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Risk Factor Associated With Sever Bronchiolitis In Infants In Hilla City

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بسم الله الرحمن الرحيم

((يرفع الله الذين امنوا منكم و الذين اوتوا العلم درجات و الله بما تعملون خبير)) *** المجادلة : 11 ***

صدق الله العلي العظيم

اهداء:

أحمد الله عز وجل على منه و عونه لإتمام هذا البحث . إلى الذي وهبني كل ما يملك حتى أحقق له أماله ، إلى من كان يدفعني قدما نحو الأمام ، إلى الذي سهر

على تعليمي بتضحيات جسام ، إلى الإنسان الذي إمتلك الإنسانية بكل قوة ، المبتغى إلى مدرستي الأولى في الحياة أبي الغالي على قلبي أطال الله في عمره ؛ التي رعتني ، إلى التي صبرت على كل شيء ، إلى التي وهبت فلذة كبدها كل العطاء و الحنان حق الرعاية و كانت سندي في الشدائد، و كانت دعواها لي بالتوفيق ، تتبعتني خطوة خطوة في عملي ، إلى من إرتحت كلما تذكرت إبتسامتها في وجهي نبع الحنان أمي أعز ملاك على القلب و العين جزاها الله عني خير الجزاء في الدارين ؛ إليهما أهدي هذا العمل المتواضع لكي أدخل على قلبهما شيئا من السعادة إلى إخوتي و أخواتي الذين تقاسموا معي عبء الحياة ؛ كما أهدي ثمرة جهدي لأستاذي الكريم الدكتور : وسام حمزة حمد الذي كلما تظلمت الطريق أمامي لجأت إليه فأنارها لي و كلما دب اليأس في نفسي زرع فيا الأمل لأسير قدما و كلما سألت عن معرف فة زودني بها و كلما طلبت كمية من وقته الثمين وفره لي بالرغم من مسؤولياته المتعددة ؛ إلى كل أساتذة كلية الصيدلة وعميدها المحترمون ؛ و إلى كل من يؤمن بأن بذور نجاح التغيير هي في ذواتنا وفي أنفسنا قبل أن تكون في أشياء أخرى ... قال الله تعالى : " إن الله لا يغير ما بقوم حتى يغيروا ما بإنفسهم " من سورة الرعد الآية 11 .

إلى كل هؤلاء أهدي هذا العمل

Abstract:

Bronchiolitis is the most prevalent cause of hospitalization in infants under the age of 12 months. The disease caused by many type of virus such as Para influenza virus and rhinovirus but the most common causes respiratory synytial virus(RSV) infection.

This study is aimed to assessing the risk factors associated with severe bronchiolitis in infants under 2 years age.

Cross-sectional study was carry out in hilla hospital that involved 421 infants for 4 months from November 2021 to February 2022. All bronchiolitis admissions <2 years were include 421 children were evaluated. Including 231 male and 190 female.

Children under the age 6 months accounted for the highest proportion (57%). Wheezing was the main reason to be taken to the hospital (69.2%). Bronchiolitis cases increased in winter spring season. And the highest registered number was found in January. The risk factor including age <6 months, low birth weight, preterm labor, nonbreastfeeding for the first six months, early weaning, and exposing to ciggarette smoke increase the sevirity of disease, history of cesarean section, poor living condition, and maternal education are 10 risk factor of sever bronchiolitis caused by RSV.

RSV is a common infection among young infants with severe bronchiolitis ;thus. Developing avaccine against RSV is essential. Compaigns to reinforce the importance of avoiding infants exposure to ciggarette smoke are also needed.

Introuduction:

Bronchiolitis is the most uses of hospitalization in infants under the age of 12 months, resulting in significant increasing in expenditure to Healthcare systems and families [1, 2]. Severe bronchiolitis is the inflammation of the bronchioles which is the most typically caused by aviruse and is common in children under the age of two [3_5]. The disease is distingushed by its regularity of incidence. Which is Highest during the winter months of November [6]. Bronchiolitis is characterized clinically by expiratory breathing difficulties in babies. While cough, tachypenea, hyperinflation, chest retraction, broad crackles, and wheezing are several untypical symptoms. The disease has a diverse and complex clinical course. Who's symptoms can rang from mild to severe and quickly lead respiratory failure [7]. Therefore, pediatric patients need to be diagnosed early and treated promptly to avoid mortality.

Bronchiolitis is mainly caused by a viral infection, especially RSV [8_11]. RSV is a negative sense single strand RNA virus belonging to penumvirus genus in paramyxoviridae family with two antigencally distinct A and B subtypes. Which is based on reactivity of F and G surface proteins to monoclonal antibodies[12_14]. And can causes several symptoms ranging from moderate upper respiratory tract infections to severe and possible life-threatening lower respiratory tract infections, Which may hospital necessitate admission and mechanical ventilation[15].

By the age of two, the majority of children will have had at least one RSV infection[11] while most acute bronchiolitis cases are mild and can be cured by home treatment [16, 17]. The acute respiratory distress syndrome causes 2-3% of pediatric patient to be admitted to hospitals. With 5% of them requiring transfer to intensive care units. The death rate of sever bronchiolitis 1-7% and up to 30-40% in children at risk of preterm birth, bronchopulmonary dysplasia, and congenital heart defect. Many influcing factors lead to severe bronchiolitis such as(crowded living environment, inhalation of ciggarette smoke, the lake breastfeeding, and congenital heart defects) with longer hospitalization time and higher death rate [18, 19]

The aim of these study to assessing the risk factors associated with severe bronchiolitis in infants under 2 years age.was carried out in hilla hospital for children and maternity for 4 months from November 2021 to February 2022.

Materials and methods:

2.1. Study design

A descriptive cross-sectional study was carried out for 4 months periods, from November 2021 to February 2022, the study site was children and maternity hospital in hilla city. By take the number of children that have bronchiolitis in emergency of hospital and children lounges from statistic unit of hospital and study the main risk factor between lying children in hospital with confirm all information from mother and physician about children to comparison between more distribution risk factor in infants that increase disease of sever bronchiolitis. Sever cases was define rhinorrhea, cough, tachypenia, wheezing, rales, and increase respiratory effort(grunting, nasal flaring, and intercistal and/or subcostal retraction), with symptoms of severity (increase respiratory rate, retractions, and oxgyen saturation at 90% or lower).

All these infants with severe bronchiolitis diagnosed were hospitalized in ward. In addition, clinical informations about healthy age – matched infants, that received care for healthy infants control, informed consent was obtained from infants parents at the time of clinical evaluation, inclusion criteria included diagnosis of sever bronchiolitis, age 2 years or younger infants, data of birth during study period,

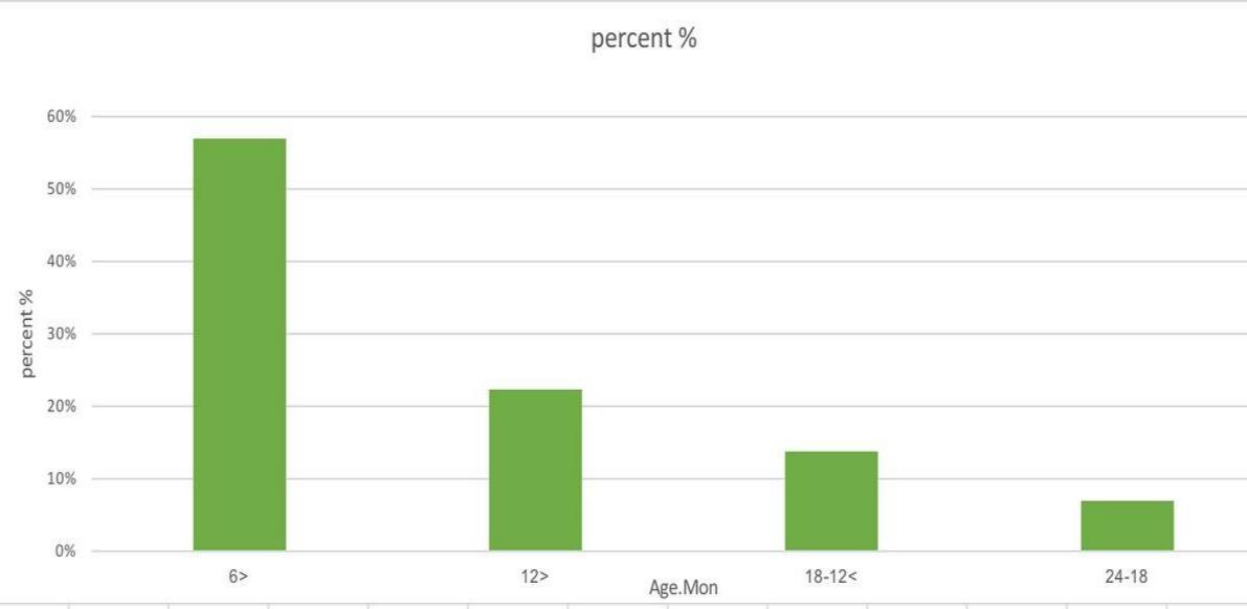
2.2. Demographic, questionnaire, and risk factor data

The information was recollected using standardized questionnaire in the moment that the infants was present at emergency or preventative departments for evaluations. The following demographic data were investigated : age, sex, data of birth, gestational age, birth wight, history of respiratory disease, all mother were interviewed to determined their children exposure to potential or known risk factors for sever bronchiolitis, especially exposure to ciggarette smoke and delivery by cesarean section, preterm birth, requirement for meachanical ventilation during the neonatal periods, congenital abnormality, breast feeding at least 6 months, environmental factors, family history(asthma, allergies)

Results:

There were 421 infants from 11 to 2 months old admitted to children and maternity hospital, hilla, over four months periods from November 2021 to February 2022, were the total number of patient 231(69.2%) male and 190 (30.8%) female according to these figur below .(figure 1)

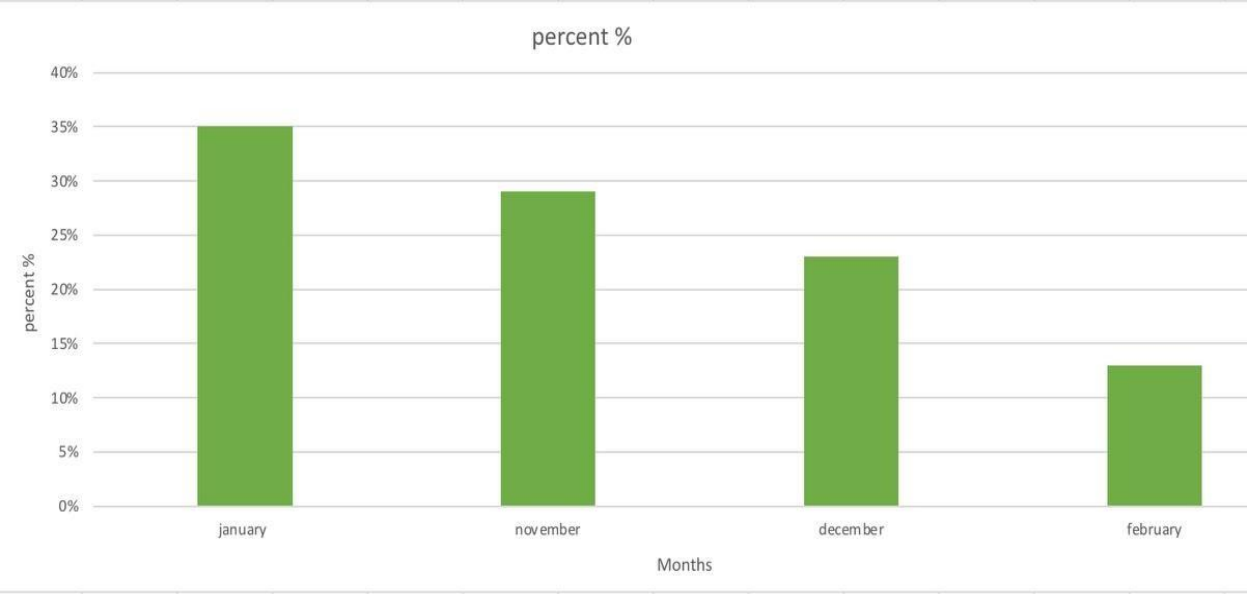
According to distribution of most risk factor between children all children evaluated during the reaserch are divided into four major group based on the age that act the main risk factors. Children under the age of 6 months made the first group(57%),children 6 to under 12 months made up second group (22.3%), children aged 12 to 18 months made third group (13.8%),and children aged 18 to 24 months made up the fourth group(6.9%), from these result we can estimated that the most infants that more risk of bronchiolitis is under the age of 1 years.



Risk factor according to age of children

In our study, patients with bronchiolitis were admitted the highest number of patients was in january (35%) the most months that have distribution of bronchiolitis in hospital in our investigation, November (29%), December (23%),february (13%),(figure 2)

[chart 2] shows depicts the monthly distribution of bronchiolitis patients over reaserch period.



Risk factor in infants according to months of distribution

Other main risk factors of sever bronchiolitis preterm birth its mean the infants that gestation under the age of <37 weeks when it's comparative with normal birth can estimated that premature birth more suspitable to risk of bronchiolitis than normal infants, so approximately 64% of infants we found premature infants,(table 1)

Low birth wight also act from the main risk factors between infants comparative to normal birth wight it's estimated about 52% of infants.

According to question and collected information from mothers of infants we found most of mother undergo C/S about 76% from the cases more than normal birth mother or natural birth infants

Other condition or risk can effect on infants with sever bronchiolitis we abserved by mother no breast feeding (artifecial feeding) accounted for 51% of infants while the normal breast feeding 49% of cases when it's comparative so the artefecial feeding act from important risk factors of sever bronchiolitis becous its correlation with immunity of infants.

Risk factors	NO-patients	%	%-of main risk factors.
Gender Male female	421 231 190	69.2% 30.8%	30%
Preterm birth Male Female Normal birth Male Female	271 160 111 150 98 52	64% 36%	27%
Low birth Wight Male Female Normal Wight Male Female	223 153 70 198 100 98	52% 48%	22%
History of C/S Male Female Normal birth Male Female	320 199 121 101 60 41	76% 24%	18%
Artificial feeding Male Female Breast feeding Male Female	215 140 75 206 118 88	51% 49%	12%

Main risk factors in infants effect on severity of bronchiolitis

Other risk factors related to severe bronchiolitis in infants in our study poor living condition and effect of life of parents on infants state with effect of environments and area of live, we estimated that the infants who parents live in overcrowded conditions and who exposure to ciggarette smoke(poor healthy conditions) 47%. Becouse it decrease pulmonary functions in infants under 2 years age which is result increase visit of emergency departments of most cases and who live in rural area 34% of cases while normal living condition just 20%, as in table below [table 2]

	Over crowded conditions	Rural area	Normal living conditions
Poor living Condition (NO-infants)	197	145	79
%	46%	34%	20%

Risk factor according to poor living conditions

Discussion:

Virus infections are leading cause of bronchiolitis in children worldwide, and RSV is well recognized as the most common virus in severe bronchiolitis in infants hospitalized [21].in our study were 421infants boys accounted for 69.2%,which was consistent with reaserch of Ghazaly and Nadel [22], at 63% children under age of 12 months were the most common age group of patient hospitalized with bronchiolitis, with children under the age 6 months being the most prevalent. The study was from 11 month to 2 months in hilla hospital of children and maternity over four months periods from November 2021 to February 2022.

Looking at the monthly distribution of infants hospitalized due to sever bronchiolitis in 4 months period, overall, there was a common increasing tendency over the winter-spring season.

The highest figure of infants admitted january followed by November and December and less Cass was found in last of February. Number of infants admitted with sever bronchiolitis significantly increase in winter season while gradually decrease in the rest of years [6].from our study we found more than one type of virus can increase sevirity of bronchiolitis and caused it such as single or mixture(confections). RSV type A and B was the most frequance detected. Follow by rhinovirus and PIV type 3.

To determined the risk factor of severe bronchiolitis caused by RSV, we examined 10 variables between children with sever cases include sex, age, preterm birth, breastfeeding under six months, low birth wight, history of undergoing cesarean section, poor living condition, maternal education,meachanical ventilation, exposure to cigarrette smoke, and living in overcrowded conditions also increase the risk of infants admitted with sever bronchiolitis [23].

In our study show some disease that can effect as factors can increase the risk of RSV infection and progress lead to severe cases of bronchiolitis such as pulmonary disease, congenital heart disease,asthma. So from the result we investigated that most Disterbution risk factor effect on infants in these period and lead to increase severity of disease accounted 27% of all main risk factor is preterm birth and more than 64% when it comparative with normal birth infants. Low birth weight also accounted for 22% of all risk factors and more than 52% of normal wight infants. When we talke about history of C/S it's estimated that act other main risk factors and accounted for 18 % of all risk factory and more than 76% from the normal or natural birth infants, artifecial feeding acts also main risk factors becous its main reason can effected on immunity of infants so its accounted of 12% off all risk factor and more than 51% from the normal breast feeding infants, also study about the living condition of parents and area of live we estimated the poor living condition such as overcrowded conditions and rural area more cases of bronchiolitis increase with poor living condition accounted for 10% of all risk factors, less common risk factor founded in these study effect on infant was meachanical ventilation 7% of all cases and history exposure to ciggarette 4%.

The Main limitation of these reaserch is that local characteristic of our study.

The result of our study about these was found agree with other result and nearly it from other study about the same rule and methods such as study was carried out for a one-years period, from October 1,2016 to September 30,2017.

The study site was haiphong infants hospital in haiphong city, Vietnam. And study in emergency department at civil hospital of Gaudalajara Dr. Juan I. Menchea from September 2012 to January 2015. And study in Colombia from January to December 2019.

Conclusion:

The number of hospitalization infants with bronchiolitis caused by RSV has an upward trend during the winter-spring season (from January to December)

This study confirms that age, preterm birth, breast feeding under six months, history of exposure to ciggarette smoking, low birth wight, history of under going cesarean section, poor living condition are the most Risk factors of sever bronchiolitis caused by RSV in infants,

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