ISSN: 2577-2996

PROGRESS IN MEDICAL SCIENCES, 2025
VOL 9, NO. 1, PAGE 1 – 5
Doi- doi.org/10.47363/PMS/2025(9)226

REVIEW ARTICLE

Open Access

Analysis Cervical Cancer among Urban and Rural Residents in Xiangyang, Hubei, 2017-2019

Chen Xiaohui

Xiangyang Disease Prevention and Control Center, Xiangyang City, Hubei Province, China

ABSTRACT

Objective: Analyze the incidence and mortality of cervical cancer among urban and rural residents in Xiangyang City from 2017 to 2019, and provide evidence for effective prevention and control of cervical cancer.

Methods: Based on the cervical cancer registration database, the crude incidence rate, the age-standardized rate by the standard Chinese population and the world population (ASRC and ASRW), the truncated rate of 35~64 years old, were calculated and analyzed by descriptive statistics.

Results: From 2017 to 2019, the crude urban(rural)incidence rate of cervical cancer in Xiangyang was $18.60/10^5$($15.20/10^5$), the ASRC was $13.93/10^5$($11.51/10^5$), the ASRW was $13.69/10^5$($11.17/10^5$); The crude urban(rural) mortality rate was 3.75/105(4.69/105), the ASRC was 2.53/105 (3.05/105), the ASRW was $2.62/10^5$($3.21/10^5$). Except in 2019,the crude incidence rate was no difference between urban and rural , the rural incidence rate in 2017 was $19.41/10^5$, higher than that in 2018 ($X2=4.35$, $P<0.04$), higher than that of urban $13.48/10^5$ ($X2=4.52$, $P<0.03$); In 2018, the urban incidence rate was $24.76/10^5$, significantly higher than rural ($12.18/10^5$,$X2=14.20$, $P<0.001$), the urban incidence rate of 15-34 age group was $14.61/10^5$,higher than that of rural (2.73/105,$X2=6.57$, $P<0.05$), the urban truncated rate (35~64 years old) was 41.77/105 was significantly higher than that of rural ($20.86/10^5$,$X2=10.60$, $P<0.01$); no difference in the mortality rate of cervical cancer between urban and rural residents from 2017 to 2019, but the ranking of the rural mortality was higher than that of urban, ranked sixth In 2017,than seventh in 2018(2019).

Conclusion: The higher incidence rural rate of cervical cancer than urban in 2017, may be related to screening of female cervical cancer in 2017, improved the coverage of early diagnosis in rural; In 2018, the incidence urban rate was higher than rural, was related to the younger patient's increasing. It is necessary to expand cervical cancer screening in young people to improve the level of early diagnosis and treatment of cervical cancer in rural areas.

ARTICLE HISTORY

Received December 24, 2024
Accepted December 28, 2024
Published January 04, 2025

KEYWORDS

Cervical Cancer, Incidence Rate Mortality Rate, Analysis

Introduction

Cervical cancer is a major public health problem that continues to endanger women's health. At present, the disease burden of cervical cancer is still serious in China [1]. According to the study on the trend of incidence rate and mortality of cervical cancer from 2006 to 2016, the age standardized incidence rate of women aged 15 to 84 in China increases by about 3.7% every year. Among the 25-39 age groups, the incidence rate in urban areas has declined, while the incidence rate in rural areas has an upward trend; It is predicted that from 2017 to 2030, the standardized incidence rate will increase from 17.13/100000 to 23.22/100000, with an annual increase of 2.5%; It is predicted that the incidence rate in urban areas will continue to decline and the incidence rate in rural areas will continue to rise in the age group from 15 to 54 [2]. In order to understand the current situation and epidemic characteristics of cervical cancer in Xiangyang City, and provide decision-making basis for local government departments to formulate and evaluate prevention and control measures for cervical cancer, this article intends to analyze and evaluate the epidemic characteristics of cervical cancer in Xiangyang City based on population-based malignant tumor registration report data from 2017 to 2019.

Data and Methods

Source of Information

The data on cervical cancer cases in Xiangyang City are all sourced from the registration and reporting system, which are the National Cancer Registry Areas (Xiangyang Cancer Registry serves as the urban registration point, and Yicheng Cancer Registry serves as the rural registration point). The starting date for the case analysis included in this series is from January 1, 2017 to December 31, 2019; The International Classification of Diseases 10th edition (ICD-10) codes for cervical cancer cases are C53.0~C53.9. Uterine body cancer (C54) and unspecified location uterine cancer (C55) are not included in this analysis. The demographic data of Xiangyang from 2017 to 2019 are from the registered residence management data of the public security department.

Contact: Chen Xiaohui, Xiangyang Disease Prevention and Control Center, Xiangyang City, Hubei Province, China.

Quality Control

According to the " Chinese guideline for cancer registration (2016)" and relevant standards, the Xiangyang/Yicheng Cancer Registry Area reviews and organizes the original registration data, and reports it to the Hubei Provincial Cancer Registration Center [3]. The Hubei Provincial Cancer Registry and the National Cancer Registry evaluate the completeness and reliability of the data, and promptly provide feedback on quality issues discovered during the audit. Xiangyang City/Yicheng City will verify and reorganize the data based on the feedback results. The proportion of pathological diagnosis (MV%) in tumor registration reports from 2017 to 2019 in Xiangyang City was 58.61%, the proportion of medical certificates of death (DCO%) was 4.21%, and the death/incidence ratio (M/I) was 0.59.

Statistical Processing

The incidence (death) rate of cervical cancer in urban and rural women in each year and age group, the total incidence (death) rate from 2017 to 2019, the standardized incidence (death) rate of the Chinese population, the standardized incidence (death) rate of the world population, and the cutoff rate of 35 to 64 years old were calculated by Excel 2013, in which the standardized rate of the Chinese population (referred to as the bid winning rate) was calculated by using the standard population age composition of the 2000 national census, and the standardized rate of the world population (referred to as the world standard rate) was calculated by using the Segi's world standard population age composition. Chi square test (statistical value is X2) and variance analysis (calculation of F value) were performed. The difference was statistically significant with $P<0.05$.

Results

Overall Prevalence of Cervical Cancer

Incidence Rate

From 2017 to 2019, a total of 552 cases of cervical cancer occurred in the registered area of Xiangyang City, accounting for 3.02% of the total number of malignant tumors in Xiangyang, and the crude incidence rate was 8.87/100000; The incidence of malignant tumors in the female population accounts for 6.52%, and the crude incidence rate is 17.69/100000, ranking the fourth in the incidence of malignant tumors in women. All statistical indicators below are based on the calculation of the "rate/ratio" of the female population. The bid winning rates of cervical cancer in urban and rural areas were 13.93/100000 and 11.51/100000 respectively, and the world standard rates were 13.69/100000 and 11.17/100000 respectively. The cutoff rates of 35-64 years old were 32.60/100000 and 23.35/100000 respectively, and the cumulative incidence rate of 0-74 years old was 1.29 and 1.00 respectively (Table 1); Except that there was no difference in the crude incidence rate of cervical cancer between urban and rural residents in 2019, the incidence rate of cervical cancer in rural areas in 2017 was 19.41/100000 higher than 12.18/100000 in 2018 ($X2=4.35$, $P<0.04$), the incidence rate in rural areas in 2017 was 19.41/100000 higher than 13.48/100000 in urban areas ($X2=4.52$, $P<0.03$), and the incidence rate of cervical cancer among urban residents in 2018 was 24.76/100000 higher than 12.18/100000 in rural areas ($X2=14.20$, $P<0.001$).

Table 1: The Incidence of Cervical Cancer in Xiangyang, 2017~2019

Area	Years	Cases	Pro-portion(%)	Crude rate(1/105)	ASRC(1/105)	ASRW(1/105)	Truncated rate(35-64 years old) (1/105)	cumulative rate(0-74 years old)(%)
Urban	2017	99	6.54	13.48	10.34	10.63	26.04	1.13
	2018	175	7.58	24.76	18.85	17.92	41.77	1.58
	2019	128	5.09	17.77	12.59	12.51	29.99	1.16
				18.67	13.93	13.69	32.60	1.29
Rural	2017	51	8.70	19.41	14.68	14.15	30.88	1.26
	2018	32	6.24	12.18	8.07	8.51	20.86	0.79
	2019	37	6.47	14.02	11.77	10.86	18.29	0.95

Mortality Rate

From 2017 to 2019, there were a total of 118 deaths from cervical cancer in the registered areas of Xiangyang City, accounting for 1.17% of all malignant tumor deaths in the population, with a crude mortality rate of 2.00/100000; In the female population, malignant tumor deaths account for 3.28%, with a crude mortality rate of 17.69/100000, ranking 11th among female malignant tumor deaths. The mortality rates of cervical cancer in urban and rural areas are 2.53/100000 and 3.05/100000, respectively. The world standard rates are 2.62/100000 and 3.21/100000, respectively. The cutoff rates for 35-64 years old are 5.94/100000 and 5.72/100000, respectively. The cumulative mortality rates for 0-74 years old are 0.24 and 0.30, respectively (Table 2); There was no difference in the mortality rate of cervical cancer between urban and rural residents from 2017 to 2019, but the mortality rate of cervical cancer in rural areas was higher than that in urban areas. In 2017, the mortality rate of cervical cancer in rural areas was higher, ranking 6th.

Table 2: The Mortality of Cervical Cancer in Xiangyang, 2017~2019

Area	Years	Cases	Proportion(%)	Crude rate(1/105)	ASRC(1/105)	ASRW(1/105)	Truncated rate(35-64 years old) (1/105)	cumulative rate(0-74 years old)(%)
Urban	2017	24	3.08	3.27	2.62	2.64	5.89	0.25
	2018	23	2.58	3.25	2.08	2.12	4.88	0.20
	2019	34	3.38	4.72	2.89	3.09	7.06	0.27
				3.75	2.53	2.62	5.94	0.24
Rural	2017	13	3.61	4.95	3.54	3.60	4.17	0.39
	2018	12	4.23	4.57	2.86	3.08	5.84	0.29
	2019	12	4.26	4.55	2.75	2.96	7.16	0.21
				4.69	3.05	3.21	5.72	0.30

Incidence of Cervical Cancer

Average Age of Onset of Cervical Cancer

The average age of onset of 522 female cases of cervical cancer registered in Xiangyang City from 2017 to 2019 was 51.04 ± 12.05 years (median 51.00), with the youngest being 20 years and the oldest being 92 years (both rural women in 2018). The average age of onset in 2018 was 49.50 ± 11.95 years (median 49.00), which was lower than the 52.93 ± 11.15 years (median 53.00) in 2017 and 51.27 ± 12.76 years (median 51.00) in 2019, with a statistically significant difference (F-value of 3.60), P<0.05; From 2017 to 2019, except for the average age of incidence of cervical cancer in rural areas in 2018, which was 54.19 ± 14.60 years (median 54.50), which was higher than that in urban areas, which was 48.65 ± 11.23 years (median 48.00), the F-value was 5.96, P<0.05, There are no other differences. The average age of onset of cervical cancer in urban and rural areas was 51.00 ± 11.60 years (median 51.00) and 51.22 ± 13.53 years (median 50.50), respectively, with no statistical difference between the two.

Incidence Rate of Cervical Cancer in all Age Groups

From 2017 to 2019, there was no report of cervical cancer cases aged 0-19 years in the registered area of Xiangyang City. After 20 years old, the incidence rate increased rapidly with age. The overall peak of incidence was in the 50-year-old group (39.78/100000), and cases aged 35-64 accounted for 77.78% of the total number of cases. However, the age specific incidence trends were different in different years. In 2017, 2018 and 2019, the peak of incidence was in the 50-year-old group (52.97/100000), 55-year-old group (46.88/100000), and 60-year-old group (35.83/100000), respectively; In 2017, there was a small peak in the age group of 75 to 100000 (32.59/100000) (Figure 1). In 2018, the incidence rate of 14.61/100000 in the urban 15-34 age group was higher than that of 2.73/100000 in the rural area (X2=6.57, P<0.05), and the incidence rate of 41.77/100000 in the 35-64 age group was significantly higher than that of 20.86/100000 in the rural age group (X2=10.60, P<0.01), of which the incidence rate of the 45-64 age group was the highest, 48.73/100000 was significantly higher than the incidence rate of 24.32/100000 in the rural age group (X2=8.45, P<0.01) (Table 3).

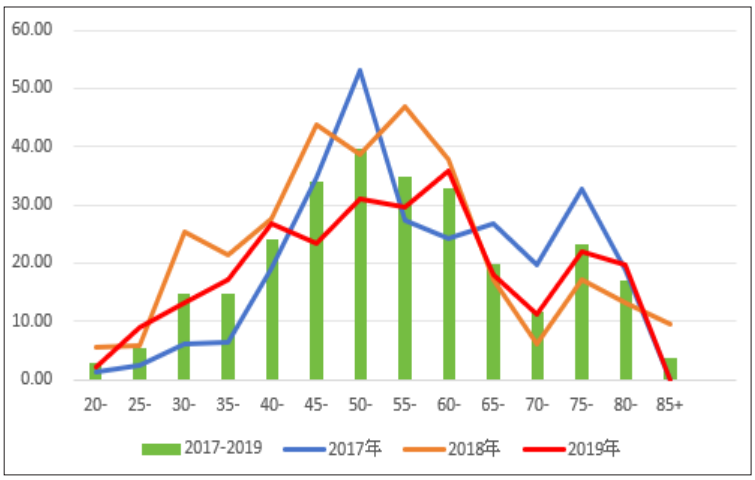

Figure 1: The Age-Specific Incidence of Cervical Cancer in Xiangyang, 2017~2019

Table 3: The E Age-Specific Incidence of Cervical Cancer in Xiangyang, 2017~2019

Age groups	Urban Incidence ($1/10^5$)				Rural Incidence ($1/10^5$)			
	2017	2018	2019	2017-2019	2017	2018	2019	2017-2019
20-	0.00	6.75	3.54	2.65	4.02	4.02	0.00	3.04
25-	1.53	6.12	4.53	3.78	4.71	4.71	17.82	9.25
30-	3.00	31.04	9.25	14.29	21.19	0.00	26.71	17.01
35-	6.43	25.53	18.10	16.37	6.58	6.58	12.85	8.70
40-	16.43	31.22	26.46	24.27	26.81	17.88	27.58	23.85
45-	27.99	57.94	26.74	37.73	49.58	10.63	15.49	25.52
50-	57.42	40.90	37.52	43.71	47.60	31.73	17.69	30.26
55-	32.71	55.34	33.08	40.43	15.16	25.26	20.21	20.21
60-	26.27	37.15	44.48	35.36	26.14	39.20	16.53	26.66
65-	26.77	16.99	16.73	18.31	35.08	17.54	21.77	24.60
70-	26.89	7.61	10.59	12.29	14.35	0.00	12.98	9.24
75-	24.02	17.41	22.37	18.90	67.52	16.88	20.69	35.97
80-	32.30	9.26	26.78	21.28	0.00	22.39	0.00	7.67
85+	0.00	0.00	0.00	0.00	0.00	34.38	0.00	12.82
ALL	13.48	24.76	17.77	18.60	19.41	12.18	14.02	15.20

Death Toll from Cervical Cancer

Average Age of Death from Cervical Cancer

The average age of 118 registered cervical cancer deaths in Xiangyang City from 2017 to 2019 was 57.67 ± 13.41 years (median 55.00), with the youngest being 32 years (urban women in 2018) and the oldest being 92 years (rural women in 2017). The average age of women who reported cervical cancer deaths in 2017, 2018, and 2019 was 57.68 ±14.29 years (median 55.00), 58.20 ±13.39 years (median 57.00), and 57.26 ±12.98 years (median 54.50), respectively, with no statistically significant difference; Urban and rural areas with an average age of 48.65 ±11.23 years (median 48.00) and an F-value of 5.96, $P<0.05$, There are no other differences. The average age of reported deaths from cervical cancer in urban and rural women was 56.30 ±12.70 years (median 54.00) and 60.68 ± 14.56 years (median 61.00), respectively, with no statistically significant difference between the two.

Mortality Rate of Cervical Cancer in Different Age Groups

From 2017 to 2019, there were no reported deaths from cervical cancer in the registered areas of Xiangyang City for individuals aged 0-29 years old. The overall mortality peak was in the 85-year-old group (18.67/100000), with deaths from 45 to 75 years old accounting for 79.67% of the total deaths. The mortality trends varied by age in 2017, 2018, and 2019, with peak incidence rates in the 75-year-old group (16.29/100000), 85-year-old group (19.65/100000), and 75-year-old group (30.82/100000), respectively. The highest mortality rates in urban and rural areas were in the 75-year-old group, with 14.70/100000 and 29.97/100000, respectively, with no statistically significant difference.

Discussions

Cervical cancer is almost entirely caused by human papillomavirus (HPV), and persistent HPV infection is the main risk factor for this disease, causing cervical intraepithelial lesions that can progress to cervical cancer over time [4]. In this sense, cervical cancer is a largely preventable disease, and primary prevention and screening are the most effective methods to reduce the medical burden and mortality caused by cervical cancer [5]. Because global research has found that the incidence rate and mortality of cervical cancer have declined in the past few decades, especially in developed countries that implement effective cervical cancer screening programs and HPV vaccination [6]. Xiangyang launched the screening of female breast cancer and cervical cancer from 2017. According to the analysis of the epidemiological characteristics of cervical cancer incidence and death in Xiangyang from 2017 to 2019, we found that cervical cancer is still a public health challenge among women in Xiangyang. The incidence rate of cervical cancer in Xiangyang has risen to 21.34/100000 in 2018, Increased by 45.54% compared to 2017 [7]. Although it is lower than the overall 22.70/100000 in Hubei Province, the incidence rate of cervical cancer in the city (the rough rate is 24.76/100000, the winning rate is 15.85/100000, and the world standard rate is 17.92/100000) is higher than the urban level in Hubei Province (the rough rate is 23.30/100000, the winning rate is 15.53/100000, and the world standard rate is 15.44/100000) [8]. In 2019, cervical cancer showed a downward turning trend (the rough rate of cervical cancer is 16.76/100000, lower than the provincial 19.57/100000) [9]. In consideration of the above phenomenon, the increase in incidence rate of the registration report in 2018 is related to the increased probability of early detection and early diagnosis after the city launched the screening in 2017, especially for urban women (the crude incidence rate of each group aged 20-55 is high and the level of urban registration areas in Hubei Province of the same age group), which will return to the normal level in 2019 (the crude incidence rate of each age group after the age of 45 is lower than the overall level of Hubei Province). It is noteworthy that, with the increasing aging of the population, although the average age of incidence of most cancers is showing an increasing trend, the results of this paper show that the average age of incidence of cervical cancer in Xiangyang women is on the decline in 2019, and the incidence rate of cervical cancer in all age groups of 20-40 years old is higher than that in Hubei Province, indicating that the incidence of cervical cancer in this city is showing a "young" trend, especially in rural areas, the peak incidence group is 40-45

years old, 5-10 years younger than the peak incidence group of 55-59 years old in Hubei Province.

This article comprehensively analyzes the characteristics of cervical cancer incidence and mortality based on 3-year population cancer registration data. The higher incidence rate of cervical cancer in rural areas than in urban areas in Xiangyang in 2017 may be related to the first comprehensive screening of female cervical cancer and breast cancer in Xiangyang in 2017 to improve the coverage of early diagnosis and treatment in rural areas; In 2018, the incidence rate of cervical cancer among urban residents in Xiangyang was higher than that among rural residents, and it was considered that it was related to the younger age of cervical cancer (the gross incidence of each group in the urban 20-40 age group was higher than that in rural areas, with an average of 19.26/100000 higher). Therefore, it was suggested that cervical cancer screening should pay attention to expanding the scope of young people in rural areas, so as to improve the level of early diagnosis and treatment of cervical cancer in rural areas. In short, more epidemiological and intervention studies are needed to gain a deeper understanding of the risk factors for cervical cancer, optimize prevention and control strategies, and provide scientific basis for formulating more targeted public health policies [10].

Reference

[1] Zhang L, Fang Y, Liang SS, Ren HY. Analysis and prediction of incidence of cervical cancer in cancer registry areas in China. Journal of Cancer Control and Treatment 2023; 36: 557-563.

[2] Yuan M, Zhao X, Wang H, Shangying H, Fanghui Z. Trend in cervical cancer incidence and mortality rates in China,2006-2030:A Bayesian age-period-cohort modeling study. Cancer Epidemiol Biomarker Prev 2023; 32: 825-833.

[3] National Cancer Center. Chinese guideline for cancer registration (2016) [M]. Beijing: People's Health Publishing House 1-482.

[4] Viveros-Carre OD, Fernandes A, Pareja R. Updates on cervical cancer prevention. Int J Gynecol Cancer 2023; 33:94-402.

[5] Fowler JR,Maani E V, Dunton C J, David PG, Brian WJ. Cervical Cancer. In: StatPearls [EB/OL] https://www.ncbi.nlm.nih.gov/books/NBK431093/.

[6] Lin S, Gao K, Gu S, You L, Tang M, et al. Worldwide trends in cervical cancer incidence and mortality,with predictions for the next 15 years. Cancer 2021; 127: 4030-4039.

[7] Wei Shaozhong. Annual Report on Cancer Registration in Hubei Province [M]. Hubei: Hubei Science and Technology Press 2021: 1-263.

[8] Wei Shaozhong. Annual Report on Cancer Registration in Hubei Province [M]. Hubei: Hubei 9. Science and Technology Press 2022: 1-287.

[9] Wei Shaozhong. Annual Report on Cancer Registration in Hubei Province [M]. Hubei: Hubei Science and Technology Press 2023: 1-285.

[10] CHEN Jianguo. Trends of Cervical Cancer Incidence in Qidong City of Jiangsu Province from 1977 to 2021 [J/OL. China Cancer. https://link.cnki.net/urlid/11.2859.r.20240423.1150.002.