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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | NIV (n) | Control (n) | Age | Location | Cause of ARF | Type of NIV | comparator | Reported outcomes |
| Basnet S 2012 | 10 | 10 | 1-18 years | ICU | Asthma | BiPAP | Standard therapy | Intubation rate, ICU and hospital mortality, ICU and hospital stay |
| Cam BV 2002 | 18 | 19 | <15 years | ICU | Dengue hemorrhagic fever | CPAP | Oxygen mask | Intubation rate, ICU mortality |
| Cesar RG 2020 | 28 | 35 | <9 months | ICU | Bronchiolitis | CPAP | HFNC | Intubation rate, ICU and hospital stay |
| Chisti MJ 2015 | 79 | 146 | <5 years | ICU | Pneumonia | Bubble CPAP | Low flow nasal cannula, HFNC | Intubation rate, hospital mortality and stay |
| Fioretto JR 2015 | 55 | 53 | 28 days -3 years | ICU | After extubation | BiPAP | Nasal or facial mask | Intubation rate, ICU and hospital stay |
| Lal SN 2018 | 36 | 36 | 1 month - 1 year | Ward | Bronchiolitis | Bubble CPAP | Standard oxygen mask | Intubation rate |
| Liu C 2020 | 41 | 43 | <2 years | Emergency ward | Pneumonia | CPAP | HFNC | Intubation rate, hospital mortality and stay |
| McCollum ED 2019 | 321 | 323 | 1-59 months | Ward | Pneumonia | Bubble CPAP | Low flow nasal cannula | Hospital mortality |
| Milési C 2017 | 71 | 71 | 1 day - 6 months | ICU | Bronchiolitis | Nasal CPAP | HFNC | Intubation rate, ICU and hospital mortality, ICU stay |
| Ramnarayan P 2018 | 53 | 59 | 36 - to 16 years | ICU | Any disease requiring NIV,After extubation | Any CPAP | HFNC | Intubation rate, ICU and hospital mortality, ICU and hospital stay |
| Ramnarayan P 2022 April | 272 | 281 | Birth to 15 years | ICU | Any disease requiring NIV,After extubation | CPAP | HFNC | Intubation rate, ICU and long-term mortality, ICU and hospital stay |
| Ramnarayan P 2022 June | 278 | 295 | Birth to 15 years | ICU | Any disease requiring NIV | CPAP | HFNC | Intubation rate, ICU mortality, ICU and hospital stay |
| Sarkar M 2018 | 16 | 15 | 28 days - 12 months | ICU | bronchiolitis | Nasal CPAP | HFNC | Intubation rate, ICU stay |
| Vitaliti G 2008 | 20 | 20 | 1-24 months | Emergency department | Any respiratory distress | Helmet CPAP | Standard oxygen mask | Intubation rate, hospital stay |
| Yañez LJ 2008 | 25 | 25 | 1 month - 15 years | ICU | Any respiratory failure | BiPAP | HFNC | Intubation rate, ICU and hospital stay |

**Supplementary Table 2. Characteristics of Included Studies.**

ICU: Intensive Care Unit, ARF: acute respiratory failure, NIV: non-invasive ventilation, CPAP: continuous positive airway pressure, BiPAP: bilevel positive airway pressure, HFNC: high flow nasal cannula,