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EFFICACY OF MODIFIED RESPIRATORY DISTRESS ASSESSMENT INSTRUMENT SCORE IN ASSESSING THE ACUTE LOWER RESPIRATORY TRACT INFECTIONS OUTCOME IN CHILDREN

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Abstarct:

Aim: *To estimate the short-term results (ALRTI) of acute lower respiratory tract infections in children from two months to two years and to determine the clinical benefit of assessing the score of the Respiratory Distress Assessment Instrument(RDAI).*

Study Design: *A Cross-sectional study.*

Place and Duration: *In the Pediatrics Department of Jinnah Hospital, Lahore for one year duration from June 2016 to June 2017.*

Methods: *140 patients were selected with acute lower respiratory tract infection (ALRTI) in children aged 2 months to 2-year-old. Based on the WHO protocol system, ALRTI was diagnosed based on rapid breathing and lower chest compression. The modified RDAI score was administered at the time of admission or shortly after starting the treatment.*

Results: *The mean age of the patients was 7.94 ± 6.4 months. 99.3% of the patients were discharged and 77.9% of them were discharged within 72 hours of hospitalization and 22.1% of them were discharged. 72 hours of hospital stay. 0.7% of all cases had a single expiration date.*

Conclusion: *It has been concluded that the modified RDAI score can be used as a guide for the clinician in identifying patient categories requiring general or intensive care.*

Key words: *Acute respiratory tract infection, RSV, pneumonia, bronchiolitis.*

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INTRODUCTION:

Acute respiratory infections are one of the main causes of morbidity and mortality in young children in developing countries. Information about the viral etiology of acute respiratory infections is very limited in developing countries. Due to the risk of developing hyponatremia, prescription of intravenous hydration in children with lower respiratory tract disease (LRTD) is a problem. The severity of acute respiratory tract infection is higher in developing countries, especially in socioeconomically disadvantaged regions. Viral pneumonias are more common among children. Children with acute respiratory tract infection (ARI) account for 20% to 40% of children with outpatient clinics and 12 to 35% of hospitalizations. It is estimated that there will be 500 to 900 million ARI per annum in developing countries. Every year, ARI dies 5 million children under the age of five, of which 90% occur in developing countries. Pneumonia from acute respiratory diseases is the leading cause of death in children under five years of age in most developing countries and is responsible for 1.9 million deaths a year6. Pneumonia is available in the community or hospital. Community-acquired pneumonia (CAP) is an important cause of morbidity and mortality. Streptococcus pneumonae is the most common bacterial pathogen and respiratory syncytial virus (RSV), the most important viral pathogen in children. Worldwide, RSV is the most common cause of viral infection of infants and young children with lower respiratory tract. Approximately 75% of the applications for bronchiolitis in children under the age of five are related to RSV. The World Health Organization (WHO) has developed an ARI case management strategy that uses simple clinical signs to diagnose pneumonia and then applies empirical antimicrobial therapy. WHO considers all acute lower respiratory tract infections (ALRTI), including bronchiolitis, as pneumonia. The main objective of the ARI program is to reduce the mortality rate related to pneumonia in developing countries. This requires the administration of antibiotics to all children, including those with viral ALRTI.

MATERIALS AND METHODS:

This Cross-sectional study was taken place in the Pediatrics Department of Jinnah Hospital Lahore for one year duration from June 2016 to June 2017. One hundred and forty patients with ALRTI in children aged 2 months to 2 years were hired. An informed consent was obtained from the parents or parents of the child. Demographic information including name, age, gender and address was recorded. A detailed history of the parents / guardians was taken and a complete physical examination was performed with special attention to the respiratory system. ALRTI was diagnosed on the basis of rapid respiration (as defined in the operational description) and lower chest tension. The modified RDAI score was administered at the time of admission or shortly after starting the treatment. The patient was classified as mild respiratory distress (score 0-4), moderate (score 5-8) and severe (score 9-12) according to the modified RDAI score specified in Annex I. The patients were kept in the ward and the treatment was performed according to the hospital protocol. The outcome was evaluated according to the hospital discharge or death and length of stay. All this information has been recorded in a pre-designed form in Annex II. In the data analysis, modifiers of the effects such as age, form of admission (emergency / OPD) and categories (mild, moderate and severe) were discussed in the modified RDAI score. It was presented as mean and standard deviation. Respiratory distress (mild, moderate and severe) and outcome rates and percentages were presented. Death and hospital discharge, hospitalization frequency and duration were presented as mean and standard deviation.

RESULTS:

The mean age of the patients was 7.94 ± 6.4 months (Table 1).

Table-1: Distribution of cases by age

Age (months)	Number	Percentage
2-11	99	70.7
12-24	41	29.3
Mean ± SD	7.94 ± 6.4 months	

The distribution by sex was 85 males (60.7%) and 55 females (39.3%) (Table 2).

Table 2: Distribution of cases by sex

Sex	Number	Percentage
Male	85	60.7
Female	55	39.3

The predicted RDAI score was estimated to be discharged with 62 patients (44.3%), 73 patients (52.2%) were discharged from the middle and 4 patients (2.8%) were discharged. severely modified RDAI score and 1 patient (0.7%) were filled (Table -3).

Table-3: Prediction of Modified RDAI score

Modified RDAI	**Outcome**			
	Discharged		**Expired**	
	No.	**%**	**No.**	**%**
Mild	62	44.3	-	-
Moderate	73	52.2	01	0.71
Severe	04	02.8	-	-
P value = 0.638				

Gender classification by RDAI score; Patients with mild respiratory failure had 43, moderate respiratory distress 39 and severe respiratory distress 03 and patients with mild respiratory failure 19, moderate respiratory distress 35 and severe respiratory distress 3 (Table 4).

Table 4: Stratification of sex according to RDAI score outcome

Gender	**Modified RDAI Score**			**Total**
	Mild	**Moderate**	**Severe**	
Male	43	39	03	85
Female	19	35	01	55

Layering of age according to the RDAI score; Patients with mild respiratory distress between 2 and 11 months were 41, moderate respiratory failure was 54, severe respiratory distress was found to be 04, and mild respiratory distress and moderate respiratory insufficiency were 21 in 21 patients (Table 5).

Table-5: Stratification of age according to RDAI score outcome

Age (months)	**Modified RDAI Score**			**Total**
	Mild	**Moderate**	**Severe**	
2-11	41	54	04	99
12-24	21	20	-	41
Total	62	74	04	140

DISCUSSION:

ALRTI is the leading cause of morbidity and mortality in youngest children. It represents 33 to 50% of mortality in children fewer than 5 years of age, mostly in underdeveloped countries. Pneumonia is the primary cause of death in children under five years of age in most developing countries and is responsible for 1.9 million deaths each year. In hospitalized children, viruses are seen in 30-40% of ARI. Bacteria accounted for 60% of community-acquired pneumonia. In developed countries, viruses are the most common cause of LRTI. WHO considers it recommended for all children, including those who have viral ALRTI, including all ALRTI, bronchiolitis such as pneumonia. Many children are worried about taking unnecessary antibiotics because they may have viral pneumonia or bronchiolitis. It has been observed that breathing difficulties may serve as a guideline for the clinician in identifying patient categories requiring general or intensive care. RDAI can predict the outcome of the modified score ALRTI and pneumonia with mild breathing difficulty can prevent unnecessary hospital admission and transport situations and it is estimated that most of these patients can be treated abroad. Studies show that due to the application of standardized case management protocols, ALRTIs in developing countries can produce up to 50% reduction in death to children. The success of the program depends on the detection of high-risk cases and on-time delivery to hospitals with secondary and tertiary care. The majority of our patients were less than one year old. 70.7% of patients with a mild respiratory failure, 29.3% of patients with moderate respiratory distress, and 38.6% of patients with 2.8% of patients with severe respiratory insufficiency. This age group, which was 29.3% of patients, belonged to the age group of 12 to 24 months and included in 15% of patients with 14.3% of patients with mild respiratory distress and moderate respiratory failure who were not in a patient with severe respiratory failure. This is comparable to a similar study by Mansbach et al. Most of the patients concluded that 73% were less than 12 months. In the present study, only 2.9% of the patients had severe respiratory distress when the respiratory distress was examined by the modified RDAI score, and the majority of patients (97.1%) were found to be. all of them belonged to mild and moderate respiratory distress, including 44.3% patients with mild respiratory distress and 52.9% of patients with moderate respiratory distress. These results were reported by Kristjansson et al. Dobson et al., Reijonen et al And Shann et al.

CONCLUSION:

Patients who presented with mild and moderate respiratory distress according to the modified RDAI score responded well to conservative treatment provided in the hospital and managed adequately with outpatient treatment without intensive intervention or antibiotics. This approach helps to reduce hospital admission and is also profitable because it involves only selective cases and the use of antibiotics in all cases of ALRTI.

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