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What changes poor mothers’ child care-seeking behaviors? : a cross-sectional study in Granada, Nicaragua

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Abstract

Background

Evidence is limited on how poor mothers seek health care for their children and how they make choices when their children are sick. Objectives of this study were to examine poor mothers’ care-seeking behavior for childhood illness and to identify the determinants of making changes in their choice of care.

Methods

A cross-sectional study with structured questionnaires and anthropometric measurements.

Study site was 37 villages (clusters) in the Nandaime, Granada province, Nicaragua.

Participants were mothers and their children 0 to 23 months of age in 756 households.

Results

When a child was ill, the majority of mothers (> 75%) selected public health facilities as their first choice for health care. However, their second choice varied. We also determined the factors which contributed poor mother’s change of their choice for care. They were symptoms of respiratory illness (AOR, 2.48; 95% CI, 1.28-4.88), previous child death (AOR, 2.17; 95% CI, 1.19-3.97), and health post as the first choice (AOR, 2.13; 95% CI, 1.27-3.58). The child’s
nutritional status, mother’s educational level, and previous participation in health education sessions were not identified as significant factors in the final model.

Conclusions

This study revealed the difficulty of conveying an appropriate health message to the poorest mothers. We recommend that emergency care of illness should also be included in child health education programs for poor mothers.
Background

Approximately 9.2 million children under 5 years of age die every year around the world [1]. The majority of these child deaths occur in poor, developing countries [1,2]. Recent data have shown that an estimated 2.7 billion people are still living on less than 2 US dollars a day [3]. The major killers of children under 5 years of age in developing countries are acute respiratory infections, and acute diarrhea [2,4]. However, childhood deaths caused by these diseases might be preventable if early and appropriate treatment were rendered [5]. Mothers in developing countries, however, do not often have sufficient knowledge about appropriate treatment for these diseases [5]. This leads to delayed action and may result in fatalities. In this sense, a mother’s care-seeking behavior is particularly important in resource-poor countries.

Studies have shown that factors associated with a mother’s care-seeking behavior for childhood illness are: the mother’s level of education [6-8], economic status [7,9,10], age [11], and ethnicity [11-15] distance to the health care facility [6,17], the child’s age [17], birth order [18,19], and nutritional status [9,20], the recognition of the severity of the illness by the mother [10,19], the presence of diarrhea [21] or respiratory illness [14], prior participation in health education [7], and the quality of health care services [22-24].

Nicaragua is one of the poorest countries in Latin America. Its per capita Gross
National Income (GNI) was 980 USD (2007)[25]. This is only one-third of the regional average [25]. Of 33 Latin American countries, Nicaragua is the poorest, followed only by Haiti [25]. Measured by the income distribution method, overall poverty was 60% and extreme poverty was 34% of the total population [26]. Nicaragua has huge economic inequalities [25]. The Gini Coefficient in Nicaragua was reported to be 0.54 in 2006 (0 = perfect equality, 1 = perfect inequality), in which the wealthiest 20% earned approximately 60% of the total income [25].

Between 1980 and 2005, Nicaragua succeeded in reducing the infant mortality rate (IMR) from 82/1000 to 30/1000 and the under-5 childhood mortality rate (U5MR) from 113/1000 to 37/1000 [1]. However, huge domestic disparity remained. The IMR in urban area was 28/1000, while that of rural was 43/1000 [27]. Similarly, the U5MR was 34/1000 in urban, and 55/1000 in rural [27]. The majority of poor mothers are more likely to live in remote areas where medical services are scarce, and little is known about how these poor mothers behave in seeking medical care when their children get sick.

Objectives of this study were to examine mothers’ care-seeking behaviors for their sick children and to identify the determinants of utilization of health care services in a semi-rural area in Nicaragua, using the child nutritional status study data set [28].
Methods

Study design and study site

We carried out a cross-sectional study using face-to-face interviews with a structured questionnaire and anthropometric measurements. The study site was the Nandaime municipality in Granada, Nicaragua, located about 70 km southeast of the capital city of Managua. The estimated population in Nandaime was nearly 40,000. The total number of households was about 7,400 [29].

Target population

The inclusion criterion for our study population was mothers with at least 1 child aged 0 to 23 months.

Sampling

We adopted a 2-stage cluster sampling procedure [28]. We randomly selected 10 clusters from the eastern, northern, western, and southern parts of the target area. Due to geographical inaccessibility, 3 clusters were excluded. In total, 37 study clusters were selected, comprising 10 urban and 27 rural communities. We used the estimated child stunting proportion as 35%, based on the Demographic and Health Survey 1998 [30]. The minimum sample size for the
rural and urban areas in this study site was 356 for each.

**Definition of positive change of care-seeking behavior**

We defined the preferable positive change as change in care-seeking behavior from self-medication or home remedies to visiting a health care facility where health personnel were assigned.

**Health center and health posts**

In this area, there was 1 public health center staffed by physicians. On the other hand, rural health posts were staffed only by paramedics.

**Data collection and statistical analysis**

We conducted a field survey from February to March 2002. We used SPSS, version 16.0 for data analysis (SPSS Inc., Chicago, IL, USA). To determine the predictors of mothers’ care-seeking behavior for childhood illness, we calculated the crude odds ratios (COR) and adjusted odds ratios (AOR) to control for possible confounding factors.

**Ethical considerations**
We obtained informed consent verbally from all mothers who participated in the interviews. The Granada provincial health office (SILAIS Granada), Ministry of Health, Nicaragua, reviewed and approved the study protocol. On the Japanese side, the advisory committee for the Project for Strengthening Community Health in Granada, Nicaragua (PROGRA) approved the study protocol.
Results

Sociodemographics of the respondents (Table 1)

The total number of participating households was 756 (response rate, 100.0%; total covered population, n = 5,198). Table 1 shows the sociodemographics of the respondents. We divided the respondents into 3 groups using the World Bank definition of poverty level: group 1: < 1 US Dollar (USD) a day (extreme poverty level, monthly household income < 30 USD; n = 140); group 2: 1 to 2 USD a day (monthly household income, 30-60 USD; n = 258); and group 3: > 2 USD a day (monthly household income > 60 USD; n = 358). The mean monthly income of group 3 was approximately 5 times that of group 1 (117.4 USD vs. 23.4 USD; p < .001). There was no significant difference among the 3 groups for the age of children, nor the rate of mother’s previous participation in health education (p= .256). Maternal education was significantly higher in the more affluent groups (p < .001).

Table 2 outlines child health status by household income. Symptoms of respiratory illness, diarrhea in the last 14 days, and death of a child in the past were not significantly different among the 3 groups. The mean height for age z-score (HAZ), which represents stunting (chronic malnutrition) was -1.51 (SD, 1.65) in group 1, -1.42 (SD, 1.58) in group 2,
and -0.69 (SD, 1.58) in group 3 by ANOVA (p < .001).

**Poverty and mothers’ care-seeking behaviors (Table 3)**

Table 3 depicts the associations between the mothers’ care-seeking behavior by economic status. The majority of mothers (> 75%) in all groups selected public health facilities (health center and health post) as their first choice for their children’s health care. Wealthier mothers (Group 3) were more likely to use private facilities as their first choice (13.3%; p < .05).

Regarding the second choice, more than half of the mothers (> 60%) would visit public health facilities. Of the poorest mothers, 11.6% selected private clinics as their second choice. The proportion that would use self-medication and home remedies decreased as a second choice among all income groups.

**Predictors of change of care-seeking behavior of poor mothers (< 2 USD/day) for childhood illness (Table 4)**

As shown in Table 4, we found several possible predictors of change of poor mothers’ care-seeking behavior: symptoms of respiratory illness in the previous 14 days (COR, 2.77; 95% CI, 1.43-5.35), experiencing a child death in the past (COR, 2.07; 95% CI, 1.17-3.64), and health post rather than health center as the nearest health facility (COR, 2.24; 95% CI,
1.35-3.70). Even after adjusting for possible confounding factors, the predictors did not change: symptoms of respiratory illness (AOR, 2.48; 95% CI, 1.27-4.88), experiencing a child death in the past (AOR, 2.17; 95% CI, 1.19-3.97), and the nearest health facility was a health post (AOR, 2.13; 95% CI, 1.27-3.58). Child stunting, mother’s level of education, and participation in health education in the past were not associated with a change in the mother’s behavior.
Discussion

Our data reveal that three predictors for poor mothers changing their care-seeking behavior for their children. They were recognition of symptoms of respiratory illness, previous child death experience, and health post as the first facility choice. We discuss these predictors in sequence below.

First, the symptoms of respiratory illness were identified as a strong predictor for poor mothers’ behavioral changes. As discussed in previous studies, the symptoms of acute respiratory illness were regarded as a distressing sign for mothers [4,31]. Although we did not identify severity of the symptoms, mothers might know that respiratory illness is one of the common killers of younger children. In particular, we observed a higher prevalence of acute respiratory infections in this study population (Table 2).

Second, the present study also showed that experience of a previous child death might predict a change of poorer mother’s care-seeking behavior. One possible reason is that mothers who have experienced child death in the past might be more sensitive to trying to save another child's life. Determination of the severity of a childhood disease is difficult for poorer mothers [32,33]. Although Integrated Management of Childhood Illness (IMCI), which is a common strategy to improve case-management skills was already introduced [33,34], this
might not have been disseminated to this poorest regions.

Our data showed that the proportion of mothers who mentioned the death of a child under 5 years old was much higher than the official data in this country [27]. This kind of data is commonly shown in studies from developing countries [35,36]. This suggests that more accurate sampling method is required for the official health research in developing countries.

Third, choice of a health post as the first choice of health care facility was one of the strongest predictors of poor mothers’ behavioral change (Table 4). Poor mothers might naturally select the health facility that is closest as their first choice; however, they also might recognize that the health post did not offer satisfactory health services.

Although we did not show in the results, we noticed that some mothers claimed during the interview that health personnel were not in the health post when they were needed. This suggests that, although the national rural health system was functioning, the services might be limited. A recent study emphasized that many developing countries have reported low rates of systematic referral for childhood illnesses [32]. A modified IMCI strategy recommended that illness in younger children should be treated at first-level facilities, since this might be more realistic[32]. On the other hand, utilization of public health facilities was quite high as both first (> 75%) and second choices (> 60%). A public health center in this area might provide satisfactory medical services for poor mothers and their children, since
this figure is much higher than figures from studies in other developing countries [22,24].

Childhood nutritional status (stunting) was not identified as a predictor for changing the behavior of poor mothers. Childhood malnutrition might not yet be perceived by poor mothers as a serious signal of childhood health risks. In addition, maternal educational level was not associated with changing poor mothers’ care-seeking behavior. Knowledge acquired from primary school education nor basis of previous health education did not seem to be sufficient for coping with emergency care of childhood illnesses. Although we conducted frequent community based health education for mothers, our data showed in average only 38% of mothers previously participated in health education (36.4%, 41.9% and 35.5%, respectively, as shown in Table 1). This figure was surprisingly low.

Since our study was cross sectional, we could not determine a causal relationship. Moreover, the results cannot be generalized. However, the present study revealed the difficulty of conveying an appropriate health message to the poorest mothers in the population. We recommend that emergency care for children should also be included in the health education program for poor mothers and pregnant women. Moreover, the knowledge level and change in health behavior of poor mothers after health care interventions should be followed.
Conclusions

For mothers, symptoms of acute respiratory illness in their child might be a more distressing sign than other symptoms. Previous experience of a child's death was also identified as a factor in changing care-seeking behavior of poor mothers. These results suggest that the current childcare education would probably not change the behavior of poor mothers. In addition, health posts might not meet the needs of mothers with sick children. We should address to maximize the function of rural health posts in this area. We recommend that emergency care of illness should also be included in child health education programs for poor mothers.
**Competing interests**

The authors declare that they have no competing interest.

**Authors’ contributions**

KS carried out the research, analyzed the data, and led the writing of the article. MJ contributed to the interpretation of the data, and assisted with the writing. KH managed research funds, and supervised the study. Same time, he gave useful comments to interpretation of the data. All the authors reviewed the article, and approved the final draft.

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