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Analysis on the Epidemic Characteristics of Notifiable Infectious Diseases in Shiqiu Street, Lishui District, Nanjing from 2019 to 2024

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Abstract: *Objective:* To understand the incidence and epidemic characteristics of notifiable infectious diseases in Shiqiu Street, Lishui District, Nanjing City, and to provide scientific basis for formulating infectious disease prevention and control strategies. *Methods:* The reporting data of notifiable infectious diseases in Shiqiu Street, Lishui District, Nanjing City from 2019 to 2024 were obtained from the information system of the Chinese Center for Disease Control and Prevention, and descriptive epidemiological methods were used to analyze the incidence profile of infectious diseases and the distribution characteristics of the three districts. *Results:* A total of 1,444 cases of 11 notifiable infectious diseases were reported from 2019 to 2024. There were no reports of Class A notifiable infectious diseases. The average annual reported incidence rate was 467.01/100,000. The reported incidence rate generally showed a fluctuating upward trend. The top five diseases with the highest annual reported incidence rates are hand, foot and mouth disease, novel coronavirus infection, influenza, tuberculosis, and viral hepatitis. The order of the average annual incidence rates of infectious diseases by different transmission routes is respiratory infectious diseases > intestinal infectious diseases > blood-borne and sexually transmitted infectious diseases. The male-to-female sex ratio is 1.47:1; the disease occurs in all age groups, with the highest number of reported cases in the 0 to 9-year-old group, accounting for 39.4%; the affected people are mainly farmers, scattered children, and students. *Conclusion:* The situation of infectious disease prevention and control in Shiqiu Street, Lishui District is still severe. Comprehensive prevention and control measures should be adopted to strengthen the prevention and control of key groups and key infectious diseases.

Keywords: Notifiable infectious diseases; Incidence rate; Epidemic characteristics

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1. Introduction

Infectious diseases refer to contagious diseases caused by pathogenic microorganisms and parasites that infect the human body and can cause epidemics under certain conditions [1]. Currently, there are 41 species of notifiable infectious diseases in 3 categories in my country. In order to understand the epidemic characteristics of notifiable infectious diseases in Shiqiu Street, Lishui District, Nanjing City, and provide scientific basis for formulating infectious disease prevention and control

strategies, this article analyzes the surveillance data of notifiable infectious diseases in Shiqiu Street, Lishui District, Nanjing City from 2019 to 2024.

2. Materials and methods

2.1. Data source

The surveillance data of notifiable infectious diseases in Shiqiu Street, Lishui District, Nanjing City from 2019 to 2024 comes from the China Disease Control and Prevention Information System. The statistical caliber is "date of onset", "clinically diagnosed cases", "confirmed cases", "pathogen carriers" and "positive test". The current address is Shiqiu Street, Lishui District, Nanjing City. Population data comes from the Shiqiu Street Police Station in Lishui District.

2.2. Methods

Excel was used to conduct descriptive epidemiological analysis of the data.

3. Results

3.1. Epidemic overview

From 2019 to 2024, Shiqiu Subdistrict reported a total of 1,444 cases of 11 notifiable infectious diseases, with an average annual reported incidence rate of 467.01/100,000. There were no reports of Class A infectious diseases; 761 cases of Class B infectious diseases were reported, with an average annual reported incidence rate of 246.12/100,000; 4,683 cases of Class C infectious diseases were reported, with an average reported annual incidence rate of 220.89/100,000. See **Table 1**.

Table 1. Overview of the reported incidence of notifiable infectious diseases in Shiqiu Street, Lishui District, Nanjing from 2019 to 2024

Year	Population (person)	Category B		Category C		Total	
		Number of cases (cases)	Incidence rate (/100,000)	Number of cases (cases)	Incidence rate (/100,000)	Number of cases (cases)	Incidence rate (/100,000)
2019	51453	76	147.71	186	361.49	262	509.20
2020	51723	73	141.14	78	150.80	151	291.94
2021	51908	55	105.96	30	57.79	85	163.75
2022	51778	90	173.82	31	59.87	122	235.62
2023	51372	325	632.64	230	447.71	555	1080.36
2024	50968	142	278.61	128	251.14	270	529.74
Total	309202	761	246.12	683	220.89	1445	467.33

3.2. Incidence trend

From 2019 to 2024, the reported incidence rate of notifiable infectious diseases in Shiqiu Street generally showed a fluctuating upward trend. The reported incidence rate of Class B infectious diseases remained stable from 2019 to 2022, and was the lowest in 2021; it increased significantly from 2023 to 2024, with 329 of the 467 cases being new coronavirus infection cases. The reported incidence rate of Class C infectious diseases showed an overall downward trend from 2019 to 2022, with the lowest in 2021; it increased sharply from 2023 to 2024, with 263 influenza cases among 358 cases. See **Figure 1**.

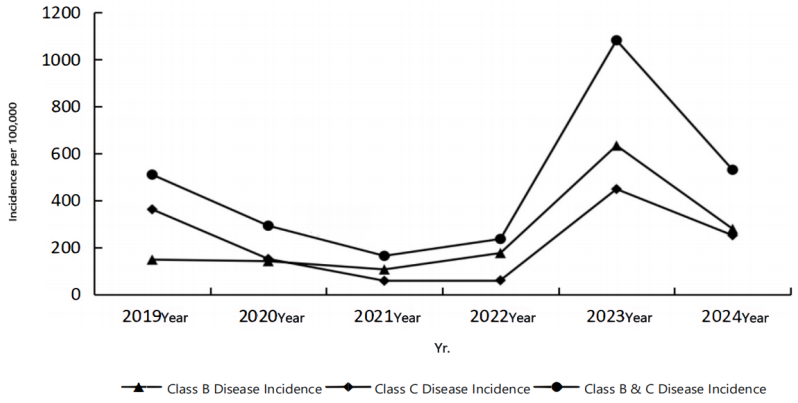

Figure 1. Change trend in the reported incidence rate of notifiable infectious diseases in Shiqiu Street, Lishui District, Nanjing from 2019 to 2024.

3.3. Order of incidence

The top five diseases with the highest reported annual incidence rates are hand, foot and mouth disease, new coronavirus infection, influenza, tuberculosis, and viral hepatitis, accounting for 84.98% of the total number of cases (1228/1445). From 2019 to 2022, the reported incidence rate of hand, foot and mouth disease has always been in the top two, and the reported incidence rate has dropped significantly since 2020; from 2023 to 2024, the reported incidence rate of new coronavirus infection and influenza occupied the top two; in 2024, the reported incidence rate of whooping cough entered the top five for the first time. See **Table 2**.

Table 2. The reported incidence of the top five notifiable infectious diseases in Shiqiu Street, Lishui District, Nanjing City from 2019 to 2024 Unit: /100,000

Years	No. 1		No. 2		No. 3		No. 4		No. 5	
	Disease type	Incidence	Disease type	Incidence	Disease type	Incidence	Disease type	Incidence	Disease type	Incidence
2019	Hand, foot and mouth disease	342.06	Syphilis	69.97	Viral hepatitis	31.10	Tuberculosis	29.15	Influenza	15.55
2020	Hand, foot and mouth disease	131.47	Viral hepatitis	56.07	Tuberculosis	38.67	Syphilis	34.80	Gonorrhea	9.67
2021	Hand, foot and mouth disease	46.24	Viral hepatitis	36.60	Syphilis	25.04	Tuberculosis	23.12	Gonorrhea	11.56
2022	Tuberculosis	52.15	Hand, foot and mouth disease, new coronavirus infection	40.56	-	-	Viral hepatitis	30.90	Gonorrhea	28.97
2023	Coronavirus infection	529.47	Influenza	327.03	Hand, foot and mouth disease	107.06	Tuberculosis	40.88	Viral hepatitis	29.20
2024	Influenza	186.39	Coronavirus infection	111.83	Syphilis	51.01	Hand, foot and mouth disease	47.09	Pertussis	43.10

3.4. The composition of transmission routes

The average annual reported incidence rate is in the order of respiratory infectious diseases > intestinal infectious

diseases > blood-borne and sexually transmitted infectious diseases. There were 782 cases of 5 types of respiratory infectious diseases reported (252.91/100,000), of which 749 cases (95.78%) were reported of the top three new coronavirus infections, influenza, and tuberculosis; 393 cases of 2 types of intestinal infectious diseases were reported (127.10/100,000), including hands and feet There were 368 cases (93.64%) of mouth diseases and 25 cases (6.36%) of other infectious diarrhea diseases; 269 cases (87.00/100,000) of 4 types of blood-borne and sexually transmitted infectious diseases were reported, of which a total of 261 cases (97.03%) of the top three reported viral hepatitis, syphilis, and gonorrhea.

3.5. Popular features

3.5.1. Time distribution

From 2019 to 2024, there are two incidence peaks of notifiable infectious diseases in Shiqiu Street, namely May-June and November-January of the following year. The highest number of reported incidences was in May (224 cases) and the lowest number (52 cases) in September. The peak incidence of Class B notifiable infectious diseases is from May to June, with the highest number of reported cases (173 cases) in May and the lowest number (27 cases) in October. The peak incidence of Class C notifiable infectious diseases is from November to January of the following year, with the highest number of reported cases (115 cases) in December and the lowest number (20 cases) in September.

3.5.2. Regional distribution

All 14 communities (villages) in Shiqiu Subdistrict have reported cases of notifiable infectious diseases. The top five cumulative reported cases are Shiqiu Community (327 cases, 22.63%), Mingjue Community (197 cases, 13.63%), Tangdou Village Community (197 cases, 13.63%), Jiutang Village (119 cases, 8.24%), and Shangfang Village (88 cases, 6.09%).

3.5.3. Population distribution

Among the reported cases, there were 860 males and 584 females. The male-to-female sex ratio was 1.47:1. The average annual reported incidence rates for males and females were 550.54/100,000 and 381.72/100,000 respectively. The incidence rates in males were higher than in females in each year. The top three age groups with the highest number of reported cases are the 0–9 year old group (570 cases), the 70–79 year old group (160 cases), and the 50–59 year old group (141 cases), accounting for 39.45%, 11.07%, and 9.76% respectively. The 40–49 year old group has the lowest number (74 cases), accounting for 5.12%. The top five occupations with the highest number of reported cases are farmers (424 cases), scattered children (290 cases), students (207 cases), child care children (188 cases), housework and unemployment (117 cases), accounting for 29.34%, 20.07%, 14.33%, 13.01%, and 8.10% respectively.

4. Discussion

From 2019 to 2024, Shiqiu Subdistrict reported 1,444 cases of 11 notifiable infectious diseases, with an average annual reported incidence rate of 467.01/100,000, which is higher than the reported level in Tongzhou District, Nantong City [2]. The reported incidence rate of notifiable infectious diseases from 2019 to 2022 has generally shown a downward trend. The reason is that the “Class B and A” measures for new coronavirus infection also have a certain inhibitory effect on the incidence of other infectious diseases [3,4].

Judging from the incidence distribution, the top five diseases with the highest annual reported incidence rates in Shiqiu Subdistrict from 2019 to 2024 are hand, foot and mouth disease, new coronavirus infection, influenza, tuberculosis, and viral hepatitis. The incidence of hand, foot and mouth disease has been in the top five for six years, and the annual reported incidence rate has generally shown a significant downward trend. This is related to the increase in the EV71 vaccination rate, the significant reduction in the prevalence of hand, foot and mouth disease caused by EV71 infection, and the changes in public health habits during the new coronavirus infection epidemic, the reduction of people gathering,

and the effective blocking of the transmission route of hand, foot and mouth disease [5–7]. Except for 2024, tuberculosis and viral hepatitis rank among the top five in annual reported incidence rates, indicating that tuberculosis and viral hepatitis are still the focus of current prevention and control work. In 2024, the reported incidence rate of pertussis entered the top 5 for the first time, which is basically consistent with the Zhejiang Province report [8]. Pertussis in my country shows the characteristics of family cluster transmission. Adults are the main source of infection in infants. The incidence group shifts to children and adolescents. Monitoring and diagnosis capabilities should be strengthened, vaccination rates should be increased, and pertussis vaccination strategies for different ages should be explored [9]. In the past six years, the largest number of reports of notifiable infectious diseases were respiratory infectious diseases, followed by intestinal infectious diseases, accounting for 81.31% in total, which is consistent with the report from Hualong District, Puyang City, suggesting that respiratory and intestinal infectious diseases should be the focus of prevention and control [10].

From the perspective of time distribution, both Class B and Class C notifiable infectious diseases show seasonal characteristics. The peak incidence of Class B infectious diseases is from May to June, and the peak incidence of Class C infectious diseases is from November to January of the following year. Therefore, there are two incidence peaks of notifiable infectious diseases in Shiqiu Street from 2019 to 2024, indicating that the seasonal characteristics of the incidence of different types of notifiable infectious diseases are related to the epidemic characteristics of the dominant reported diseases. For example, Class B infectious diseases are mainly affected by the incidence of new coronavirus infection, and Class C notifiable infectious diseases are mainly affected by the incidence of influenza. Among the reported cases, the incidence rate in men is significantly higher than that in women, which may be related to the fact that men go out more frequently and have a wider range of activities than women, which increases the chance of exposure [11]. Among different occupational groups, the largest number of reported cases is farmers, accounting for 29.34%, which may be related to weak hygiene awareness and low knowledge of infectious disease prevention knowledge [12]. The 0–9 year old group has the largest number of reported cases, and the occupational distribution is dominated by scattered children, students, and kindergarten children, accounting for 47.40% in total. Children's immune systems have not yet been fully established, and they have not yet developed effective self-protection awareness and good hygiene habits, which increases the probability of contracting infectious diseases. At the same time, the gathering of people in schools and child care institutions can easily cause the widespread spread of infectious diseases, especially hand, foot and mouth disease, influenza and other infectious diseases [13].

To sum up, the overall prevention and control situation of notifiable infectious diseases in Shiqiu Street is still severe. It is necessary to strengthen the prevention and control of high-risk infectious diseases such as hand, foot and mouth disease, new coronavirus infection, influenza, tuberculosis, and viral hepatitis. Attention should be paid to the prevention and control of whooping cough. Disease control departments should predict the possible epidemic of infectious diseases after new coronavirus infection "B Category B" and formulate response measures. Strengthen national health education, improve overall disease prevention awareness, strengthen the management of key places such as child care institutions, schools, and elderly care institutions, and effectively control the spread of infectious diseases.

About the author

Liu Caixiang (1984-), female, Han nationality, native of Lianyungang, Jiangsu Province, bachelor's degree, master's degree, current title of deputy chief physician, works at Shiqiu Central Health Center, Lishui District, Nanjing, research direction is related to infectious disease prevention and control

Disclosure statement

The author declares no conflict of interest.

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