Int J Clin Exp Med 2020;13(6):4441-4445
www.ijcem.com /ISSN:1940-5901/IJCEM0108910

Original Article

Effect of establishing a center for prevention and treatment of common pediatric infectious diseases on rapid development of health care in an urban-rural health community

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Received February 9, 2020; Accepted March 3, 2020; Epub June 15, 2020; Published June 30, 2020

Abstract: Objective: To explore the effect of establishing a center for prevention and treatment of common infectious diseases in children on promoting health care development. Methods: A total of 2,000 children diagnosed and treated in the Second Hospital of Shanxi Medical University from January 2013 to May 2014 were enrolled and assigned to the control group, and an additional 2,000 children underwent diagnosis and treatment in the same hospital from July 2014 to November 2016 were recruited and assigned to the intervention group after establishment of a center for prevention and treatment of common pediatric infectious diseases. The incidence rates, morbidity and mortality of common infectious diseases in children, and their parent satisfaction in the two groups were analyzed retrospectively. Results: The incidence rates of infections in the respiratory system, the nervous system, the urinary system and the digestive system of children in the intervention group were 6.40% (128/2,000), 3.80% (76/2,000), 5.90% (118/2,000) and 6.65% (133/2,000), respectively; which was lower than 21.60% (432/2,000), 9.30% (186/2,000), 18.70% (374/2,000) and 20.45% (409/2,000) in the control group. The morbidity and mortality of children in the intervention group were respective 1.60% (32/2,000) and 0.95% (19/2000); which were lower than 4.45% (89/2,000) and 2.10% (42/2,000) in the control group. In the Second Hospital of Shanxi Medical University, the top five most common infectious diseases in children were varicella, diarrhea, mumps, hand-foot-and-mouth disease, and bacillary dysentery. The order of the seasons with the highest to the lowest rates of common infectious diseases among children in the two groups were summer, spring, autumn and winter. The parent satisfaction of children in the intervention group was 93.75% (1875/2,000), higher than 83.65% (1673/2,000) in the control group (all $P<0.05$). Conclusion: Establishment of a center for prevention and treatment of common infectious diseases in children significantly improved the efficacy of medical and health care in an urban-rural health community. Therefore, the modal is worth of generalization.

Keywords: Common infectious diseases in children, center for prevention and treatment, health care

Introduction

Maternal and child care service has always been a major public health concern in China and other countries in the world [1]. In China, the development of maternal and child care is, to some degree, limited [2]. Currently, the effect of maternal and child care service is not ideal, and can be difficult to exert. Infectious disease is a condition which seriously affects the normal growth and development of children, and it is also the main factor for pediatric inpatient and outpatient treatment [3]. The disease not only causes pain in children, but also adds economic burden to their family and society. Therefore, this study was designed to explore the effect of accelerating the development of medical and health care in urban-rural communities by establishing a center for prevention and treatment of common pediatric infectious diseases in the Second Hospital of Shanxi Medical University. This center was created with the hope of providing more significant referential evidence for prevention and treatment of common pediatric infectious diseases and promotion of the rapid development of medical

and health care in an urban-rural health care community.

Materials and methods

Clinical data

In the current study, 2,000 children diagnosed and treated in the Second Hospital of Shanxi Medical University from January 2013 to May 2014 were enrolled and assigned to the control group. After establishment of a center for prevention and treatment of common infectious diseases in children, an additional 2,000 children receiving diagnosis and treatment in the same hospital from July 2014 to November 2016 were recruited and assigned to the intervention group. In the control group, 1,284 patients were male and 716 were female; they ranged in age from 2 to 10 years old, with a mean age of 6.4±1.3 years. In the intervention group, there were 1,304 male patients and 696 female patients between the ages of 3 to 11 years (mean, 6.5±1.3 years). There were no significant differences in general data (such as age and sex) of children between the two groups ($P>0.05$), so they were comparable. All the children's parents provided written informed consent, and this study was approved by the hospital ethics committee.

Study methods

The children in the control group were given conventional treatment and care, while those in the intervention group received corresponding diagnosis and treatment after establishment of a center for prevention and treatment of common pediatric infectious diseases. The main work in establishing the center for prevention and treatment of common pediatric infectious diseases were as follows: first, epidemiological characteristics of the pathogens for common infectious diseases in children were explored [4]. The mechanisms of pathogens, including bacteria, viruses, parasites, mycoplasma, and fungi, in the occurrence and development of common infectious diseases in children were identified, and the above pathogens were monitored closely and persistently. An atlas of pathogenesis for various infectious diseases was plotted on the basis of the results of all the testing. Second, the etiological diagnosis and bacterial resistance of common pediatric infectious diseases were confirmed: basic and essential work for etiological diagnosis was done; on this basis, in-depth research was performed, and new etiology-associated diagnostic technologies were developed and used in clinical practice [5]. Continuous monitoring on antimicrobial drug resistance was conducted among children with common infectious diseases, and long-term follow-up was performed to master the efficacy and resistance of the treatment drugs. Third, a system for prevention and treatment of common pediatric infectious diseases was constructed predominantly by the Second Hospital of Shanxi Medical University, supplemented by county and township hospitals. A medical network platform related to common pediatric infectious diseases was first set up; followed by a series of trainings related to common pediatric infectious diseases which were provided in affiliated medical institutions at all levels by means of lectures made by experts in various medical disciplines, and the training was focused on the basic medical theories and clinically relevant treatment [6].

Outcome measures

The incidence rates, morbidity, and mortality of common pediatric infectious diseases, as well as parent satisfaction, were assessed and compared between the two groups. Questionnaires were filled out among the parents of all the children for a satisfaction rate scale. The scale included 28 questions covering psychology, life, emotion and treatment effect. There were five options (extremely dissatisfied, relatively dissatisfied, satisfied, relatively satisfied and extremely satisfied) for the answer to each question, and the options accordingly corresponded to a score of 1 to 5 [7]. With a total score of 140 points, a score ≥100 indicated that the patient's parents were extremely satisfied, a score of 60 to 100 indicated that the patient's parents were satisfied, and a score <60 indicated that the patient's parents were dissatisfied. The formula for calculating parent satisfaction of a child's recovery and treatment was Satisfaction = extremely satisfied + relatively satisfied + satisfied.

Statistical analysis

The data in this study were analyzed with the use of SPSS software, version 20.0. Count data were assessed by the Chi square test, and $P<0.05$ was considered statistically significant.

Table 1. Comparison of the incidence of infectious diseases of children between the two groups (n, %)

Group	Intervention group	Control group	χ^2	P
N	2000	2000		
Respiratory system	128 (6.40)	432 (21.60)	191.894	0
Nervous system	76 (3.80)	186 (9.30)	49.42	0
Urinary system	118 (5.90)	374 (18.70)	151.885	0
Digestive system	133 (6.65)	409 (20.45)	162.575	0

Table 2. Most common infectious diseases in children and their incidence (n, %)

Group	Intervention group	Control group	χ^2	P
N	2000	2000		
Varicella	137 (6.85)	332 (16.60)	91.846	0
Diarrhea	96 (4.80)	247 (12.35)	72.71	0
Mumps	77 (3.85)	189 (9.45)	50.517	0
Hand-foot-and-mouth disease	47 (2.35)	117 (5.85)	31.155	0
Bacillary dysentery	12 (0.60)	24 (1.20)	4.036	0.045

Results

Comparison of the incidence of infectious diseases of children between the two groups

The incidence rates of infections in the respiratory system, the nervous system, the urinary system and the digestive system of children in the intervention group were 6.40% (128/2,000), 3.80% (76/2,000), 5.90% (118/2,000) and 6.65% (133/2,000), respectively, These scores were lower than the corresponding incidence rates of infections in the control group, which were respectively, 21.60% (432/2,000), 9.30% (186/2,000), 18.70% (374/2,000) and 20.45% (409/2,000). Shown in **Table 1**.

Most common infectious diseases in children and their incidence

The top five most common infectious diseases in children were varicella, diarrhea, mumps, hand-foot-and-mouth disease, and bacillary dysentery. After intervention, the rates of varicella, diarrhea and bacillary dysentery reduced significantly among the children (**Table 2**).

Comparison of incidence rates of the most common infectious diseases in children between the four seasons

The seasons in which the children of the two groups had the highest to lowest rates of most common infectious diseases were summer (June, July and August), spring (March, April and May), autumn (September, October and November), and winter (December, January and February). However, the differences in the incidence rates of the most common infectious diseases in the four seasons were insignificant between the two groups (P>0.05) (**Table 3**).

Comparison of morbidity and mortality of children between the two groups

The morbidity and mortality of children in the intervention group were respective 1.60% (32/2,000) and 0.95% (19/2,000); which were lower than 4.45% (89/2,000) and 2.10% (42/2,000) in the control group (**Table 4**).

Comparison of parent satisfaction between the two groups

The rate of parent satisfaction in the intervention group was 93.75% (1875/2,000), which was higher than 83.65% (1673/2,000) in the control group (**Table 5**).

Discussion

Insufficient attention has been paid to maternal and child care services in the health care system in China. Additionally, the government has made inadequate relevant involvement, and together with lack of awareness for self-development, this has led to an imbalanced phenomena, lack of competitiveness, and overall planning in the development of this discipline. With the constant improvement in the living standards of the residents and higher requirements for maternal and child health care services in China, it is imperative to develop an effective new care discipline. Affected by children's low immunity and other factors, the incidence of infectious diseases is relatively high in children; and children with infectious diseases account for a larger proportion among pediatric outpatients and inpatients [8, 9]. These children are likely to be disabled or

Table 3. Comparison of incidence of the most common infectious diseases in children in the four seasons (n, %)

Group	Intervention group	Control group	χ^2	P
N	2000	2000		
Spring	29.89% (136)	28.98% (406)	0.138	0.71
Summer	33.19% (151)	33.19% (465)	0	0.999
Autumn	21.76% (99)	22.34% (313)	0.0686	0.795
Winter	15.16% (69)	15.49% (217)	0.028	0.868

Table 4. Comparison of morbidity and mortality of children between the two groups (n, %)

Group	N	Morbidity	Mortality
Intervention group	2000	32 (1.60)	19 (0.95)
Control group	2000	89 (4.45)	42 (2.10)
χ^2		27.689	8.806
P		0	0.003

Table 5. Comparison of parent satisfaction between the two groups (n, %)

Group	Intervention group	Control group	t	P
N	2000	2000		
Extremely satisfied	1047	968		
Relatively satisfied	728	695		
Dissatisfied	125	327		
Satisfied	1875 (93.75)	1673 (83.65)	101.775	0

even die if they cannot receive timely and effective treatment [10, 11].

The incidence rates of pediatric infections in the respiratory system, the nervous system, the urinary system and the digestive system in the intervention group were respective 6.40% (128/2,000), 3.80% (76/2,000), 5.90% (118/2,000) and 6.65% (133/2,000), which were significantly lower than those in the control group. This result shows that the establishment of a center for prevention and treatment of common pediatric infectious diseases can significantly reduce the incidence rates of common infectious diseases in children, and is favorable for safeguarding life, health and safety in children [12, 13]. This may be due to the fact that relevant studies had been conducted to explore the epidemiological characteristics of common infectious diseases in children, coupled with data monitoring and plotting of pathogenesis atlas, which provides referential evidence for prevention of common infectious diseases in children. As a result, it helped the development and implementation of measures for preventive interventions, and achieving of the goal of reducing the incidence of common infectious diseases in children [14]. Moreover, the morbidity and mortality of children in the intervention group were significantly lower than those in the control group, implying that the treatment effect of common pediatric infectious diseases was significantly improved by establishing centers for prevention and treatment of common pediatric infectious diseases, and the prognosis was better. After analysis, we summed up the following causes: first, the technologies for clinical diagnosis can be effectively improved by etiological diagnosis, and the sensitivity and specificity of clinical pathogen detection are enhanced, which is useful in guiding the planning of clinical regimens [15, 16]. As a result, antibiotics and other drugs can be administered more reasonably, and the purpose of improving clinical treatment effects is ultimately realized [17]. Second, mastering bacterial drug resistance of common infectious diseases, to a certain extent, can avoid adverse reactions caused by unreasonable use of antibiotics, increased drug resistance and development of secondary infections, and it can also significantly improve the rationality of clinical treatment and medication [18, 19]. Third, the establishment of a prevention and treatment system is useful in helping the medical staff of medical institutions at all levels to master the knowledge and treatment measures related to common pediatric infectious diseases, so as to improve the effect of clinical treatment, and further promote the prognosis in these children [20, 21]. In addition, the rate of parent satisfaction in the intervention group was significantly higher than that of the control group, which may be attributed to the significant effect of improved clinical treatment and the low incidence of adverse reactions in the children.

In conclusion, establishment of a center for prevention and treatment of common pediatric infectious diseases helped reduce the incidence rates of common infectious diseases in chil-

dren. This significantly reduced the morbidity and mortality of the children, improved the satisfaction of children's families, effectively avoided the occurrence of medical disputes, and promoted the rapid development of health care improvement in the urban-rural health community.

Acknowledgements

This study was supported by a grant from Shanxi Science and Technology Research Project (2018041056-6), Scientific Research Project of Shanxi Health Committee (RK-26), Scientific Research Project of Shanxi Health Committee (2018077) and the Fund of the Second Hospital of Shanxi Medical University (201702-2).

Disclosure of conflict of interest

None.

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