

A Study on Relationship between only
Children's Sleep Disorders and Social
Support and its Related FactorsLi-Yi Zhang^{2*}, Hong-Hui Wei¹, Ling-Ming Kong², Gao-Feng Yao², Chun-Xia
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Abstract

Objective: To explore the relationship between only children's sleep quality and social support and its influencing factors to provide solid evidence for sleep disorder improvement.

Methods: A total of 13,080 health participants in 18 provinces of China were chosen by random cluster sampling and were assessed by the Chinese People's Social Support Scale (CPSSS) and the Chinese People's Sleep Disorder Scale (CPSDS). A variety of statistical methods, such as descriptive statistical analysis, t-test for independent sample, correlation analysis and multiple linear regression analysis, were employed for data processing.

Results: (1) The scores of motile abnormal sleep and immotile abnormal sleep in the only-child group were lower than in the corresponding group ($P < 0.05$). The scores of lethargy in the only-child group were higher than in the corresponding group ($P < 0.05$). The scores of motile abnormal sleep, immotile abnormal sleep in the married group were higher than in the unmarried group ($P < 0.05$). The scores of lethargy and daytime function in the married group were lower than in the unmarried group. All factor scores of sleep disorders in the urban group were higher than in the rural group ($P < 0.05$). (2) The social support scores of Chinese samples in the only-child or not-only-child groups and married status had significant differences ($P < 0.05$); however, the social support score differences of rural-urban groups were not statistically significant ($P > 0.05$). (3) All factors of social support positively correlated with sleep disorders ($P < 0.05$). Multiple regression analysis suggested that all factors of social support were selected into the regressive functions of lethargy and immotile abnormal sleep; they could predict the current status of the above three factors of sleep disorders ($P = 0.000$). Subjective social support and objective social support were selected in the regressive function of daytime function and insomnia; they could predict the current status of daytime function and insomnia ($P = 0.000$).

Conclusion: The current status of social support and sleep disorders in an only child's demographic sample have significant differences; social support is closely related to an only child's sleep disorder, and it can predict the only child's sleep disorder.

Introduction

China's population grew rapidly in the 1950s and 1960s, and by the 1970s it had increased by approximately 250 million due to the founding of the People's Republic [1]. From the 1970s, the fertility rate declined dramatically, mainly as a consequence of the national population policy aiming to limit birth numbers, control population growth and boost economic growth [2]. The Chinese government implemented family planning policies, defining late marriages and late childbirth with fewer and better births and a one child policy to control the population in a planned way at the beginning of the 1980s [3]. The policies, with the aim to alleviate the population pressure on resources and the environment and effectively promote economic development and social progress, have recently grown increasingly controversial. Previous studies have demonstrated that being an only child was associated with behavioral problems [3]. Some studies from Britain, Korea, and the Netherlands have shown that children without siblings are overprotected and self-centered, which may have a negative effect on their psychological development [4,5,6]. In China, researchers have found that children without siblings might have more behavioral problems than children with siblings [7,8].

Sleep is an important component of human homeostasis. Sleep disorders are closely associated with significant medical, psychological and social factors. The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) divided sleep disorders into insomnia, lethargy, sleep-wake rhythm disorder, sleepwalking, night terrors, nightmares, etc. [9]. The study shows that sleep disorders in different groups are not consistent [10-12]. In only children without siblings, socialization has its

own characteristics. As a special group, their psychological health has become a focus of social attention [13,14]. Is there a difference between children without siblings and children with siblings in types of sleep disorders? What factors are sleep disorders of only children related to? These questions remain unanswered.

Studies have shown that sleep disorders are not only associated with individual genetic quality [15]; rather, they are closely related to social psychological factors [16]. Social support is defined in terms of social network characteristics, such as assistance from family, friends, neighbors and other community members. [17] Social support is known to have a beneficial effect on physical and mental health. Social support is one of the important resources [18] that assists individuals in coping with everyday life and particularly in response to critical stress situations [19] to relieve individual pressure from negative events. The current study focuses on perceived social support, which has been strongly linked to positive psychosocial and health outcomes [20]. Further studies refer to the health benefits resulting from social support because of its capacity to reduce risks for both physical and mental cognitive health [21]. Studies have shown that sleep disorders have a close correlation with individual cognitive development. Thus, this study discusses the correlation between social support and sleep disorders and whether social support can influence an only child's sleep.

Methods

Participants

The sample frame consisted of six major administrative regions of China (Northern China region, Northeastern China region, Eastern China region, Central and Southern China region, Southwestern China region, and Northwestern China region). According to the population proportion of six major administrative regions of China, we collected 13,080 participants with a random cluster sampling method in 18 provinces. They were all tested by the Chinese People's Sleep Disorder Scale (CPSDS) and the Chinese Social Support Scale. A total of 12,260 effective samples were included after eliminating invalid questionnaires because either the questionnaire was not finished or the participants had given random answers.

Measuring instruments

Sleep quality was assessed using the Chinese People's Sleep Disorder Scale (CPSDS) [22]. The CPSDS is a 29-item self-reported, validated questionnaire that evaluates sleep quality within the past month. The CPSDS consists of five sleep components related to sleep habits including daytime function (SD1), insomnia (SD2), lethargy (SD3), motile abnormal sleep (SD4), and immotile abnormal sleep (SD5). The sleep components yield a score ranging from 0 to 3, with 3 indicating the greatest dysfunction. The sleep component scores are summed to yield a total score ranging from 0 to 87, with higher total or global scores indicating poor sleep quality. The scale of the Cronbach's α coefficient is 0.822; the five factors of Cronbach's α coefficient were 0.678, 0.658, 0.696, 0.674, 0.395. Test-retest reliability is 0.865, weights of each factor to measure the correlation coefficient were 0.872, 0.834, 0.691, 0.664, and 0.635 ($P < 0.01$).

Social support was evaluated using the Chinese social support scale [23]. The scale is self-reported and consists of three factors including subjective social support (F1), objective social support (F2),

and social support utilization (F3). The items of every factor yield a score ranging from 0 to 2, with 2 indicating the lowest social support. The social support scores are summed to yield a total score ranging from 0 to 87, with higher total or global scores indicating poor social support. The scale of the Cronbach's α coefficient is 0.821; the three factors of Cronbach's α coefficient were 0.631-0.685 ($P < 0.01$). Psychometric properties analysis showed that the two scales achieved good to excellent levels of internal consistency, test-retest reliability, and content, construct, and criterion-related validity.

Testing procedure

The tests were carried out by trained professionals; the testing process adopts unified instructions. All tests were performed after informed consent was obtained and with the approval of the hospital ethics committee. To protect the privacy of the subjects, participants were not required to fill in the name. All subjects were asked to fill in the questionnaire according to actual condition and within the prescribed time.

Statistical analysis

All analyses were performed using SPSS Version 17.0 (IBM SPSS Version 17, Chicago, IL, USA). Demographic characteristics of the study participants were assessed using means \pm standard deviation for continuous variables and counts and percentages for categorical variables. Differences in categorical variables were evaluated using a Chi-square test. T-test analyses were used to evaluate differences in mean values for sleep component scores and social support scores between different marital statuses and different residences. Pearson's correlation was used to analyze the relation of sleep disorders and social support in only children. A multiple stepwise regression analysis was used to evaluate the influencing factors of sleep disorders. All reported p-values are two-sided and defined as significant at the 5% level.

Results

Characteristics of the study population

According to the data analysis, 12260 effective samples were obtained; the effective rate was 93.7%. The only child group had a total of 6028 people, including 2860 women and 3168 men, 4365 married and 1446 unmarried, 2636 in-town residents and 3392 country residents with an average age of 26.10 ± 12.29 years. The non-only-child group had a total of 6232 people, including 3135 women and 3097 men, 4426 married and 1621 unmarried, 2493 in-town residents and 3739 country residents with an average age of 25.93 ± 11.35 years (Table 1). There were no significant differences between the two groups ($P > 0.05$).

Difference in only child sleep disorders with marital status and a town & country residence

The research shows that only children have a motile abnormal sleep score and immotile abnormal sleep score lower than non-only children; the only child lethargy score was significantly higher than the non-only child score ($P < 0.05$). The unmarried only child motile abnormal sleep scores and immotile abnormal sleep scores were lower than the married only child scores, while the daytime function scores and lethargy scores were significantly higher than the married only child scores ($P < 0.05$). The urban only child daytime function

Table 1: Differences in characteristics of participants relative to only child status.

	Only child(n=6028)	Non-only child(n=6232)	P
Mean age	26.10±12.29	25.93±11.35	>0.05
Sex			
Women	2860	3135	>0.05
Men	3168	3097	>0.05
Marital status			
Married	4365	4426	>0.05
Never married	1466	1621	>0.05
Other	197	185	>0.05
Town & Country			
Town	2636	2493	>0.05
Country	3392	3739	>0.05

Correlation between sleep disorders and social support in only children

Pearson correlation analysis shows that the five factor score of the Chinese people’s Sleep disorder Scale has significantly positive correlation with the three factor score of the Chinese social support scale in only children (P < 0.05), (Table4).

Regression analysis of influential factors of sleep disorders in only children

Age, gender, urban and rural areas, education level and all factors of the Chinese social support scale were the independent variables, and all factors of the Chinese people’s Sleep disorder Scale were dependent variables. Multiple stepwise regression analysis showed that all factors of the Chinese social support scale were used in the regression equation of insomnia, lethargy, motile abnormal sleep and immotile abnormal sleep, and it was used to predict insomnia,

Table 2: Differences in only-child sleep disorder with marital status and town & country residence ($\bar{x} \pm s$).

	Only-child		t	Marital status		t	Town & Country		t
	Yes	No		Married	Never married		Town	Country	
SD1	5.32±3.32	5.21±3.37	1.73	5.04±3.68	5.35±3.20	2.32*	5.43±3.56	5.19±2.88	2.60*
SD2	6.97±4.43	7.06±4.78	-1.03	7.00±5.07	6.93±4.24	-0.43	7.25±4.74	6.59±3.85	5.50*
SD3	4.27±2.80	4.02±2.83	4.67*	3.98±3.05	4.33±2.73	3.10*	4.35±2.96	4.18±2.53	2.14*
SD4	2.45±2.32	2.86±2.68	-8.65*	2.90±2.66	2.33±2.19	-5.94*	2.56±2.46	2.27±2.05	4.38*
SD5	1.68±2.21	2.21±2.68	-11.20*	2.31±2.67	1.53±2.05	-8.32*	1.77±2.33	1.55±2.01	3.51*

*P<0.05

Table 3: Difference in only-child social support with marital status and a town & country residence ($\bar{x} \pm s$).

	Only-child		t	Marital status		t	Town & Country		t
	Yes	No		Married	Town		Town	Country	
F1	3.32±3.56	3.96±4.02	-8.85*	4.03±4.52	3.13±3.25	-5.66*	3.27±3.61	3.42±3.47	-1.42
F2	1.93±2.61	2.57±3.03	-12.04*	2.71±3.43	1.73±2.33	-8.14*	1.89±2.64	1.99±2.56	-1.27
F3	2.07±2.07	2.42±2.32	-8.47*	2.50±2.49	1.95±1.93	-6.16*	2.08±2.14	2.07±1.98	0.07

score, insomnia score, lethargy score, motile abnormal sleep score and immotile abnormal sleep score were significantly higher than the rural only child scores (P < 0.05) (Table2).

Difference in only child social support with marital status and town & country residence

The results showed that the only child subjective social support score, objective social support score and social support utilization score were significantly lower than the non-only child scores (P < 0.05). The unmarried only child subjective social support score, objective social support score and social support utilization score were significantly lower than the married only child scores (P < 0.05). Compared to the urban only child scores, the differences between the urban only child scores and the rural only child scores of subjective social support, objective social support and social support utilization were significant (P < 0.05), (Table3).

Table 4: Correlation coefficient between sleep disorders and social support in only children (r).

	SD1	SD2	SD3	SD4	SD5
F1	0.48*	0.49*	0.37*	0.51*	0.47*
F2	0.42*	0.44*	0.34*	0.51*	0.49*
F3	0.41*	0.43*	0.32*	0.43*	0.36*

lethargy, motile abnormal sleep and immotile abnormal sleep (P < 0.05). Subjective support and support utilization were used in the regression equation of daytime function, and it can predict daytime function with a sleep disorder (P < 0.05). Age, gender, urban and rural residence, and education level were used in the regression equation of daytime function and insomnia to predict daytime function and insomnia (P < 0.05). Age, gender, and urban and rural residence were used in the regression equation of lethargy and immotile abnormal

Table 5: Regression analysis of the influential factors of sleep disorders in only children.

Dependent variables	Independent variables	B	SE	t	R ²	P
SD1	Age	-0.03	0.01	-7.18	0.26	0.04
	Gender	0.89	0.81	10.96		0.00
	Town & Country Residence	-0.40	0.82	-4.88		0.00
	Education Level	-0.08	0.08	-2.87		0.00
	F1	0.39	0.19	21.34		0.00
	F3	0.16	0.31	5.24		0.00
SD2	Age	-0.23	0.01	-4.02	0.26	0.00
	Gender	0.79	0.11	7.24		0.00
	Town & Country Residence	-0.83	0.11	-7.53		0.00
	Education Level	-0.13	0.04	-3.52		0.00
	F1	0.46	0.03	13.98		0.00
	F2	0.09	0.04	2.06		0.04
SD3	Age	-0.03	0.01	-6.79	0.16	0.00
	Gender	0.59	0.07	8.11		0.00
	Town & Country Residence	-0.28	0.07	-3.74		0.00
	F1	0.20	0.02	9.12		0.00
	F2	0.11	0.03	3.76		0.00
	F3	0.72	0.03	2.51		0.01
SD4	Age	0.01	0.00	4.30	0.28	0.00
	Gender	0.14	0.06	2.59		0.01
	Town & Country Residence	-0.30	0.06	-5.36		0.00
	F1	0.17	0.02	9.95		0.00
	F2	0.21	0.02	9.54		0.00
	F3	0.05	0.02	2.19		0.03
SD5	Age	0.03	0.00	8.21	0.26	0.00
	Town & Country Residence	-0.23	0.05	-4.14		0.00
	F1	0.14	0.02	8.46		0.00
	F2	0.29	0.02	13.64		0.00
	F3	-0.09	0.02	-4.48		0.00

sleep ($P < 0.05$). Age and urban and rural residence were used in the regression equation of motile abnormal sleep ($P < 0.05$) (Table5).

Discussion

The study found that in only children, motile abnormal sleep and immotile abnormal sleep were better than non-only children, but only child insomnia occurred more frequently than in the non-one-child group. This may be associated with the fact that in a family with only one child, the parents give more care for a good sleep environment to ensure no sleep interference. Incidence of motile abnormal sleep and immotile abnormal sleep, such as sleepwalking, night terrors and nightmares, were decreased, but it can lead to more sleep in a comfortable environment. Regarding different marital status, the study showed that only child unmarried motile abnormal sleep and immotile abnormal sleep were better than married people, while daytime function was worse than married people. Unmarried

only children sleep more than married people; this may be related to unmarried only children sleeping too much. The study shows that too much sleep can lead to fatigue, daytime sleepiness, napping, low energy, and slow responses [24]. In addition, daytime function, insomnia, lethargy, motile abnormal sleep and immotile abnormal sleep were all worse in urban only children than in rural only children; this may be associated with the fact that people living in the city are faced with more stress, leading to urban only children having poor sleep quality [16].

The research shows that subjective support, objective support and support utilization in only children were better than the children with siblings; this may be because children without siblings are the only child in the family, making it easier to get the attention of family and society. A previous study showed that [25] social support of children with siblings was better than for only children. There is a difference

with our research that may be a result of the different sample sizes or research methods of these two studies. Subjective support, objective support and support utilization of married only children were worse than unmarried only children. According to the traditional Chinese concept, married people have more stressful life events, and they should address various affairs independently after they set up their own family. Married people receive less support from their parents and others, receiving less social support than unmarried only children. Compared with rural resident only children, there was no difference with urban only children in social support; the difference is not significant. It showed that urban and rural residents have quickly developed after 30 years of reform and opening-up in our country. Especially because of more preferential policies for farmers, people's spiritual and material lives are greatly improved, and the disparity between urban and rural residents has been reduced; thus, urban and rural social support tend to have similar results.

Pearson correlation analysis shows that the five factor score of Chinese people's Sleep disorder Scale has a significantly positive correlation with the three factor score of Chinese social support scale in only children ($r = 0.32 \sim 0.32, P < 0.05$). The results suggest that better social support of only children results in higher sleep quality. Regression analysis results show that social support could predict sleep disorders of only children; the result was consistent with former studies on the correlation between social support and sleep disorder [26,27]. Studies suggest that social support is one important factor for maintaining health. Good social support can promote healthy behavior and provide more information to cope with stress [28]. Therefore, individuals who have good social support can reduce psychological pressure that can affect sleep [29]; it is easier to obtain information for healthy sleep habits [27] to maintain healthy sleep habits. Although social support plays a role in predicting sleep disorders of only children, with a prediction rate as high as 28%, it illustrates that sleep disorders in only children are still influenced by other factors that need further research.

In summary, differences in social support and sleep disorders between only children and non-only children, marital statuses, and urban and rural residents also exist. Social support was positively correlated with the sleep quality of only children; it can predict the appearance of sleep disorders.

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