Paediatrica Indonesiana

VOLUME 53 May • 2013 NUMBER 3

Original Article

Mother's health care-seeking behavior for children with acute respiratory infections in a post-earthquake setting

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Abstract

Background Delayed health care-seeking behavior is a cause of high mortality in children due to acute respiratory infections (ARIs). Factors that may affect health care-seeking behavior are socioeconomic status, maternal age, maternal education, parents' perception of illness, child's age, number of children under five years of age in the family, and occurrence of natural disasters. The 2006 Central Java earthquake damaged homes and health care facilities, and led to increased poverty among the residents.

Objective To assess the relationship between socioeconomic status and mother's health care-seeking behavior for children under five years of age with ARIs in a post-earthquake setting.

Methods This cross-sectional study used secondary data obtained from the Child Health Need Assessment (CHNA) survey. Logistic regression test was used to analyze variables that may affect mother's health care-seeking behavior for children under five years of age with ARIs.

Results Of the 665 infants surveyed, 442 infants (66.5%) had ARIs. Health care-seeking behavior was good (81.7%) in the majority of mothers. We observed that socioeconomic status did not affect maternal health care-seeking behavior for children under five with ARIs (OR 1.33; 95%CI 0.79 to 2.24; P=0.26). Maternal age, maternal education, child's age and gender, number of children under five in the family, parents' perceptions of illness and severity of house damage caused by the earthquake also had no effect on maternal health care-seeking behavior for children with ARIs.

Conclusion After the 2006 earthquake, we find that socioeconomic status, maternal age, maternal education, child age, child gender, number of children under five in the family, parents' perceptions of illness, and severity of house damage have no effect on mother's health care-seeking behavior for their children with ARIs. **[Paediatr Indones. 2013;53:144-9.]**

Keywords: *health care-seeking behavior, acute respiratory tract infection, children, socioeconomic status.*

Acute respiratory tract infections (ARIs) are a major health problem causing mortality and morbidity in children under five years of age worldwide, particularly in developing countries. Mortality due to ARIs in children under five has been estimated at 18.6%, or 4 million per year.[1,2,3] In Indonesia, ARIs is the most common cause of hospital outpatient visits, resulting in 960,460 visits per year or 9.32%. ARIs is also the eighth out of ten leading diseases in hospital inpatients (1.69 % of hospital inpatients). The reported incidences of ARIs were 8.0% in 1997, 7.6% in 2003, and 5.1% in 2004. There were 477,420 case findings of pneumonia in children under five in 2006. Pneumonia caused the highest rate of mortality in infants, resulting in 22.30% of all infant deaths, along with a peak mortality in children under five, with 23.6% of deaths.[4]

The greatest potential actions for reducing pneumonia-related deaths are training, antibiotics, and oxygen.[5] The three essential steps to reduce deaths among children under five with pneumonia are to recognize that a child is sick, to seek appropriate care, and to treat with antibiotics

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appropriately.[6] Appropriate care, as defined by WHO and UNICEF, is provided in guidelines for correct pneumonia diagnosis and treatment to hospitals, health centers, dispensaries, community health workers, maternal and child health clinics, outreach clinics, and physicians' private offices. Health care-seeking behavior is influenced by predisposing, enabling, and need factors relating to contextual and individual determinants.[7] One such predisposing factor as a contextual determinant is a natural disaster.

On May 27, 2006 an earthquake occurred in the Bantul District of Central Java and its surroundings. It caused an increase in the number of poor families in the population and damaged health facilities. This disaster may have affected parents' pattern of health care-seeking behavior for their children, especially for ARIs, the most common illness observed in Bantul District outpatient clinics.

Therefore, we aimed to assess a possible relationship between family socioeconomic status and health care-seeking behavior of mothers for their children under age five with ARIs, as well as other factors in this post-earthquake setting.

Methods

We performed a cross-sectional study using secondary data from the Child Health Need Assessment (CHNA) survey. The CHNA survey was conducted 15 months post-earthquake, August 21-31, 2007, by the Pediatrics Department of the Medical Faculty at Gadjah Mada University/Dr.Sardjito General Hospital, Yogyakarta in collaboration with the Hope Project, USA.

Subjects were mothers with 0 to 59-month-old children with ARIs in the area of Bambanglipuro Subdistrict, Bantul District, and who had complete data. Sample size estimation in the CHNA survey was calculated by stratified sampling in 2 strata. Stratum 1 was comprised of infants aged 0-11 months and stratum 2 was comprised of children aged 12-59 months.

The data-collecting tool used in this study was the CHNA questionnaire, a modified measurement tool developed by Patricia J. Allen of Yale University School of Nursing in the study Children with Special Health Needs: National Survey of Prevalence and Health Care Needs (2004). [20]

We collected data on the average monthly household expenses per person which consisted of expenses for food and non-food materials, maternal education and age, child age and gender, the number of children in the family, child's symptoms such as cough, coryza, fever, and dyspnea in the two weeks prior to the survey, parents' perception about child illness symptoms, category of house damage, and parental health care-seeking efforts for their children. Children with average monthly household expenses per person ≥ Rp. 215,175.00 were classified as moderate socioeconomic level, while those < Rp. 215,175.00 were classified as low socioeconomic level.

Child Health Need Assessment data collecting was performed by interviews with structured questionnaires for parents or caregivers. Interviewers had been trained to visit homes or where respondents were staying to directly interview them. Interviews with parents or caregivers were intended to collect information about symptoms of illness in children for the two weeks prior to the survey, parental health care-seeking behavior and what was needed for children's health.

Data on socioeconomic level, health care-seeking behavior, maternal age and education, parents' perception of illness, child's age and gender, the number of children under five in the family and house damage were reported in proportions. Proportional differences were analyzed using the Chi square test.

The relationship between the variables was analyzed with logistic regression test and stated in odds ratios (OR) with 95% confidence interval (CI). Factors having a statistically significant relationship to health care-seeking behavior in univariate analysis would be further analyzed with multiple logistic regression test to assess a multivariate relationship between significant variables. Statistical analysis was performed using statistical software SPSS for Windows (*SPSS, Inc., Chicago, Illinois, USA*).

This study was approved by the Ethics Committee for Medical and Health Research at the Gadjah Mada University Medical School, and was performed with permission from CHNA researchers. Informed consent, confidentiality and principles of benefit and justice were used in this study.

Results

Out of 665 children under five surveyed, 442 (66.5%) had ARIs. Subjects' characteristics are shown in **Table 1**. Most children (88.2%) were aged 12 months or older with more males (55.2%) than females (44.8%). Of the children aged under five years, 43.7% were in the moderate socioeconomic level and 55.9% were in the low socioeconomic level. Most mothers (74.7%) were younger than 35 years of age. Maternal educational level attained was categorized as high for mothers who had finished junior high school (357 mothers, 80.8%), and low for those who had not finished junior high school (85 mothers, 19.2%). Most mothers (96.8%) had 1 or 2 children aged under five years in their family and most mothers (385, 87.1%) considered the ARIs symptoms suffered by their children to not be dangerous. Most respondents' houses (82.4%) were severely damaged because of the earthquake.

Most mothers (81.7%) of children under five with ARIs had appropriately good health care-seeking behavior, defined as bringing their children to a health care facility and receiving medications or treatment as indicated. Furthermore we categorized severe house

Table 1. Study subjects' characteristics

Characteristics	n=442
Mother's health care-seeking behavior, n (%)	
Good	361 (81.7)
Not good	81 (18.3)
Socioeconomic level, n (%)	
Moderate	193 (43.67)
Low	247 (55.88)
Unknown	2 (0.45)
Maternal age, n (%)	
<35 years	330 (74.7)
≥35 years	112 (25.3)
Maternal education attained, n (%)	
High	357 (80.8)
Low	85 (19.2)
Parents' perception of illness symptoms, n (%)	
Dangerous	57 (12.9)
Not dangerous	385 (87.1)
Child's age, n (%)	
<12 months	52 (11.8)
≥12 months	390 (88.2)
Child's gender, n (%)	
Female	198 (44.8)
Male	244 (55.2)
Number of children under five in the family, n (%)	
≤2	428 (96.8)
>2	14 (3.2)
House damage, n (%)	
Inhabitable	364 (82.4)
Habitable	75 (17.2)
Unclassified	2 (0.45)

Table 2. Relationship between study subjects' characteristics and health care-seeking behavior

Variables	Health care-seeking behavior		P value	OR (95%CI)
	Good	Not good		
Socioeconomic level, n (%)				
Moderate	162 (45.1)	31 (38.3)	0.26	1.33 (0.79 to 2.24)
Low	197 (54.9)	50 (61.7)		
Maternal age, n (%)				
<35 years	269 (74.5)	61 (75.3)	0.88	0.96 (0.53 to 1.73)
≥35 years	92 (25.5)	20 (24.7)		
Maternal education attained, n (%)				
High	291 (80.6)	66 (81.5)	0.86	0.94 (0.48 to 1.82)
Low	70 (19.4)	15 (18.5)		
Parents' perception of illness symptoms, n (%)				
Dangerous	51 (14.1)	6 (7.4)	0.10	2.06 (0.81 to 5.54)
Not dangerous	310 (85.9)	75 (92.6)		
Child's age, n (%)				
<12 months	39 (10.8)	13 (16.0)	0.19	0.63 (0.31 to 1.32)
12-59 months	322 (89.2)	68 (84.0)		
Child's gender, n (%)				
Female	162 (44.9)	36 (44.4)	0.94	1.02 (0.61 to 1.70)
Male	199 (55.1)	45 (55.6)		
Number of children under five years in the family, n (%)				
≤2	349 (96.7)	79 (97.5)	0.69	0.74 (0.11 to 3.57)
>2	12 (3.3)	2 (2.5)		
House damage (n, %)				
Habitable	63 (17.5)	13 (16.0)	0.75	1.11 (0.58 to 2.14)
Inhabitable	296 (82.5)	68 (84.0)		

damage as inhabitable, and not damaged, moderate and mild house damage as habitable.

These study showed that family socioeconomic status did not affect mother's health care-seeking behavior for children under five with ARIs (OR 1.33; 95%CI 0.79 to 2.24; P=0.26). Other factors such as maternal age and education, child's age and gender, number of children under five in the family, parents' perception of illness and house damage because of the earthquake also did not affect mother's health care-seeking behavior for children under five with ARIs (**Table 2**).

Since the bivariate logistic regression analysis revealed no significant variables for health care-seeking behavior, the multivariate analysis was not performed.

Discussion

The earthquake in the Bantul District and surroundings on May 27, 2006 damaged various sectors, including many homes. In this study we found that most subjects' houses (82.4%) were severely damaged. Aids came from government and private organizations.

Of the 442 children under five years of age with ARIs in the 2 weeks prior to the survey, 81.7% had mothers with good health care-seeking behavior. This result was higher than that of a WHO report in which 61.3% of children under five with ARIs were brought to a health service in Indonesia.[3] Similar results were reported in another study involving children under three years of age and with subjects differentiated between rural and urban areas.[8] In rural areas in Indonesia, 65% of children under three with ARIs were brought to health service facilities, while in urban areas 72% visited a health facility. Similar rates were reported in Dominica (60.2%)[9] and Kenya (60.5%).[10]

Family socioeconomic status is an enabling factor affecting health care-seeking behavior, as it reflects an individual's actual ability to access health services.[11] Several study reports have similar findings.[8,9,10,12] In contrast, we found that moderate or low socioeconomic status did not affect good health care-seeking behavior (OR 1.33; 95%CI 0.79 to 2.24; P=0.26). Similarly, a Filipino study also reported that socioeconomic status was not a predictive factor of health service usage in ill children under five years of age.[9] In a study of children aged < 1 year with ARIs in Holland, it was also reported that socioeconomic status was not a determinant of health care-seeking behavior.[13] A possible reason may be that most parents participated in health insurance programs.

Our finding that socioeconomic status was not a factor determining mother's health care-seeking behavior for her children under five years of age with ARIs, is an important point, because this shows that health service access was not limited by socioeconomic status. From the CHNA survey, we found that the most frequently visited health facilities were private doctors/midwives/nurses (70%) and the medical personnel most commonly giving assistance to children under five with ARIs were midwives (70%). The cost of visiting a midwife was relatively lower than that of visiting general practioners or specialists. In addition, some mothers chose to bring their children to midwives because of their familiarity with them since the time of birth.

Maternal age of <35 years did not affect health care-seeking behavior for children under five with ARIs (OR 0.96; 95%CI 0.53 to 1.73; P=0.88). This result was similar to a study reporting that maternal age was not related to medical consultation frequency.[13] In contrast, two other studies reported that health care-seeking behavior for children under five with ARIs was lower for mothers ≥35 years in age.[8,10]

Maternal education level was reported to be related to health care-seeking behavior for children.[8,15,16] It was assumed that a higher level of maternal education would lead to better knowledge about health problems. Nevertheless, we found that health care-seeking behavior for children under five was not influenced by maternal education level (OR 0.94; 95%CI 0.48 to 1.82; P=0.86). This result was similar to studies in India and Dominica.[9,17,18] The relationship between maternal education and health care-seeking behavior is complex and further studies are needed.[9]

A child's age of 0-12 months is a typically a predictor of health-service seeking for children with ARIs due to the preventive medical visit schedules, such as for immunizations and weighing, mother's lack of experience, or parents' perception that morbidity at a younger age has more severe effects.[8,19] In contrast,

we found that child's age of 0-12 months did not affect health care-seeking behavior for children with ARIs (OR 0.63; 95%CI 0.31 to 3.12; P=0.19). Similarly, Ghosh reported that an age of less than 1 year was not a predictor of health care-seeking behavior for children under five with ARIs.[15] A child's age of less than 1 year was a predictor of health care-seeking behavior after adjustment with illness severity level and burden; i.e., parents tended to seek health services for milder complaints and symptoms in children under 1 year of age.[4,17]

A Dominican study reported that female gender was a predictor of health care-seeking behavior for children under five with ARIs.[9] However, we found that child's gender did not affect health care-seeking behavior for children under five with ARIs (OR 1.02; 95%CI 0.61 to 1.70; P=0.94). Similarly, a Kenyan study reported that a difference in health care-seeking behavior for boys and girls was not statistically significant.[10] A child's gender may affect health care-seeking behavior in societies where one gender is considered to be more precious than the other.[20]

Having fewer children under five increases the amount of attention parents give their children. In this vein, the *Norma Keluarga Kecil Bahagia dan Sejahtera* (NKKBS) (the norms of a prosperous, small and happy family) developed by the *Badan Koordinasi Keluarga Berencana Nasional* (BKKBN) (The National Family Planning Coordinating Board) reported the ideal number of children in a family to be two.[19] We found that 2 or fewer children in the family did not affect mother's health care-seeking behavior for children under five with ARIs, in contrast to a previous study.[16]

Parents' perception that their children's symptoms were dangerous was not a factor for health care-seeking behavior in our subjects. In contrast, health care-seeking behavior for children under five with ARIs in India was higher if parents perceived that their children were suffering from a certain illness, needed special treatment, or the natural history of the illness was too long and severe.[15]

In addition to the reasons explained above, the post-earthquake setting may also have affected our results, as there were many helpful hands from both government and non-government organizations, both domestic and from abroad. The restoration of public facilities, including health and transportation, may have allowed the population to acquire health services. Inexpensive cost at the Primary Health Center was also a factor affecting health care-seeking behavior. After the earthquake, health personnel received training or counseling, which may have influenced the health care-seeking behavior in the community.

A limitation of this study was that the morbidity data was reported by the respondents themselves. The secondary data may have been subject to recall bias. Morbidity rates in this study may have been lower than the actual morbidity rates, since respondents may have forgotten mild symptoms. Information about the age of respondents and the child's birthday was a past event. CHNA data also did not account for health belief variables or health service quality which may also play a role in determining health care-seeking behavior.

To increase the benefit of health services, factors that influence decisions to choose between government or private health services also need to be studied. The role of health insurance should also be included, because Thind *et al*. reported that children with insurance used private health services more than government health services.[8]

In conclusion, socioeconomic status, child's age and gender, maternal age and educational level, number of children under five in the family, parents' perception about ARIs symptoms and degree of house damage due to the earthquake did not significantly influence mother's health care-seeking behavior for children under five with ARIs in the post-earthquake Bambanglipuro Subdistrict, Bantul District. Government or private health service facilities should be improved or their quality maintained such that mothers' health care-seeking behavior can remain to be appropriately good.

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