The Influence Factor of Health Seeking Behavior of the Caregivers for under-Five Sick Children in Southern Xinjiang, China

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Research

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Abstract

Background: Child mortality can be reduced by 20% with the caregivers' appropriate health seeking behaviors. Therefore, in order to reduce child mortality in remote areas, we examined the Health Seeking Behavior (HSB) of caregivers of sick children under five years old in Moyu County, Southern Xinjiang, which is the remotest and poorest areas in China, and the factors influencing HSB of caregivers.

Methods: We analyzed the factors influencing the health seeking behavior of 846 caregivers of sick children with a questionnaire survey in Chinese and Uighur by a cross-sectional study. Binary logistic regression analysis was used to predict the influencing factors on HSB of caregivers.

Results: After the children's illness was detected, 89.94% caregivers took their children to go to the doctor. 44.91% caregivers took their children to the doctor in the public medical institutions, while 40.07% caregivers chosen the private medical institutions. Compared with the private medical institutions, public medical institutions were likely to be chosen when caregivers consider the treatment cost or the children with cough, runny nose and stuffy nose, but considering children's age (0.5times), reputation of doctor (0.6times), adequate drug resources (0.5times), the traditional habits on HSB (0.5times), and time to get to hospital (0.2times), the public medical institutions weren't be chosen.

Conclusions: The HSB of the caregivers for sick children in Southern Xinjiang isn't optimistic. The doctors' competencies, the quantity of medicines, the distance, the traditional habits influencing caregivers to choose hospitals, which is also the most significant thing to promote the health of rural children in Xinjiang and northwest China.

Background

Although the mortality has more than halved yet since 1990 across the globe, 5.6 million of children die every year before reaching their fifth birthday. The mortality rate of children in economically backward in a remote area of the countryside is higher than that in other areas. However, most of these death in economically backward are preventable[1,2], such as diarrhea, pneumonia, all of which play an important role in the cause of death[3,4]. Accessible health facilities, effective policy support and qualified medical staffs endeavor to lower child mortality while health seeking behavior (HSB) for sick children is also important that caregivers can recognize the symptoms of those preventable diseases and seek appropriate care for children in time[5]. According to the report, children mortality can be significantly reduced with the caregivers' appropriate HSB[6,7]. Therefore, more attention should be paid to the HSB of caregivers of children in economically backward.

HSB of caregivers represent individual take any action to seek an appropriate remedy for whom they take care of, once they are aware of the child's health problem or illness[8-10]. In developing counties, only 20% caregivers can identify symptoms of pneumonia[10]. Child mortality in developing countries, particularly in poor areas, is much higher than in developed countries and regions. China and India, Nigeria, Pakistan,

Ethiopia, the Democratic Republic of the Congo are account for half of the global under-five deaths in 2017[11]. Therefore, to reduce child mortality, HSB of caregivers in poor areas should be paid more attention.

Xinjiang Uygur Autonomous Region is the remotest and poorest region in northwest of China. The under-5-year-old mortality rate in Xinjiang is about 2-3 times higher than the average mortality rate in China, at a rate of 25 deaths per 1,000 live births[7]. Moyu County is a national poverty county in China and the second most populous region in Xinjiang, Owing to Moyu County's remoteness, harsh environment, inconvenient traffic, medical and health resources shortage, child mortality in Moyu County is significantly higher than the average level in Xinjiang. In order to reduce child mortality, Integrated management of child-hood illness (IMCI) was introduced into Moyu County, Xinjiang in 2014. The doctors in public medical institutions were trained for children's disease according to standard treatment and scientific mediation cycle by IMCI when the doctors in private medical institutions without training. However, public medical institutions haven't been enough used and chosen by the caregivers. Therefore, the purpose of this study is to investigate the factors influencing of the health behaviors of caregivers for children under five years old in southern Xinjiang, and to provide basis for developing strategies, which can take full advantage of medical services so that sick child can receive timely treatment.

Methods

Study design and participants

To know about HSB of the caregivers and its influencing factors, we conducted a questionnaire survey on caregivers of children under 5 years old in Moyu through a cross-sectional study. According to the economic development and the distance between the town and the county, we selected 8 townships from 17 townships in Moyu County by convenience sampling, and then randomly selected 4 villages in each selected township. All the caregivers in the selected villages were included in this survey. The caregivers were surveyed the latest health seeking behavior for under-5-year-old. If more than one child is under-5-year-old in a family, the HSB for the youngest child will be chosen. The inclusion criteria for the study were those caregivers of children who were sick within a year, without mental illness, infectious disease or serious organic diseases.

Considering the background of the Moyu County, based on Axel Kroeger's and Webair's research about HSB[3,12], the preliminary questionnaire was developed after the discussion with the professors in Peking University, including three parts with subject characteristics, disorder characteristics, service characteristics, a total of 20 items. Then the content and expression of the preliminary questionnaire's items were discussed in two meetings with Xinjiang Health Project Group of Save the Children and adjusted through pre-survey. The final version of the questionnaire consisted of 23 items, including 12 subject characteristics, 5 disorder characteristics and 6 service characteristics. Since the mostly native language in the southwestern of Xinjiang is Uighur, the items of the questionnaire was translated into

Uighur and then translated back into Chinese with the content validity index (CVI) of 0.75 and test-retest reliability of 0.78 after four weeks.

Before the survey, the investigators explained the purpose and content of the survey and the benefits and risks for caregivers. The caregivers volunteered to participate and can withdraw from the investigation at any stage of the investigation for no reason. After the caregivers fully understood the study, an informed consent is required to be signed for those who agreed to participate in the study. The questionnaire was conducted anonymously, and the privacy and confidentiality principles of the caregivers were always respected during the investigation, and all the information was guaranteed to be used only in the research.

HSB of caregivers is a dependent variable and was confirmed by the items, “Which medical institution did you prefer to bring your child to?” Responses included “village clinic, township hospital, county people's hospital, county maternal and child care service center, county uigur medical hospital, village private clinic, township private clinic, county private clinic”. Public medical institutions included village clinic, township hospital, county people's hospital, county maternal and child care service center, county uigur medical hospital. Private medical institutions included village private clinic, Township private clinic and county private clinic.

Study variables

Disorder characteristics are symptoms of children’ diseases and detected by caregivers. They consisted of 5 items, including the following: How long has the child been sick last time? Do you remember the specific situation of the child’s illness? What kind of uncomfortable symptoms did the child have? Responses include “coughing with breathing difficult or tachypnea, diarrhea, fever, nasal obstruction and runny nose, other(s) (Please elaborate)”. What did you think about the symptoms and what was your plan when you realize your child is feeling uncomfortable last time? Responses includes “urgent or not, to see a doctor or not”. If doctor told you that you should take your child to pay a return visit, could you do that?

Service characteristics are the information about medical institution and factors influencing the choice of caregiver, including the following: What are the main reasons you choose this institution? Responses includes “expenditure, distance, medical level, adequate medication, injection and intravenous infusion, doctor’ attitude, medical habits, time spent on the road, the decision of decision-makers in family, simple process, no deposit, no need pay all expenditure at once, other(s) (Please specify)”. Please prioritize the factors which affect your choice of medical institutions. The distance from your home to the selective hospital is. How long does it take to go to the medical institution you choose?

Subject characteristics consist of 10 items about caregiver (including the following: gender, age, nation, education, occupation, village name, annual family income, number of members of family, relation between the caregiver and the child and the person who made the decision to seek medicine service when the child was sick last time) and 2 items about child (including the child’s gender, age).

Ethics approval and informed consent

The caregivers volunteered to participate in the study. Each potential respondent was properly told of the study objectives, the related aspects to the study. This study protocol and procedure were approved by the Ethics Committee of Peking University Health Science Center (Ethical review approval number: IRB00001052-18001).

Statistical Analysis

Data was entered using Epidata and analyzed using SPSS 22.0. Firstly, all characters are shown in table 1 and table 2. Secondly, all variables are categorized, and their frequency is compared between the public medical institutions and the private medical institutions by chi-square tests in table 3 and table 4. Thirdly, we examined the association between variables and HSB in Table 5 with logistic regression analysis. $P<0.05$ was considered statistically significant. Per capita age and annual family income are considered as continuous variables.

Results

A total of 945 caregivers of sick children under 5 years old were recruited and 846 completed the questionnaire with response rate of 89.52%. In this survey, everyone is Uygur. Demographic data of the caregivers shows that the caregivers of sick children are mainly their mothers, accounting for 95.5%. Their ages are concentrated in 20-40 years old. The oldest was 50 and the youngest was 19. They generally have low education, either primary education or no education. Caregivers' occupations are mainly farmers, accounting for more than 90%. The demographic characteristics of the caregivers are detailed in Table 1.

After the child's illness was detected, 89.94% of the caregivers took their child to see a doctor, and the selected mainly hospitals were township hospital and private medical institutions. As shown in Table 2, country-level hospital and others are least chosen. Therefore, township hospitals and village clinics were merged into public medical institutions.

The characteristics compared between public medical institutions and private medical institutions are shown in table 3 and table 4. There is no significant different except for the child's cold (P=0.006, =7.420). Other factors don't show much different in the HSB from the data.

Subject characteristics, order characteristics and service characteristics are regarded as dependent variables, and public medical institutions, private medical institutions were regarded as independent variables. Regression analysis shows that Treatment cost are considered (P<0.001, OR=2.101, 95% CI: 1.463-3.016) and Cold (P=0.013, OR=1.689, 95% CI: 1.115-2.557); people are more likely to choose public. When considering Child's age, they are less likely to choose them (P=0.040, OR=0.542, 95% CI: 0.302-0.972); Reputation of doctor (P=0.036, OR=0.672, 95% CI: 0.464-0.974); Insufficient drugs (P=0.041,

OR=0.512, 95% CI: 0.270-0.972); Traditional habits on HSB (P=0.047, OR=0.559, 95% CI:0.315-0.992); Time to hospital (P=0.004, OR=0.245, 95% CI: 0.094-0.634), as shown in table 5.

Discussion

In some developing countries, when child becomes ill, caregivers don't seek for medical care urgently, often leading to child deaths[13]. In Moyu, the medical or public health services are the poorest. The mortality rate of children under-5-year-old in Moyu is significantly higher than that in Xinjiang province, which is also 2-3 times higher than that in China[14]. Therefore, in order to reduce mortality rate, it is essential to pay attention to the health-seeking behavior of parents in remote areas. The researches involving the caregivers' health-seeking behavior for sick children mainly concentrate on the children with single disease such as diarrhea, visual impaired, or nodding syndrome[15-17]. The Niger study found that about one-third of caregivers wouldn't take their children to see a doctor in rural Niger when their children have acute diarrhea[18]. However, the major causes of death among children under-5-year-old include diarrhea, pneumonia, fever, etc. Therefore, our study focuses on the caregivers' health-seeking behavior for children under-5-year-old suffering from different diseases in remote rural areas, medical institutions chosen by caregivers and the factors that influence the caregivers' seeking medical services.

An Iranian study found that about 70% of caregivers seek health care when their children have an acute diarrhea [19]. The study in western China showed that the rate of seek health care for diarrhea is 67.2% [20]. Another research based on vision health care program for left-behind children in Shanxi and Gansu showed that even if Symptoms are detected, health care services will be underutilized without a subsidy [20]. Our study found that about 89.94% of caregivers would take their children to see a doctor when their children got sick. It is higher than other research. On one hand, it indicate that with the development of the society, the caregivers in remote areas have gradually realized the importance of taking their children to see a doctor in time when symptoms of diseases were detected. On the other hand, in the process of recruit, some caregivers told us that their children didn't have any diseases in the past years. Therefore, it is referred that some caregivers may not have detected the signs of diseases. Propaganda and education about disease symptoms need to be strengthened.

In Moyu County, the differences between doctors in public medical institutions and private medical institutions doctors are as follows. First of all, the doctors in public medical institutions can treat children according to standard treatment and scientific mediation cycle. Second, the cost can be reimbursed in a certain proportion. However, the cost of private medical institutions cannot be reimbursed. But doctors in private medical institutions tend to treat the children according to their parents' requirements, including the treatment cycle. For example, private medical institutions charge by day when public medical institutions charge by a course of treatments. If intravenous infusion takes 3 days and Caregivers chosen to private medical institutions for treatment on the first day, they won't proper to continue to treatment next day when they felt relieved. Therefore, the public medical institutions are recommended by Moyu

County. However, in our study, nearly half of caregivers chose to take their children to private medical institutions. So, we analyzed the influencing factors of HSB.

The caregivers' health-seeking behavior is influenced by various factors, such as the caregiver's age, education, and the symptoms of children's disease detected, as well as the current status of medical institutions, such as distance, cost, etc[15]. Our finding show that caregivers are likely to choose public medical institutions when children with cough, runny nose and stuffy nose. However, there is no significant different in caregivers choosing medical institutions for other diseases. In other words, there is no obvious relationship between caregivers' choice and the types of children's diseases, unless the disease is common. Caregivers are also likely to choose public medical institutions, when considering treatment cost. However, they are less likely to choose them when considering children's age, doctor's reputation, insufficient drugs, the traditional habits of HSB, time to hospital. Analyzing the factors influencing caregivers' choice, we found that caregivers in Moyu County had more faith in the doctors in private medical institutions, which may be due to the traditional habits, adequate drug resources, easy to access.

Research about HSB in northwest of China is few. Gao's research shows that if caregivers lived farther, caregivers preferred to choose the lower level care for their children under 36 months with diarrhea in rural western China[20]. In addition to child's age, the education of caregivers also influenced the care-seeking behaviors. In our research, only child's age is found to influence the choice. we didn't find caregivers' education has an influence on health-seeking behavior, which is inconsistent with the results of relevant studies [5]. The reason may be that the overall caregivers' education is very low in Moyu. Most of caregivers only have primary education or no education, so the influence of education level is not obvious.

Conclusion

Our study found that many factors may have impact on HSB of caregivers for children under-5-year-old in southern Xinjiang. Considering the cost of treatment can encourage caregivers to choose the doctor in public medical institutions. Considering the amounts of drugs, time to hospital, doctor' reputation, the traditional habit of HSB can prevent caregiver to choose the doctor in public medical institutions. More attention needs to be paid to the traditional habits of HSB and the status of insufficient drugs in public medical institutions, which is also the key to reduce children's death rate in the rural areas of Xinjiang and northwest China.

Declarations

Ethics approval and consent to participate

The caregivers volunteered to participate in the study. Each potential respondent was properly told of the study objectives, the related aspects to the study. This study protocol and procedure were approved by

the Ethics Committee of Peking University Health Science Center (Ethical review approval number: IRB00001052-18001).

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analyzed during the current research are available from the corresponding author on request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

LR, XZ, and HL conceived and designed the study. LR, FL acquired the data. LR, YD, YY, KZ, ZW, LZ, TZ, JH did the data analysis and data interpretation. LR, YD, YY, XZ and HL wrote, reviewed, and revised the manuscript.

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Tables

Table 1.
Frequency distribution of caregivers and their sick children by demographic characteristics.

Demographic characteristics	Frequency	% (N=846)
Caregivers characteristics		
Role of caregivers		
Mother	808	95.5
Other	38	4.5
Caregiver age (years)		
<20	2	0.24
>=20-30	461	54.37
>=30-40	269	31.80
>=40	114	13.59
Caregivers' educational level		
High school or higher	57	6.79
Junior school or secondary school	550	65.00
No education or primary school	239	28.21
Caregiver occupation		
Farmer	765	90.43
Other	81	9.57
Annual household income per capita		
<1000	345	40.78
>=1000-3000	153	18.09
>=3000	348	41.13
Ethnicity of caregiver		
Uyghur	846	100.00
Other	0	0
Children characteristics		
Age		
<12 months	88	10.40

12–36 months	367	43.38
>=36 months	391	46.22
Sex		
Male	408	48.27
Female	438	51.73

Table 2.
Status of the caregivers' health seeking behavior
（N=846）

Entry	n	%
Not to see the doctor	85	10.06
to see the doctor	761	89.94
Public medical institutions [a]	380	44.91
Private medical institutions [b]	339	40.07
Country-level hospitals and others	42	4.96

[a] Village clinic, township hospital. [b] Village private clinic, township private clinic.

Notes: Public medical institutions represent village clinic, township hospital. Private medical institutions represent village private clinic, township private clinic.

Table 3.

The demographic characteristics effect on health seeking behavior (N=719)

Demographic characteristics(n)	Public medical institutions [a] n (%)	Private medical institutions [b] n (%)	χ^2	*P*
Caregivers characteristics				
Role of caregivers				
Mother (671)	354(52.8)	317(47.2)	0.036	0.850
Other (48)	26(54.2)	22(45.8)		
Caregiver age (years)				
<35(535)	286(53.5)	249(46.5)	0.309	0.578
≥35(184)	94(51.1)	90(48.9)		
Caregivers' educational level				
Primary school (199)	99(49.7)	100(50.3)	2.911	0.233
Secondary school (471)	250(53.1)	221(46.9)		
High school or higher (49)	31(63.3)	18(36.7)		
Caregiver occupation				
Farmer (665)	384(52.3)	317(47.7)	0.962	0.327
Other (54)	32(59.3)	22(40.7)		
Annual household income per capita				
<1000(299)	158(52.8)	141(47.2)	4.472	0.613
>=1000-3000(267)	144(53.9)	123(46.1)		
>=3000(153)	78(51.0)	75(49.0)		
Children characteristics				
Age				
<12 months (68)	27(39.7)	41(60.3)	5.285	0.071
12–36 months (302)	162(53.6)	140(46.4)		
>=36 months (349)	191(54.7)	158(45.3)		
Gender				
Male (341)	186(54.5)	155(45.5)	0.747	0.387
Female (378)	194(51.3)	184(48.7)		

[a] Village clinic, township hospital. [b] Village private clinic, township private clinic.

Notes: Public medical institutions represent village clinic, township hospital. Private medical institutions represent village private clinic, township private clinic.

Table 4.
The disorder characteristics effect on health seeking behavior (N=719)

Symptom (n)	Public medical institutions [a] n (%)	Private medical institutions [b] n (%)	X^2	P
Coughing with difficulty breathing or rapid breathing				
Yes (76)	43(56.6)	33(43.4)	0.474	0.491
No (643)	337(52.4)	306(47.6)		
Diarrhea				
Yes (103)	51(49.5)	52(50.5)	0.537	0.464
No (616)	329(53.4)	287(46.6)		
Fever				
Yes (316)	165(52.2)	151(47.8)	0.092	0.762
No (403)	215(53.3)	188(46.7)		
Cough, runny nose and stuffy nose				
Yes (286)	169(59.1)	117(40.9)	7.420	0.006*
No (433)	211(48.7)	222(51.3)		
Other				
Yes (119)	62(52.1)	57(47.9)	0.032	0.858
No (600)	318(53.0)	282(47.0)		

[a] Village clinic, township hospital. [b] Village private clinic, township private clinic.

Notes: **P<0.05.* Public medical institutions represent village clinic, township hospital. Private medical institutions represent village private clinic, township private clinic.

Table 5.

Logistic regression analysis of characteristics on health seeking behavior (N=719)

Variables	Public medical institutions [a]		
	B	*P*	*OR(95CI)*
Intercept	0.771	0.202	
Caregivers' age (years)	0.115	0.600	1.122(0.730,1.723)
Child age (>=36 months as control)			
<12 months	-0.613	0.040*	0.542(0.302,0.972)
12–36 months	0.023	0.894	1.024(0.724,1.447)
Annual household income per capita(>=3000 as control)			
<1000	0.222	0.318	1.248(0.808,1.929)
>=1000-3000	0.193	0.382	1.213(0.786,1.872)
Role of caregivers (Other as control)			
Mother	-0.484	0.155	0.616(0.316,1.200)
Caregivers' educational level (High school or higher as control)			
Primary school	-0.543	0.165	0.581(0.270,1.251)
Secondary school	0.336	0.338	0.714(0.359,1.422)
Child sex (Female as control)			
Male	0.117	0.472	1.124(0.817,1.546)
Caregiver occupation (Other as control)			
Farmer	-0.459	0.162	0.632(0.332,1.203)
Symptom (No as control)			
Coughing with difficulty breathing or rapid breathing	0.268	0.336	1.307(0.757,2.257)
Diarrhea	0.122	0.655	1.130(0.660,1.936)
Fever	0.107	0.599	1.113(0.747,1.659)
Cough, runny nose and stuffy nose	0.524	0.013*	1.689(1.115,2.557)
Other	0.226	0.380	1.254(0.757,2.077)
Influential factors (No as control)			
Treatment cost	0.742	<0.001*	2.101(1.463,3.016)
Distance	-0.160	0.435	0.852(0.571,1.273)

Reputation of Doctor	-0.397	0.036*	0.672(0.464,0.974)
Insufficient drugs	-0.670	0.041*	0.512(0.270,0.972)
Practice of injection	-0.160	0.650	0.852(0.428,1.697)
Attitude of medical Stuff	0.584	0.101	1.793(0.780,2.512)
The traditional Habits on HSB	-0.581	0.047*	0.559(0.315,0.992)
Time to get to Hospital	-1.408	0.004*	0.245(0.094,0.634)
Customary choice	-0.761	0.061	0.467(0.211,1.036)
Simplicity of procedure	-0.300	0.154	0.741(0.491,1.119)
No deposit	-0.588	0.288	0.556(0.188,1.642)
No need to pay in Full once	-0.005	0.935	0.947(0.255,3.508)
Others	-0.090	0.733	1.094(0.653,1.832)

[a] Village clinic, township hospital.

Notes: **P<0.05.* Public medical institutions represent village clinic, township hospital. Private medical institutions represent village private clinic, township private clinic.