activity, recovery capacity, preserving mental health, providing social support. They are also known to decrease the risk of chronic diseases, including cardiovascular disease, diabetes mellitus, obesity and stroke, which are common in elderly patients [13]. The maintenance of the independence of the elderly and their functional results (for example, ability to perform instrumental activities of daily life and cognitive function) depend on the prevalence of in-depth studies to develop methods to incorporate risk in general [7]. The care of the elderly population at bath time is prevention of unexpected sudden deaths in bathtubs [15].

Yang et al. [13] also points out that leisure activities in cultural differences have shown a protective role in the development of dementia, physical and social activity can vary significantly among the elderly in Asia and Western countries. For example, dancing for seniors in a Taiwanese ballroom are common physical activities, moreover, the pathophysiology mechanism that relates each type of leisure activity and risk may be different, contribute to regional quality of life and decline in mortality [13]. Men living in rural areas have been protected from the prevalence of heart disease due to their higher levels of physical activity and body mass indexes [6]. As the Mokdad [27] study and collaborators suggested, integrated management work with the World Health Organization reduces substantially the burden of respiratory tract infections in various age groups, but especially in the elderly and children dependent on regional needs. Better access to health care and an emphasis on appropriate treatment have likely played a crucial role in reducing mortality [27].

In order to develop an intervention in the most effective approach to health, the study highlights the importance of understanding the differences in the prevalence of cardiovascular diseases and mortality among ethnic groups [24]. Studies on cardiovascular disease provide the basis for future evidence -based

guidelines, improve care applicable to the elderly worldwide [7]. When using a multidisciplinary approach of health professionals in the elderly undergoing hip fracture surgery, it is presumably associated with a decrease in postoperative complications, hospital stay and mortality [29]. Sustainable development objectives (SDOs) will be needed for continued reductions in the global burden of mortality from respiratory tract infection [27].

ODSs are part of the evolution of a United Nations global treaty that began in 2000 and was called the Millennium Development Goals (MDGs) by 2015. They are strategies for the development of economic, social and environmental public policies that aim at meeting goals that reduce the negative impacts worldwide, one of these important impacts on health is the reduction of atmospheric pollution with aerosols [30]. Clinical trials that include a broad spectrum of elderly approaches and quantitative critiques of population studies are necessary for the therapeutic construction process and to obtain relevant long-term results in global quality of life [7,31-36].

Result and Discussion

Several authors describe as main causes of death being related to cardiac functions Chada et al. [23] comment that cardiovascular diseases represent the main cause of death in the elderly population [23]. Udall et al. [24] point out that risk proportions vary according to age in all ethnicities. Thomachan et al. [25] also describe that one of the main causes of death in the world is coronary disease and advanced age being the strongest risk factor [25,37-42]. Michael et al. [7] in his research said cardiovascular disease is the leading cause of death and great disability in elderly people over 75 years of age. Aging increases the risk of infections, the most frequent in the elderly: Flu, pneumonia and septicemia [2]. The causes of death in the elderly with male and female gender cited in the complementary studies as "major or major" in several places in the world were: Cardiovascular diseases, pneumonia, accidental death (falls), acute coronary syndromes, respiratory tract infections and cancer [43-46].

The other mortality or cause of death descriptions identified in this study by origin were (Figure 1).

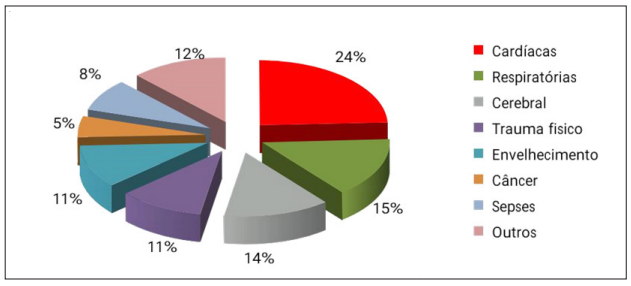

Figure 1: Origin of causes of death.

a) Cardiac-Heart disease, cardiac arrest, cardiovascular disease, atherosclerosis, chronic heart failure, hypertensive diseases, myocardial infarction, acute myocardial infarction and acute coronary syndromes.

b) Respiratory-Acute respiratory infection, respiratory tract infections, pulmonary complications, pneumonia, pulmonary effusion and influenza [47-49].

c) Brain-Stroke, loss of consciousness, cerebrovascular diseases, Alzheimer's disease and dementia.

d) Physical trauma-Fall, penetrating injuries, suicide, low trauma rib fracture in elderly and accidental death.

e) Aging-Functional limitations, disability, hypertension associated with fragility, physical fragility, exhaustion, weakness, slowness, reduction of physical activity, old age, general decline in physiological functions, physical morbidities, hemodynamic instability and diseases related to aging [50,51].

f) Cancer-Carcinoma, colorectal cancer and colon cancer.

g) Infecções - Infecções da corrente sanguínea, sepse, doenças infecciosas e choque séptico.

h) Others-Joint pain, osteoporosis, postoperative complications, kidney disease, chronic kidney disease, weight loss, related to social, diarrheal diseases and diabetes mellitus.

The following are eight (8) tables, which list the main causes of death found in the studies analyzed in this research, separated according to the different sources identified by the authors (Table 1).

1. The causes of death in elderly related to cardiac functions demonstrating comorbidities and risk factors were analyzed from samples of studies in the European continent and from countries such as Japan, United States, Italy, China, Israel, Arab countries and the global population as shown in Table 2.

2. The causes of death in elderly people related to brain functions showing comorbidities and risk factors, were analyzed from samples of studies on the continent (Table 3).

3. The causes of death in the elderly related to physical trauma showing comorbidities and risk factors were analyzed from study samples in countries such as the United States, Australia, China, Barcelona and the global population as shown in Table 4.

4. The causes of death in elderly related to aging showing comorbidities and risk factors were analyzed from study samples in countries such as Spain, China, Italy, Denmark and the global population as shown in Table 5.

5. The causes of death in cancer-related elderly showing comorbidities and risk factors were analyzed from study samples in countries such as Canada and the United States as shown in Table 6.

6. The causes of death in sepsis-related elderly showing comorbidities and risk factors were analyzed from study samples in countries such as Japan and Denmark as shown in Table 7.

7. The causes of death in the elderly related to various origins showing comorbidities and risk factors, were analyzed from study samples in Denmark as shown in Table 8.

Table 1: Causes of death in elderly people related to cardiac functions.

Cause of Obit	Place of Study	AGE	Comorbidity/Risk Factors	Year	Authors
Cardiovascular disease the main cause of death	United Kingdom (Europe)	≥60	ertiroidimo Hyperthyroidism and hypothyroidism, morbidly obese, hyperlipidemia, parkinson's, synucleinopathies	2018	Chadda
Stroke, heart disease, joint pain, osteoporosis and cancer	Japan (Tókio)	≥80-90	Stroke, heart disease, joint pain, osteoporosis and cancer	2018	Kiyoshige
Cardiac arrest other symptoms (fall, loss of consciousness, stroke and others)	Japan (Tókio)	≥60	Circulatory diseases	2018	Kanawakua
Cardiovascular disease	United States	≥54 -65	Left ventricular hypertrophy, systolic blood pressure, hypertension	2018	Cao
Heart failure and chronic kidney disease	Pittsburgh	≥ 70 -79	Renal function and heart failure	2018	Selamet
Chronic heart failure	Pisa (Italy)	≥ 77	Renal dysfunction	2018	Vergaro
Cardiovascular disease is the main cause of death	Global population	≥75	Physical disabilities, significant cognitive, fragility, residence in nursing home, hospitalized patients	2016	Michael
Cardiovascular causes	Taiwan	≥60	Causes and cardiovascular, diabetes, hypertension, ischemic heart disease, heart failure and stroke	2015	Lai
Cardiogenic shock, acute myocardial infarction	Shahekou (China)	≥75	Recurrent myocardial infarction, new stroke, hemorrhagic events, renal failure	2018	Ke
Coronary heart disease is one of the main causes of death	United Arab Emirates	≥80	Diseases related to blood circulation	2018	Thomachan
Acute myocardial infarction	Kyoto (Japan)	≥60	Age, heart failure, dysfunction and cirrhosis of the liver	2016	Yamashita
Main acute coronary syndromes	Israel	≥75	Age and cardiac complications	2016	Yankelson

Table 2: Causes of death in elderly people of origin related to respiratory functions.

Cause of Obit	Place of Study	Age	Comorbidity/Risk Factors	Year	Authors
Infectious diseases and Sepsis	United States	≥ 60	Respiratory tract infections, pneumonia, sepsis, influenza, urinary tract infections, central nervous system infections, skin infections, soft tissue infections, dementia, impaired coordination, falls and lesions with infection, malnutrition, peripheral vascular disease without wound healing, diabetes mellitus, chronic obstructive pulmonary disease (COPD), chronic kidney disease and malignancy, solid organ or bone marrow transplants, malignancy or inflammatory conditions, and a range of pathogens and invasive devices and procedures	2016	Liang
Influenza, pneumonia, cerebrovascular deaths, myocardial infarction and septicaemia	United States	≥ 65	Chronic low respiratory disease Alzheimer's disease, diabetes	2017	Jump
Major cause of death Pneumonia	Global population Canadá	≥60- 65	Respiratory tract infections	2017	Calder
Pneumonia and Infections in the respiratory tract	United States	≥65	Infection by influenza	2015	Granados
Major cause Respiratory infection, 2nd heart failure	Shiichuan (China)	≥65	Not described in the text	2015	Wamg

Table 3: Causes of death in elderly people of brain function related origin.

Cause of Obit	Place of Study	Age	Comorbidity/Risk Factors	Year	Authors
Depression	China, Gana, Índia, México, Rússia, África do Sul	≥ 50	Weak grip force has a higher prevalence of depression than those with higher manual grip force	2018	Franks
Alzheimer's disease	United States	≥ 60	Dementia	2018	Wilkins
Alzheimer's disease	Taiwan e United States	≥60	Dementia, vascular risk factors (diabetes mellitus type 2, hypertension and and hypercholesterolemia) lifestyle (leisure activities, smoking and alcohol consumption)	2015	Yang
Cerebrovascular diseases, Cardiovascular diseases, Diabetes mellitus	United States	Elderly	Obesity, race, diabetes, hypertension, cerebrovascular diseases	2016	Udall
Cerebral vascular accident, atherosclerosis	United States	Elderly	Stroke, cerebrovascular pathology, hypertension, cognitive impairment and dementia	2018	Robison
Cerebrovascular Diseases and Hypertensive Diseases	Rio de Janeiro (Brazil)	≥70-79	No description of the author	2018	Vilella

Table 4: Causes of death in the elderly related to physical trauma.

Cause of Obit	Place of Study	Age	Comorbidity/Risk Factors	Year	Authors
Mortality from physical trauma (falls, penetrating injuries, suicides)	United States	≥65	Intervertebral disc herniation, osteophyte formation, fractures, injuries, depression, dementia, mental illness, fall	2018	Hamidi
Low trauma rib fracture in elderly, pulmonary complications, pneumonia and pulmonary effusion	Dubbo (Austrália)	≥70	Age, previous fracture and fall (in men), osteoporosis, low bone marrow density, pulmonary complications (30% and 40% of elderly patients with rib fracture develop pneumonia and pulmonary effusion)	2018	Mai
Suicide	United States	≥60	Old age, fragility, tolerance to stress	2018	Brooks
Falls and physical morbidities	India	≥60	Hearing impairment, depression, the use of multiple drugs and slippery floors at home	2018	Jindal
Of the causes of accidental death in the elderly, falls come second	Taiwan	≥65	Fall, psychological stress, prolonged hospitalization	2014	Tsai
Mortality from diseases related to the respiratory tract	Global population	Elderly	Locality, age, gender and diarrhea	2017	Mokdad
Postoperative complications (cardiovascular complications, hemodynamic instability, acute respiratory infection, renal complications)	Barcelona (Espanha)	≥85	Hip fracture	2018	Reguant

Table 5: Causes of death in elderly people of origin related to aging.

Cause of Obit	Place of Study	Age	Comorbidity/Risk Factors	Year	Authors
Mortality related to Espanha functional limitations and disability	Espanha	≥65	Hypertension, diabetes mellitus, hyperlipidemia, heart disease, cancer, anemia, chronic obstructive pulmonary disease, psychiatric disorders, osteoarthritis, osteoporosis, hearing loss, cataract and peripheral vascular disease	2018	Contador
Hypertension associated with fragility	Pequim (China)	≥60	Risk Factors (Age, low schooling, cognitive impairment, depression, chronic diseases and lower meat consumption)	2018	Lina
Physical weakness (weight loss, exhaustion, weakness, slowness and reduction of physical activity)	Rugão (China)	≥70 - 84	Covariable risk factors: Age, gender, smoking, drinking habits, occupation (Farmer and others), marital status and literacy	2018	Shia

Old age	Copenhagen (Denmark)	≥50	Age and gender contributed more to predictions of mortality in old age, added values of genetics, physiology, functionality, humor, cognition, nutritional status, subjective health, disease, fragility and lifestyle	2018	Kusumastuti
General decline of physiological functions	Itália	≥65	Dramatic decrease in circulating B lymphocytes and immune functions	2017	Bulati
Diseases related to aging	Global population	≥65	Cardiovascular diseases such as ischemic heart disease, stroke, hypertension, peripheral vascular disease	2012	Fachine

Table 6: Causes of death in the elderly related to cancers.

Cause of Obit	Place of Study	Age	Comorbidity/Risk Factors	Year	Authors
Colon Cancer	Colúmbia Britânica (Canadá)	≥50-69	Risk factor age and cardiovascular diseases	2018	Raycraft
		≥ 70			
Cancer is one of the main causes	Florida (United States)	≥ 65	Cancer	2018	Balducci
Cancer and Cardiovascular Diseases	United Kingdom and United States	≥75	Obesity, blood pressure, cholesterol and alcoholism	2015	Martin

Table 7: Causes of death in elderly people of sepsis-related origin.

Cause of Obit	Place of Study	Age	Comorbidity/Risk Factors	Year	Authors
Bloodstream infections	Japan	≥65	Inadequate empirical antimicrobial therapy and hospital care	2018	Honda
Septic or sepsis-related shock	Copenhagen (Denmark)	Elderly	Immunosuppression, diabetes, cancer, risk factors such as advanced age, type of infection (e.g. methicillin-resistant Staphylococcus aureus (MRSA), polymicrobial), number of organ dysfunctions and adequacy of antimicrobial	2017	Rannikko

Table 8: Causes of death in elderly people of different origins.

Cause of Obit	Local Study	Age	Comorbidity/Risk Factors	Year	Authors
Social-related mortality	Copenhagen (Denmark)	≥76	Associated with low schooling and financial conditions	2018	Jorgensen

Conclusion

Through this study it was found that cardiovascular diseases, brain diseases and diseases related to the respiratory tract are the main causes of death in the elderly in 53%, which is within the guidelines of the World Health Organization (WHO) in relation to chronic non-communicable diseases (NCD), in this issue it is noted that cancer accounts for 5% of causes of death in this research. It is important to mention that about 11% of the deaths were related to physical trauma such as injuries, fall and suicide, another important aspect was the death during bathing due to temperature shock in relation to weather conditions, which demonstrates the demand for the need to guide family members, as well as effective public policies related to care and health of the elderly population.

The cause of death and its variables depend on several integrated data, being relevant the characteristics presented as: Age, gender, place of study and morbidity or risk factors. The more advanced age is a great factor for increasing the risks of morbidities and prevalence of diseases. According to the gender significant differences were identified depending on the disease, for example, the female hormone estrogen is a potential cerebrovascular protector in women, with menopause and reduction of the hormone there may be greater predisposition to related diseases, already in men in relation to hormonal there is greater fitness in physical activities, low physical activity is a risk factor for frontal lobe atrophy in men.

The epidemiological data change according to the place of study, by geographic, climatic and socioeconomic conditions.

Morbidities or risk factors are differentials according to life habits, environment, inherited genetic predispositions and susceptibility of diseases. So, by compilation and evaluation of data from this study it was identified the major causes of death by origin in order: cardiac, respiratory, cerebral, physical trauma, associated with aging, cancer and sepsis. Studies and research in relation to the elderly population and causes that lead to death, are necessary for the prevention of morbidities, implementation of treatments for diseases and reduction of mortality, together with the multidisciplinary approaches of health professionals, aiming at improving the quality and life expectancy of the aging population in the world.

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