

Analysis of Death Cause Monitoring Results of Residents in Jingxi City, Guangxi from 2019 to 2020

Wang Fuchun, Wei Fengxian, Liang Guoyue

Jingxi City Center for Disease Control and Prevention, Jingxi, China

Email address:

jxcdc2376@163.com (Wang Fuchun)

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Abstract: *Objective* understand the main causes and death levels of residents in Jingxi City from 2019 to 2020, and provide a reference for formulating disease prevention and control strategies and measures. *Methods* According to the International Classification of Diseases (ICD-10), the data of residents' death monitoring data in Jingxi City from 2019 to 2020 are classified, and a brief life table is made. Excel 2016 and SPSS 21.0 software are used to analyze the crude death rate, standardized death rate, and composition. *Results* statistical analysis of indicators such as ratio, cause of death, and life expectancy, from 2019 to 2020, the crude death rate of residents in Jingxi City's death cause monitoring was 1165.97/100,000, and the standardized death rate was 964.80/100,000. Males were higher than females. There were differences in the main causes of death among people in different years and different age groups. The top 5 causes of death and mortality of residents in Jingxi City are heart disease 126.35/100,000, cerebrovascular disease 117.48/100,000, malignant tumor 86.24/100,000, respiratory disease 53.69/100,000, injury and poisoning 20.10/100,000. The top 5 causes of death accounted for 71.92% of the total number of deaths in the population. The average life expectancy of residents is 78.16 years, and the life expectancy of women is higher than that of men. *Conclusion* cardiovascular and cerebrovascular disease, Malignant tumors, respiratory diseases, injuries and poisoning are currently the main causes of death affecting the healthy lifespan of residents in Jingxi City. These diseases should be the focus of prevention and control in the future, and national health education should be strengthened to improve the health of residents.

Keywords: Mortality, Death Cause Order, Death of Causes Analysis

1. Introduction

With the aging of the population and the acceleration of urbanization in my country, social problems such as environmental pollution have become more and more serious. Chronic non-communicable diseases such as cardiovascular and cerebrovascular diseases, malignant tumors, respiratory diseases, injuries and poisoning have become the main threats to the health of Chinese residents [1-4]. In order to understand the main causes of death and death levels of residents in Jingxi City, and to provide a reference for formulating disease prevention and control strategies and measures, this paper analyzes the monitoring results of death cause of residents in Jingxi City, Guangxi from 2019 to 2020, and the results are reported as follows.

2. Materials and Methods

2.1. Data Source

The death information of residents in Jingxi City from 2019 to 2020 comes from the "China Disease Prevention and Control Information System Death Cause Registration and Reporting System". The death time for death cause monitoring and registration is from January 1, 2019 to December 31, 2020. The deceased It is a permanent resident of Jingxi City who has passed the final review. The population data are provided by the Jingxi Municipal Bureau of Statistics, and the standard population uses the data of the sixth seven population census in 2010.

2.2. Methods

The death data of residents were classified and coded according to the International Classification of Diseases (ICD-10), and a brief current life table was made. The main analysis indicators were crude death rate, Standardized death rate, composition of death causes, ranking of death causes, and life expectancy.

2.3. Statistical Analysis

Using Excel 2016 and SPSS 21.0 software for statistical analysis of the data, the comparison of rates was performed by the χ^2 test, and $p < 0.05$ was considered statistically significant.

2.4. Quality Control

Provide professional technical training to all relevant personnel involved in the investigation and registration of the cause of death, direct network reporters, and cause of death investigation and monitoring. The content and methods of the investigation and monitoring are unified, and the division of responsibilities at all levels is clearly defined. The medical and health institutions at all levels are responsible for the area under their jurisdiction. Residents' cause of death investigation and monitoring, registration and direct network reporting of data, county and city-level disease prevention and control centers are responsible for reviewing coding, data entry, correction and rechecking, etc. City-level disease prevention and control centers are responsible for business training guidance, random inspections, verification and quality control, to ensure that the data is true and complete.

3. Results

3.1. Overall Death

The resident population of Jingxi City from 2019 to 2020 is 525,398, of which the sex ratio of men to women is 1:0.95, the population ≥ 60 years old accounted for 17.42%, the population ≥ 60 years old accounted for 12.49%, and the population is in an aging society. From 2019 to 2020, Jingxi City reported a total of 6126 deaths among residents with a crude death rate of 1165.97/100,000, and a standardized death rate of 964.80/100,000, of which the crude death rate for males was 1357.92/100,000, and the standardized death rate

was 1306.65/100,000, the crude death rate for females was 963.09/100,000, and the standardized death rate was 642.92/100,000.

The mortality rate of men was higher than that of women, and the difference between the two was statistically significant ($\chi^2=177.55$, $P<0.001$).

3.2. Ranking of Elderly ≥ 65 Years Old

From 2019 to 2020, among the permanent residents of Jingxi City's death cause monitoring 65,603 people aged 65 or older, accounting for 12.49%. A total of 4162 deaths were reported, accounting for 67.94% of the total population deaths, and the crude death rate was 6344.22/100,000. The standardized mortality rate is 580.74/100,000, male crude death rate is 7592.86/100,000, standardized death rate is 733.13/100,000, female crude death rate is 5414.46/100,000, and standardized death rate is 470.36/100,000. The mortality rate of men is higher than that of women, and the difference between the two is statistically significant ($\chi^2=128.18$, $P<0.001$).

3.3. Mortality Rates by Age and Sex

From 2019 to 2020, the crude death rate of infants and children in the 0-4 year old age group of Jingxi City is 54.22/100,000. With the increase of age, the death rate has decreased, and the crude death rate of the 5-9 year old group has decreased to 31.31/100,000, and then gradually increased. The crude death rate for the 10-19 year-old age group rose to 76.43/100,000, while the crude death rate for the 20-24 year-old and 25-29-year-old age group decreased slightly, to 75.72/100,000, respectively, 59.90/100,000. Starting from the year-old age group, with the increase of age, the mortality rate gradually increases, especially the mortality rate of the elderly ≥ 60 years old, which is increased from 1853.50/100,000, in the 60-64 year-old age group. To 85-year-old age group population of 25977.22/100,000. The mortality rate of the elderly is higher than that of the young, and the difference between the two is statistically significant ($\chi^2=6902.51$, $P<0.001$). From the perspective of gender, the mortality rate of women in the 80-84 and 85-year-old age groups is higher than that of men. The difference between the two is statistically significant ($\chi^2=23.02$, $P<0.001$). The mortality rate of men in other age groups is higher than that of women. The difference between the two is statistically significant ($\chi^2=481.37$, $P<0.001$). See Table 1.

Table 1. Cause of death monitoring of residents in Jingxi City from 2019 to 2020.

| Age group (years old) | Average population | | | Death toll | | | Crude mortality (1/100,000) | | | Standardized mortality (1/100,000) | | |
|--------------------------|--------------------|-------|-------|------------|-------|-------|-----------------------------|--------|--------|------------------------------------|-------|-------|
| | Male | Femal | Total | Male | Femal | Total | Male | Femal | Total | Male | Femal | Total |
| 0~ | 3443 | 3128 | 6571 | 7 | 4 | 11 | 203.31 | 127.88 | 167.40 | 2.09 | 1.32 | 1.72 |
| 1~ | 16943 | 15219 | 32162 | 8 | 2 | 10 | 47.22 | 13.14 | 31.09 | 2.19 | 0.61 | 1.44 |
| 5~ | 20471 | 17854 | 38325 | 11 | 1 | 12 | 53.73 | 5.60 | 31.31 | 2.86 | 0.30 | 1.67 |
| 10~ | 21845 | 19712 | 41557 | 14 | 9 | 23 | 64.09 | 45.66 | 55.35 | 3.60 | 2.57 | 3.11 |
| 15~ | 18590 | 16736 | 35326 | 14 | 13 | 27 | 75.31 | 77.68 | 76.43 | 5.64 | 5.82 | 5.72 |
| 20~ | 12977 | 12117 | 25094 | 15 | 4 | 19 | 115.59 | 33.01 | 75.72 | 11.05 | 3.16 | 7.24 |
| 25~ | 16936 | 14781 | 31717 | 15 | 4 | 19 | 88.57 | 27.06 | 59.90 | 6.71 | 2.05 | 4.54 |
| 30~ | 22812 | 21566 | 44378 | 54 | 15 | 69 | 236.72 | 69.55 | 155.48 | 17.26 | 5.07 | 11.33 |
| 35~ | 21391 | 19734 | 41125 | 78 | 19 | 97 | 364.64 | 96.28 | 235.87 | 32.31 | 8.53 | 20.90 |
| 40~ | 18529 | 15502 | 34031 | 155 | 37 | 192 | 836.53 | 238.68 | 564.19 | 78.30 | 22.34 | 52.81 |
| 45~ | 20692 | 16748 | 37440 | 239 | 55 | 294 | 1155.04 | 328.40 | 785.26 | 91.48 | 26.01 | 62.19 |

| Age group (years old) | Average population | | | Death toll | | | Crude mortality (1/100, 000) | | | Standardized mortality (1/100, 000) | | |
|-----------------------|--------------------|--------|--------|------------|-------|-------|------------------------------|----------|----------|-------------------------------------|--------|--------|
| | Male | Femal | Total | Male | Femal | Total | Male | Femal | Total | Male | Femal | Total |
| 50~ | 18891 | 16409 | 35300 | 290 | 63 | 353 | 1535.12 | 383.94 | 1000.00 | 90.73 | 22.69 | 59.10 |
| 55~ | 15562 | 15310 | 30872 | 273 | 85 | 358 | 1754.27 | 555.19 | 1159.63 | 107.01 | 33.87 | 70.74 |
| 60~ | 12889 | 13008 | 25897 | 367 | 113 | 480 | 2847.39 | 868.70 | 1853.50 | 125.29 | 38.22 | 81.55 |
| 65~ | 10764 | 13210 | 23974 | 364 | 160 | 524 | 3381.64 | 1211.20 | 2185.70 | 104.15 | 37.30 | 67.32 |
| 70~ | 8404 | 10946 | 19350 | 445 | 215 | 696 | 5295.10 | 2293.08 | 3596.90 | 130.79 | 56.64 | 88.84 |
| 75~ | 4684 | 6394 | 11078 | 477 | 451 | 928 | 10183.60 | 7053.49 | 8376.96 | 182.29 | 126.26 | 149.95 |
| 80~ | 2602 | 4122 | 6724 | 397 | 454 | 851 | 15257.49 | 11014.07 | 12656.16 | 152.57 | 110.14 | 126.56 |
| 85~ | 1546 | 2931 | 4477 | 443 | 720 | 1163 | 28654.59 | 24564.99 | 25977.22 | 163.33 | 140.02 | 148.07 |
| Total | 269971 | 255427 | 525398 | 3666 | 2460 | 6126 | 1357.92 | 963.09 | 1165.97 | 1309.65 | 642.92 | 964.80 |

3.4. Sequence and Composition of Causes of Death

From 2019 to 2020, the top 5 causes of death in the population of Jingxi City residents are heart disease, cerebrovascular disease, malignant tumor, respiratory disease, injury and poisoning and the death toll accounts for 21.86%, 20.32%, and 14.92% of the total deaths respectively, 9.29%, 5.53%, the top 5 causes of death were 4, 406 residents, accounting for 71.92% of the total deaths. Among them, the

top 5 causes of death for men were cerebrovascular disease, heart disease, malignant tumor, respiratory disease, injury, and poisoning.

The death toll was 2692, accounting for 73.43% of the total death toll of men. The top 5 death causes of women were heart disease, followed by heart disease. Cerebrovascular diseases, respiratory diseases, malignant tumors, injuries and poisoning caused 1, 714 deaths, accounting for 69.67% of the total female deaths. See Table 2.

Table 2. Ranking of death causes of residents in Jingxi City from 2019 to 2020.

| Disease name | Total | | | Male | | | Female | | |
|------------------------------------------------|----------|------------|-----------------------|----------|------------|-----------------------|----------|------------|-----------------------|
| | Sequence | Death toll | Composition Ratio (%) | Sequence | Death toll | Composition Ratio (%) | Sequence | Death toll | Composition Ratio (%) |
| Heart Disease | 1 | 1339 | 21.86 | 2 | 741 | 12.10 | 1 | 598 | 9.76 |
| Cerebral vascular disease | 2 | 1245 | 20.32 | 1 | 799 | 13.04 | 2 | 446 | 7.28 |
| Malignant tumor | 3 | 914 | 14.92 | 3 | 634 | 10.35 | 4 | 280 | 4.57 |
| Respiratory diseases | 4 | 569 | 9.29 | 4 | 285 | 4.65 | 3 | 284 | 4.64 |
| Injury and poisoning | 5 | 339 | 5.53 | 5 | 233 | 3.80 | 5 | 106 | 1.73 |
| Digestive system diseases | 6 | 213 | 3.48 | 6 | 180 | 2.94 | 8 | 33 | 0.54 |
| Infectious Diseases | 7 | 146 | 2.38 | 7 | 106 | 1.73 | 7 | 40 | 0.65 |
| Endocrine, nutritional and metabolic diseases | 8 | 129 | 2.11 | 8 | 78 | 1.27 | 6 | 51 | 0.83 |
| Urogenital diseases | 9 | 69 | 1.13 | 9 | 46 | 0.75 | 10 | 23 | 0.38 |
| Nervous system diseases | 10 | 54 | 0.88 | 10 | 33 | 0.54 | 11 | 21 | 0.34 |
| Musculoskeletal and connective tissue diseases | 11 | 44 | 0.72 | 11 | 20 | 0.33 | 9 | 24 | 0.39 |

Note: unknown cause of death and other diseases do not participate in the ranking of causes of death.

3.5. Life Expectancy

The life expectancy of residents in Jingxi City from 2019 to 2020 is 78.16 years, of which male life expectancy is 75.77 years, female life expectancy is 80.78 years, and the difference in life expectancy between men and women is 5.01 years.

4. Discussion

The analysis results show that the top 5 causes of death for residents in Jingxi City from 2019 to 2020 are heart disease, cerebrovascular disease, malignant tumors, respiratory diseases, injuries and poisoning.

These diseases are the main diseases that seriously endanger the lives and health of residents in Jingxi City. The death toll accounts for 71.92% of the total death toll. The top 5 causes of death are basically the same as the results of related studies in Guangxi and the whole country in recent

years [5-9], but the order of death is slightly different. This shows that the overall health status of residents in Jingxi City is basically the same as that of residents in other parts of the country. With the accelerated development of an aging society, chronic non-communicable diseases have become a major public health problem that seriously threatens the lives and health of the entire population.

The aging of the social population refers to a country or region where the elderly population over the age of 60 accounts for 10% of the total population, or the population over 65 years old accounts for 7% of the total population [10]. The proportion of the population over 60 years old in Jingxi City is 17.42% of the total population, and the proportion of people over 65 years old in the total population is 12.49%, indicating that Jingxi City has entered an aging society. The life expectancy of resident in Jingxi City is 78.16 years, and the life expectancy of women is higher than that of men. This is basically consistent with the results of relevant studies in Guangxi [11-12], reflecting the good health of residents in

Jingxi City, the improvement of living environment, and the higher quality of life.

My country has built a well-off society in an all-round way, the rapid development of social economy, the country is prosperous, the people are prosperous, people's living standards continue to improve, the environmental quality continues to improve, the medical technology level improves and other reasons, the life expectancy of the population is gradually extended [13]. In the results of this analysis, the mortality rate of men is higher than that of women, which is consistent with the results of relevant domestic research [14]. This may be related to some of the bad habits of men, such as smoking, drinking, irregular eating, or stress in work and life.

The main causes of death of residents in Jingxi City are cardiovascular and cerebrovascular diseases and malignant tumors, accounting for 57.10% of all deaths. The death rate of cardiovascular and cerebrovascular diseases is relatively high, and the age of onset is younger. cardiovascular and cerebrovascular diseases are the result of a variety of factors, especially high-salt, high-fat, high-sugar, high-cholesterol diet, smoking, high psychological pressure, and sedentary factors that play an important role. National health education should be strengthened, knowledge of the prevention and treatment of chronic diseases such as hypertension, diabetes, and hyperlipidemia should be popularized, and personal living habits should be cultivated.

Lowering lipids and controlling body weight within a reasonable range to reduce the incidence and mortality of cardiovascular and cerebrovascular diseases.

Malignant tumors are one of the main causes of death among residents in Jingxi City, which is consistent with the survey results in other parts of the country [15]. It is necessary to strengthen social publicity and education of malignant tumor prevention and control, develop a healthy lifestyle, and conduct regular physical examinations, and strengthen the screening of malignant tumors.

Check, achieve early detection, early diagnosis, early treatment, and take intervention measures to reduce the occurrence of malignant tumors.

5. Conclusion

The analysis results of the death cause monitoring data in Jingxi City from 2019 to 2020 show that heart disease, Cerebrovascular disease, malignant tumor, respiratory system disease, injury and poisoning are the top 5 causes of death that seriously endanger the health of residents in Jingxi City. It has become a major public health problem that seriously affects residents' health and economic and social development in Jingxi City. Therefore, governments at all levels should attach great importance to improving the prevention and treatment of chronic diseases, and should conduct extensive health education for the people to improve the health of the people. Take effective measures to fully carry out the "three-level prevention", advocate a healthy lifestyle of reasonable diet and scientific exercise, improve the quality of life, and reduce the population's disease damage and social and economic losses.

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