Original article:

Factors Associated with *Mothers' Perceived Quality* of *Life* among *Young Children* with *Pneumonia* in Dhaka, Bangladesh

Happy Bandana Biswas[1], Nujjaree Chaimongkol[2], Yunee Pongjaturawit[3],

Abstract:

Objective: This study aimed to examine factors associated with quality of life among young children with pneumonia. A simple random sampling was used to recruit a sample of 100 mothers of young Bangladeshi children with pneumonia admitted in pediatric wards at the Dhaka Medical College Hospital, Dhaka, Bangladesh from January to March 2014. ***Materials and Methods:*** Research instruments included a demographic questionnaire, the perceived severity of illness' scale, the Parenting Stress Index and the quality of life scale for Pneumonia Module. Their reliability were .79, .91 and .77, respectively. Data were analyzed by using descriptive statistics, Pearson correlation, independent t-test and one-way ANOVA. ***Results:*** Results revealed that mean total score of quality of life of the children with pneumonia was 50.05 (*S.D.* = 11.11), and at a moderate level. There was a significant relationship between maternal stress and quality of life of pneumonia children (r = -.48, p < .01). However, there was no relationship between perceived severity of illness and quality of life. No significant difference of quality of life of pneumonia children was also found between levels of maternal education and yes/no co-morbidity. ***Conclusion:*** These findings indicate that maternal stress is a significant factor. Pediatric nurses and related health care providers should plan and intervene to lessen stress of the mothers, and that would result in increasing quality of life of young children with pneumonia.

Keywords: *Quality* of *Life*, *Pneumonia*, *Mothers*' *Perception, Young Children*, Bangladesh

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Introduction

Pneumonia is the world's leading killer of children under the age of five. One child dies from pneumonia every 15 seconds[1]. It is an inflammatory conditions of the lung-affecting primarily the microscopic air sacs known as alveoli. Each year, pneumonia takes the life of two million children before they reach their fifth birthday. According to the United Nation International Children's Emergency Fund (UNICEF) in 2012 reports, pneumonia continues to be the number one killer of children around the world-causing 18% of all child mortality, an estimated 1.3 million child deaths in 2011 alone[2]. Only 30 percent of under 5-year-old children with suspected pneumonia are taken to an appropriate health care provider. The mortality rate in this age group under 5 years is estimated to be 0.29 episodes per child-year in developing and 0.05 episodes per child-year in developed countries. Remarkably, Pneumonia is common in Bangladesh with significant mortality and morbidity. About 25% of all childhood death occurs in Bangladesh, due to pneumonia[3]. Young children with pneumonia commonly decreased their quality of life (QoL) due to fast breathing, cough, malaise to high fever, loss of appetite, fatigue and chest in

1. Happy Bandana Biswas, RN, MNSc. Faculty of Child Health Nursing, National Institute of Advanced Nursing Education and Research (NIANER), Dhaka, Bangladesh.
2. Nujjaree Chaimongkol, RN, PhD. Associate Professor, Dean of Faculty of Nursing, Burapha University, Thailand
3. Yunee Pongjaturawit, RN, PhD. Assistant Professor, Faculty of Nursing, Burapha University, Thailand

Correspondence to: Happy Bandana Biswas, RN, MNSc. Faculty of Child Health Nursing, National Institute of Advanced Nursing Education and Research (NIANER), Dhaka, Bangladesh. ***Email:*** bandana.happy@yahoo.com

drawing at the beginning of their life. Usually at this age, child's QoL depends upon a mother who always takes care of her child. QoL is an indicator of well-being and contentment of life which was the highest goal of a human being[4]. Recent studied have shown mothers' education that means knowledge or perception and level of understanding about various aspects of respiratory diseases including signs and symptoms, primary management and care, immunization and prevention of those respiratory diseases is closely related to QoL among young children. Parvez et al. (2010) also presented in Bangladesh that lower health related quality of life was associated with a lower level of education in household, especially the mother. Relatively, children with more severe illness reporting lower health related quality of life[5]. Consequently, child's severity of illness and frequency of illness was a health related factor influencing on maternal stress[6]. On the other hand, co-morbidity and delay in seeking appropriate treatment are the main risk factors for severe pneumonia[7]. Pneumonia can be managed to improve quality of life, as well as by controlling factors in the environment, education, and close monitoring. In addition, if the QoL is cumulative in the sense that problems in early childhood manifest themselves in adolescence and adulthood, then focusing on children's QoL at an early age may be an effective way of reducing problems later in development. Further, it is typically parents' perceptions of their children's QoL that influences healthcare utilization[8]. For these reasons, this study aimed to determine association between potential influencing factors, including maternal education, severity of illness, co-morbidity of pneumonia and maternal stress of mother having young children with pneumonia. Findings from this study would be beneficial for nurses and related health care personnel to plan an effective intervention to enhance and promote quality of life of young Bangladeshi children with pneumonia.

Materials and Methods:

This study was a survey descriptive design.

Sample:

Two days a week per ward, except Friday, were randomly selected to collect the data in each of 3 pediatric wards at Dhaka Medical College Hospital from January 2014 to March 2014. Inclusion criteria were age of 18 years old or older, able to communicate and reading ability in Bangla language, and the children were admitted for 24 hours or more.

Setting:

Bangladesh, is approximately 147,570 km^2, and in 2013 the population more than150, 039,000 million. The number of children under five years old was 53.6 % of registered. Dhaka is the capital and largest city in center of Bangladesh and the area of Dhaka approximately 815.85 Sq. kilometers, and population in Dhaka approximately 7 million. However, for conducting of study about QoL of pneumonia in young children Dhaka medical college hospital inpatient department or pediatrics ward was selected to be the study settings. The Dhaka Medical College Hospital is the central point of public health services of all the government hospitals in Bangladesh, there are 2300 bed with 25 departments, 48 units, and 45 wards including 3 pediatrics wards in this hospital at present. In addition, there were about 50-70 children with pneumonia who admitted in pediatrics ward monthly.

Research Instruments:

A demographic questionnaire contained information about mother's information, including age and education, and the child's characteristic, including age, sex and co-morbidity of pneumonia. The perceived severity of illness's scale was a visual analogue scale (VAS) developed by Wongcheree et al[9]. It was used by asking the mother rating within the range from none (0) to very severe illness (10). Zero score indicates not being perceived as ill and ten scores indicate being perceived as very severely ill. Moreover, scores between 1-3 was classified as mild, 4-6 scores as moderate, and 7-10 as a severely ill child with pneumonia. The Parenting Stress Index-Short Form (PSI-SF) developed by Abidin[10] was used to assess the stress in the parent-child system. It consisted of 36 items with three subscales of parental distress (PD), parent-child dysfunctional interaction (P-CDI) and difficult child (DC). The mothers were asked to rate each item of 1-5 response from 1 (strongly agree) to (strongly disagree). Higher scores indicate higher level of maternal stress. It was also categorized as low (scores 36 to <84), moderate (scores 84 to <132) and high (scores 132 to <180) level of maternal stress. The quality of life scale for Pneumonia Module was developed by Varni et al[11]. It was used to measure quality of life of young children specifically with pneumonia by asking the mother to complete. The scale contained a total of 20 items comprising 2 dimensions pneumonia symptoms (11 items), and treatment problems (9 items). The mother chose one response among

five rating scales (0-4) from 'Never=0'to 'Almost always=4'. For the ease of interpretability, items were reversed scores and linearly transformed to a 0-100 scale. To reverse answers, transform the 0-4 scale items to 0-100 points as follows: Never = 100, Almost = 75, Sometimes = 50, Often = 25, and then Almost Always = 0, so that higher scores indicate better Quality of Life. All research instruments were in English and translated into Bangla by using back-translated method as recommended by Cha et al[12]. Reliability testing of the instruments were .79, .91 and .77, respectively.

Data collection procedures:

After the proposal was granted ethical approval from the Faculty of Nursing, Burapha University, Institutional Review Board, the letters of asking permission to collect the data by the researcher from the Dean of the Faculty of Nursing, Burapha University was issued to the director of the Dhaka Medical College hospital in Dhaka, Bangladesh. Then, the researcher was obtained the permission from the director of the hospital as well as from nursing superintendent to collect the data. Data were collected at the Dhaka Medical College Hospital. Two days a week per 1 of 3 Pediatric wards of the hospital, except Friday as a regular holiday of Bangladesh, were randomly selected to collect the data. After receiving the written consent from the participants, all questionnaires were delivered hand to hand to the participants by the researcher. The participants were asked to complete them and return them directly to the researcher. The researcher was available nearby the completion and collection the responses. The researcher was review all the data and ask the subjects to make sure whether or not they had completes all responses if there were some missing answers. Then the researcher entered the data into the computer for subsequent analyses.

Data analyses:

Data were analyzed by using a statistical software computer program. The alpha level of significance was set at <.05. Descriptive statistics included frequency, percent, mean, standard deviation were utilized to describe the demographic characteristics of the mothers and their young children with pneumonia, quality of life of the children, perceived severity of illness, maternal stress and co-morbidity. Pearson correlation coefficient was used to determine correlation between independent variables with continuous data (severity of illness and maternal stress) and quality of life among young Bangladeshi children with pneumonia. Independent *t*-test and one-way ANOVA was used to determine the differences between independent variables with categorical data (maternal education and co-morbidity) and quality of life among young Bangladeshi children with pneumonia.

Results Demographic data:

Mean age of mothers was 25.0 years (*SD* = 4.67, range = 18-40). Forty-nine percent of the mothers had their education level up to high school, 40.0% had completed up to primary school, and the rest (11.0%) had completed college/university degree. The children with pneumonia were 61.0% for boys and 39.0% for girls. Their mean age was 8.66 months (*S.D.* = 9.50, range = 1-53). Seventy three % of the children had co-morbidity, and 27% had no co-morbidity of pneumonia. Among those with co-morbidity, there were diarrhea (11.0%), malnutrition (34.0%), vomiting (28.0%), heart disease (10.0%), and others (17.0%).

Descriptive data of the children's quality of life, severity of illness and maternal stress: Mean total score of quality of life for pneumonia scale was 50.05 (*S.D.* = 11.11, range = 25.00-75.00), and at a moderate level. In addition, it contained to two subscales of pneumonia symptoms with mean score of 55.09 (*S.D.* = 10.81, range = 27.27-84.09) and treatment problems with mean score of 43.88 (*S.D.* = 14.77, range = 11.11-75.00) (Table 1). **Table 1:** Mean, standard deviation, and range of quality of life, specifically for pneumonia, among young Bangladeshi children (*n*=100)

Quality of life	M	S.D.	range	Interpretation
Total scores	50.05	11.11	25.00-75.00	Moderate
Subscale				
Pneumonia symptoms	55.09	10.81	27.27-84.09	Moderate
Treatment problem	43.88	14.77	11.11-75.00	Moderate

The mothers perceived children's severity of illness with a mean score of 6.58 (*S.D.* = 2.90, range = 1-10). The mothers perceived that 57.0%, of the children had severely illness, 22.0% had moderate and 21.0% had mild. Mean total score of maternal stress was 115.14 (*S.D.* = 23.03, range = 61-154). In terms of its subscales, mean score of parental distress (PD) was 35.61 (*S.D.* = 8.44, range = 19-54), parent-child dysfunctional interaction (P-CDI) was 40.95 (*S.D.* = 9.55, range = 17-53), and for difficult child (DC) was 38.58 (*S.D.* = 8.45,

range = 17-51). For the level of stress, more than half (62.0%) of the mothers had moderate stress, 24.0% had high stress, and 14.0% had low stress level.

Association between the study variables and quality of life among young children with pneumonia:

It was found that there was a negatively significant relationship between total score of maternal stress and quality of life. When considering each subscale of maternal stress, there were negatively relationships between each subscale of parental distress (PD), parent-child dysfunctional interaction (P-CDI), and difficult child (DC) and quality of life (Table 2).

Table 2: Relationships between perceived severity of illness, maternal stress, and pneumonia quality of life by Pearson correlation coefficient (n = 100)

Variable	Quality of Life (r)
Perceived severity of illness	-.08^{ns}
Maternal stress	-.48**
Subscales	
Parental distress (PD)	-.22*
Parent-child dysfunctional Interaction (P-CDI)	-.47**
Difficult child (DC)	-.56**

*p < .05, **p < .01, ns = non-significant (p >.05)

There was no significant difference of pneumonia quality of life between yes and no co-morbidity (t = -.119, p > .05). Likewise, it was found that there was no statistical significant difference of pneumonia quality of life between three educational levels of mother in primary school, high school, and college /university ($F_{2, 97}$ = 2.60, p >.05).

Discussion:

Quality of life of pneumonia children and in overall, symptoms and treatment problems were at moderate level, which were acceptable. It could be explained that mothers could monitor the changes for her child's health status or in detecting responses to treatment. It could be also explained that in this study that the mother was concerned more during admitted in the hospital. The study results showed that there was a negatively significant relationship between mean total score of maternal stress and quality of life which was similar to findings by Cummings et al[13], Laurvick et al[14] and Yamada et al[15]. They reported that mothers in the high stress group perceived their children's disability as being more severe than the mothers in low stress group and contributed to perceptions of high quality of life scores for child's illness. In regard of considering each aspect of parenting stress subscales, the PD subscale incorporates the mother's perception of their child rearing abilities, availability of social support and restrictions in their other life roles[15]. The mother of this study feel more stress which could be because most of the children were infants (74.0%) and unable to speak or tell about their problem regarding to infant development, but crying. Therefore, the mothers might feel more stress to carry on her young children with this condition. The P-CDI subscale assessed the mother's perception of whether the child meets their expectations and the interactions with her child that not reinforcing to her as a mother[15]. Lastly, the DC subscale focused on the mother's perception of their child behavior and temperament, which make them difficult to manage[15].

Limitations:

In regard to study limitations, all of this study measures were based on mothers self-report. Therefore, the researcher cannot rule out potential biases because of social desirability or faulty recollection. The present study was conducted during winter season in Bangladesh, which was the peck time for respiratory infection especially for the children.

Recommendations:

Intervention studies to improve quality of life of Bangladeshi children under 5-year-old with pneumonia need to be further study. It is also important to focus both generic and disease specific of quality of life, then it will be easier to relate the factors which are affected their growth and developmental status due to disease conditions. In addition, research in specific age of children, for example, infant, toddler, or preschooler will be clearer to determine the children quality of life. Comparing settings between government and non-government hospitals would also be of interest. Pediatric nurses, especially who are taking care of the hospitalized children, need encourage and provide more information to the mother with supportive educative nursing system to prevent maternal stress as well as to improve quality of care versus quality of life among under 5-year-old children with pneumonia.

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