CLINICAL PROFILE AND OUTCOME OF PNEUMONIA ASSOCIATED WITH TRADITIONAL CHILD REARING PRACTICES IN INFANTS

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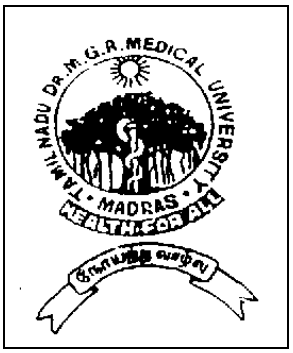

GOVT. STANLEY MEDICAL COLLEGE & HOSPITAL
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CERTIFICATE

This is to certify that the dissertation entitled "**CLINICAL PROFILE AND OUTCOME OF PNEUMONIA ASSOCIATED WITH TRADITIONAL CHILD REARING PRACTICES IN INFANTS"** is the bonafide original work of **Dr. K. ARIVOLI** in partial fulfillment of the requirements for **M.D. (Paediatrics) BRANCH – VII** Examination of the Tamilnadu Dr. M.G.R. Medical University to be held in March 2007.

Dr. D.R. GUNASEKARAN, M.S.
DEAN
Govt. Stanley Medical College & Hospital,
Chennai-600 001.

Dr. R. KANDASAMY, M.D., D.C.H.,
PROFESSOR
Department of Paediatrics,
Institute of Social Paediatrics,
Govt. Stanley Medical College,
Chennai-600 001.

DECLARATION

I, **Dr. K. ARIVOLI,** solemnly declare that dissertation titled, "**CLINICAL PROFILE AND OUTCOME OF PNEUMONIA ASSOCIATED WITH TRADITIONAL CHILD REARING PRACTICES IN INFANTS"** is a bonafide work done by me at Govt. Stanley Medical College & Hospital during 2004-2007 under the guidance and supervision of **Dr. R. KANDASAMY, M.D., D.C.H.,** and **Dr. P. SEKAR M.D., D.C.H.,** Professors, Department of Paediatrics, Institute of Social Paediatrics, Stanley Medical College, Chennai-600 001.

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CONTENTS

INTRODUCTION

Traditional practices are time honoured rituals and beliefs which are prevalent in a community and they may pertain to a wide range of activities. The customs and cultural practices pertaining to mother craft and child care are passed on from one generation to another. The traditional practices are influenced by the educational level, socio-economic status and value system of the family and society. The conventional or traditional practices have become part and parcel of our life style. They are available at the doorstep of the people and they are readily acceptable to the society. The traditional practices are so ingrained in the minds of people that are difficult to change them easily even when they are identified to be useless or harmful.

Customs and traditions are strictly followed in many Indian families, both rural and urban. Certain established child rearing practices are being advocated by elders and are being followed traditionally even nowadays.

Certain Child rearing practices appears to play a significant role in causing pneumonia in children. This study was undertaken to assess the clinical profile and the outcome of pneumonia following those traditional child rearing practices in infants.

REVIEW OF LITERATURE

TRADITIONAL CHILD REARING PRACTICES (CRP)

Customs and traditions are strictly followed in many South Indian families both rural and urban. Certain established child rearing practices are being advocated by elders and are being followed traditionally. Under the influence of elderly ladies of the family and neighborhood, even the educated and urban elites are also, to some extent, not exempted from the traditional cultural practices. Community data does indicate a strong influence of various cultural practices in the causation of morbidity and mortalities of children.[1]

Traditional health care practices can be categorized into four main sub-groups: useful, harmful, innocuous and of uncertain utility. A number of traditional health practices for the care of new born babies are useful and based on sound scientific knowledge and logic. They must be promoted and actively encouraged in the society.

A large number of traditional practices are apparently harmless or innocuous but are widely practiced. Some South Indian families use either gingilli oil or coconut oil for head bath. Some use white of egg, soap nut powder, Green gram / Bengal gram powder during head bath or oil bath. Nowadays, families with westernized habits have reported using soap or shampoo for cleansing the scalp. The family / community fix a particular day of the week for this ritual. Biweekly head bath for infants is a common practice among many families.

Oil Bath procedure - Before the children are bathed, gingilli oil or coconut oil is applied liberally over the scalp and also over the body; finally oil is instilled into the nose, eyes and ears. After this exercise and the actual bath, a time gap is provided. Then luke warm water and quite often hot water is poured over the head and body of the child. Later soap-nut powder is

applied liberally over the scalp and all over the body including the face and rubbed vigorously in order to remove oil from the scalp and the surface of the body. Instead of enjoying a good bath, invariably children cry non-stop, during this painful and laborious ritual. Instillation of oil into eyes and nose, result in conjunctival irritation, sneezing and rhinorrhoea. Further it is possible that the vigorously crying child can aspirate water, bathing materials along with throat and nasal secretions. In order to remove these secretions and aspirated materials, they resort to different methods to clear the nose and the throat.

After the bath, the child is then exposed to a dense smoke of myrrh produced by sprinkling the powdered myrrh over the glowing charcoal fire. Soon after the inhalation of this smoke the child develops severe cough and sneezing, followed by profuse nasal discharge.

With years of experience, the elders in the families and dhais alike claim that they are technically skilled in the practice of blowing into the nose. The dhai fixes the child's head by introducing her right index finger into the child's mouth and keeps the child in close proximity to her. She holds the child's head in her left palm. After taking deep breath, she approximates her mouth into one naris and initiates a powerful blow into the open naris with a hope to dislodge the nasal secretions. The same procedure is repeated 3 to 4 times on each naris with a view to remove the secretions completely. Most of the dhai's were chewing areca nuts and tobacco continuously even while bathing the children. By the forcible blow of air, not only the child's nasal and throat secretions are dislodged but they may also contaminate the throat and airways with betel nut debris and her infectious breath. The sudden increase in airway pressure is likely to produce impaction of betel nut debris or contaminated nasal or pharyngeal secretions into the airways of infants, leading to pneumonia in some children and in some, leads to persistent pneumonia.

Clearance of throat secretions was undertaken in some children by two different methods. In finger-mouth suctioning method, they introduce the right index finger into the oropharynx and then scoop out the thick throat secretion with their hooked finger. During this procedure the uvula and posterior pharyngeal wall are stimulated and the child develops retching and vomiting. Mouth to mouth vigorous suction was also done.[2,3,4,5,6]

Also, unhygienically prepared, herbal preparations (ghutti / karam) consists of vasambhu, neem leaves, masikkai, jathikkai, cheragam, pepper, camphor, garlic, ginger, turmeric, ghee, notchi leaves, nona leaves etc. are given after bath, which are claimed to aid in digestion and to reduce respiratory problems.[7,8,9,10,11]

Harmful practice of instillation of vegetable oil (usually gingili oil) into the child's nose and mouth is done as a cure for respiratory infections is a widespread custom in rural and some urban areas of Tamilnadu.[12,13,14] Healthy children probably having a viral respiratory illness when subjected to this practice eventually develop more serious complications like lipoid pneumonia usually accompanied by bacterial sepsis. This oil instillation is a septic procedure enabling direct inoculation of bacteria into the child's lungs. Occasionally when neem oil is used for the same custom, children present with encephalopathy and seizures. Liquid paraffin or mineral oil, is a hydrocarbon that physicians often use to treat chronic constipation in children and adults. It is a tasteless, indigestible liquid that is poorly absorbed from the gastrointestinal tract and acts as a stool softener by decreasing the reabsorption of water from the intestinal lumen. However, other properties such as its low volatility and high viscosity may contribute to undesirable side effects. Mineral oil may not elicit a normal protective cough reflex and may impair normal mucociliary transport. These effects can increase the likelihood of its aspiration and subsequent impaired clearance from the respiratory tract and presenting

with an infiltrate in the chest radiograph. X-ray findings are nonspecific which include alveolar consolidation and ground glass opacities.[15,16]

Laboratory tests usually show peripheral blood polymorphonuclear leukocytosis with an elevated erythrocyte sedimentation rate. The cytological demonstration of lipid-laden macrophages in the broncho-alveolar lavage is a characteristic feature.Vegetable oils like – olive, cotton seed and sesame oil are the least irritating oils and produces no inflammation. Animal oils like cod liver oil due to their high fatty acid content produce more damage. Liquid petroleum is chemically inert and not as irritating as other oils, but acts as a foreign body [17]. Lipoid pneumonia has few stages :

I Stage : Interstitial proliferative inflammation with exudative pneumonia.

II Stage : Diffuse, chronic, proliferative fibrosis and superimposed acute bronchopneumonia.

III Stage : Multiple localized nodules, tumor like paraffinomas.

As the number of infectious diseases is on the rise and different patterns of drug resistance are emerging constantly, treating the affected children is a real challenge for the pediatrician. To add to this burden, the socio cultural practices involved in child rearing, mostly irrational cause a great impact in childhood morbidity and mortality. The blind faith in the traditional health practices of doubtful utility may lead to nonacceptance of modern system of medicine. All efforts must be made to accord right perspective to the prevalent traditional health care practices in the country in order to derive the maximum benefit for rearing of children and prevent avoidable hazards by launching a crusade against the harmful cultural practices.

PNEUMONIA

Pneumonia is an inflammation of the parenchyma of the lungs. Most cases of pneumonia are caused by microorganisms but there are a number of non-infectious causes that sometimes need to be considered. These non-infectious causes include but are not limited to, aspiration of food and / or gastric acid, foreign bodies, hydrocarbons and lipoid substances, hypersensitivity reactions and drug / radiation induced pneumonias. Infections in neonates and other compromised hosts are distinct from infections occurring in otherwise normal infants and children.

Pneumonias are classified on an anatomic basis as a lobar/lobular, alveolar or interstitial process but classification of infectious pneumonias on the basis of presume / proven etiology is diagnostically and therapeutically more relevant.

Respiratory causes are the most common cause of pneumonias during the first several years of life. Although bacterial pneumonias are numerically less important as causes of pneumonia, they tend to be responsible for more severe infections than those caused by the non-bacterial agents. The most common bacterial causes of pneumonia in the normal child are S.pneumoniae, H.influenzae type B, S.pyogenes and S.aureus.

PNEUMONIA OF VIRAL ORIGIN

Etiology

The most common viruses causing pneumonias include respiratory syncytial virus (RSV), Para influenza, influenza and adenoviruses. In general lower respiratory tract infections (viral) are much more common during the winter months and RSV is the most common viral pneumonia, especially during infancy. Although the seasonality of these viral agents is quite

predictable, local epidemics may show incidence figures for a given year. The type and severity of the illness are influenced by several factors including age, sex, season of the year and crowding. Boys are infected slightly more often than girls. The attack rate for pneumonia is more between the ages of 2 and 3 years and decreases slowly thereafter.[18, 19]

Viruses associated and pneumonia in children

Age Group

Viruses	Infants	Preschool	School age
RSV	+++	++	±
P. Influenza			
Type 3	++	+	+
Type 1	++	++	+
Influenza A	+	++	++
B	±	++	++
P. Influenza Type 2	+	+	±
Adeno Virus	+	+	+
Measles	+	+	±
CMV	+	±	±
Picorna	±	±	±

Pathogenesis

Inoculation of viruses may take place by direct contact, droplet nuclei or aerosol whether by extension down the airways from upper respiratory tract infection or by direct implantation. The virus invades the terminal airway and alveoli. The involvement is usually patchy affecting multiple lobes.

The earliest lesion is probably destruction of the epithelium with sloughing of cellular debris into the lumen. The inflammatory response initially involves infiltration of mononuclear cells into the sub mucosa and into contiguous perivascular areas. A few polymorphs may be

seen. As the process advances, debris, mucus and inflammatory cell increases, leading to complete or partial obstruction; complete obstruction causing atelectasis and partial obstruction causing air trapping.

Severe infections progress to develop hemorrhagic exudates; rarely develops interstitial fibrosis, both of which can cause permanent disability.

Considerable evidence suggests that the virus infections may precede the development of bacterial pneumonias in children. Bacteria may invade the lower respiratory tract by two routes. The first route is via the blood stream or it may trap bacteria in the middle ear / para nasal sinuses which lead to purulent infection and the additional possibility of bacteremia which may result in pneumonia. Therefore continued evaluation and clinical reassessment of the patient are important in medical management.[20]

Clinical Manifestations

Most viral pneumonias are preceded by several days of respiratory symptoms, including rhinitis and cough. Usually other family members are ill. Although fever is usually present temperatures are generally lower than bacterial pneumonias. Tachypnoea, accompanied by intercostal, sub costal and supra sternal retractions, nasal flaring and use of accessory muscles of respiration are common. Severe infections may be accompanied by cyanosis and respiratory fatigue. Chest auscultation may reveal widespread rales and wheezing, but it is often difficult to localize the source of these adventitious sounds in very young children with hyper resonant chests. The viral pneumonias cannot be definitely differentiated from mycoplasma disease on purely clinical grounds and may on occasions be difficult to distinguish from bacterial pneumonias. Furthermore, evidence of viral infection is present in many patients who have confirmed bacterial pneumonia.[21, 22]

DIAGNOSIS

In viral pneumonias, the infiltrates are likely to be poorly defined, involving more than one lobe and is usually located in the perihilar region. Scattered areas of atelectasis or atelectasis involving the right upper or middle lobe are considered to be associated with viral infections. Hyperinflation is common.[23,24]

The peripheral white blood count of children with viral pneumonia tends to be normal or only slightly elevated (<20,000/c-mm.) with a predominance of lymphocytes. Acute phase reactants (ESR/C-Reactive protein) are usually normal or only slightly elevated.

Definitive diagnosis requires the isolation of the virus from a specimen obtained from the respiratory tract. Growth of a respiratory virus in tissue culture usually takes 5-10 days. However an immediate diagnosis can be established by demonstrating viral antigens in respiratory secretions. Finally serological tests can be used to diagnose a recent viral infection. Acute and convalescent sera are collected and a rise of antibodies to a specific viral agent is sought but this technique is not clinically useful as the infection usually is resolved by the time it is confirmed serologically.

TREATMENT

Many patients are given antibiotic agents initially if bacterial pneumonias are suspected. Failure to respond to antibiotic treatment is additional evidence for a viral etiology. Usually, only minimal supportive measures are required although some patients need hospitalization for intravenous fluids oxygen or even assisted ventilation. The only specific agents available for the treatment of respiratory viral infections are oral amantadine (or rimantadine) and aerosolized ribavarin. The former agents are active against influenza A isolates. They have demonstrable efficacy in preventing influenza A infections in exposed susceptible individuals

and in the treatment of patients infected with influenza A virus. Treatment appears to be beneficial only if started within 48 hrs of the onset of infection. The newer drug Osaltamivir, acts against both influenza A and influenza B is now coming into use which reduces influenza related complications and secondary infections and its treatment with antibiotics.[26] Ribavarin is active in *vitro* against RSV. It appears to be beneficial for certain infants hospitalized with lower respiratory tract infection caused by RSV. It is, however, a very expensive agent that needs to be administered virtually continuously by aerosolization. Its precise role in the management of RSV-infected infants remains a subject of debate.

PROGNOSIS

Most children with viral pneumonias recover uneventfully and have no sequelae, although the course may be prolonged especially in infants. Some infants may develop bronchiolitis obliterans, unilateral hyperlucent lung or other complications. Adeno Virus seems to be most dangerous agent in this regard, capable of causing acute fulminant pneumonia [27].

BACTERIAL PNEUMONIAS

Although viral pathogens are responsible for the majority of pneumonias in the pediatric population in the western counties, bacterial pneumonias are among the major causes of mortality among the pediatric population in the developing world[28,29] Unfortunately establishing the etiologic diagnosis of pneumonia is often difficult and in many cases cannot be done despite multiple diagnostic tests.

Microbiology

The pathogens causing pneumonia vary with the age, immune status as well as with some environmental conditions.

Pneumonia in the newborn period is usually caused by organisms that inhabit the genital tract of pregnant women, including Group B Streptococci, Escherichia coli and other enteric gram-negative bacilli and Listeria monocytogenes.

The bacteria commonly implicated as a cause of pneumonia in children over 1 month are

Bacteria	Bacteria-like agents
Streptococcus pneumoniae	Mycoplasma pneumoniae
H.influenzae	Chlamydia pneumoniae
Staphylococcus aureus	Chlamydia trachomatis
Group A Streptococci	Chlamydia psittaci
Bordetella pertussis	Coxiella burnetti
Moraxella catarrhalis	Rickettsiae
Yersinia pestis	
Pasteurella multocida	
Brucella	
Francisella tularinesis	
Neisseria meningitides	
Salmonella spp.	

Streptococcus pneumoniae is responsible for the majority of bacterial pneumonias in children 1 month to 6yrs of age. The incidence of pneumonia due to H.influenzae type B has decreased significantly since the introduction of a vaccine against this organism, but still remains an important agent in countries where this vaccine is not widely available. Others are rare[30].

In children over 6 years of age and adolescents, M.pneumonia and S.pneumonia are most common. Diseases due to M.pneumonia and C.pneumoniae are called atypical pneumonia. Secondary infections due to H.influenzae usually complicate mycoplasmal infection[31,32]

PATHOGENESIS

The airways normally start from the sub laryngeal area to the lung parenchyma. The lung is protected from bacterial infections by a variety of mechanisms, including anatomic and mechanical barrier as well as local and systemic immune factors. The former include filtration by the nasal hair, the epiglottic reflex, the cough reflex and the mucociliary apparatus, while the latter include local secretion of immunoglobulin A and the inflammatory response mediated by leukocytes, complement, cytokines, immunoglobulins, alveolar macrophages and cell mediated immunity.

Pulmonary infection may occur when one or more of these defense mechanisms are altered or when the host is challenged by particularly large inoculums of virulent organism. The infectious agent most commonly gains access to the lower respiratory tract through inhalation of aerosolized material or aspiration of resident flora of the upper airway. Less frequently pneumonia results from hematogenous seeding of the lungs. There is increasing evidence that viruses may enhance the susceptibility of the lower respiratory tract to infections by both the clearing mechanism and the host's immune responses. It has been estimated that 25 to 75 percent of children with bacterial pneumonias have a concurrent or preceding viral infection.[33]

The bacterial invasion of lung parenchyma evokes an exudative consolidation of the pulmonary tissue that can be lobular, lobar or interstitial. Bacterial pneumonias begin with hyperemia due to vascular engorgement, exudation of intra-alveolar fluid, deposition of fibrin and infiltration by neutrophils (red hepatization). The consolidation causes a decrease in lung compliance and vital capacity. A physiologic shunt because of ventilation/perfusion mismatching with resultant hypoxemia may be caused by increased blood flow through the affected lung. The O_2 desaturation may result on increased cardiac work. This stage is followed

by a predominance of fibrin deposition and progressive disintegration of inflammatory cells (gray hepatization). Resolution occurs after 8-10 days, usually, sometimes infection extends into pleural cavity producing empyema which may lead to fibrous adhesions[17].

CLINICAL MANIFESTATIONS

The clinical presentation of pneumonia varies with the age of the patient, the extent of the disease, and the etiologic agent. Clinical manifestations are extremely diverse and may occasionally be absent, particularly in young infants. Non–specific signs and symptoms include fever, chills, headache, malaise, restlessness and irritability. Gastro intestinal complaints, including vomiting, abdominal pain, and distension are often a prominent feature in young children.

General signs of lower respiratory tract disease include nasal flaring, tachypnoea, dyspnoea, grunting, head nodding, inability to drink, retractions of the accessory intercostals and abdominal muscles, and cyanosis. These signs were found to be good predictors of hypoxemia[34]. Chest in drawing is a particularly useful sign as it appears early and yet has a high specificity and a reasonable sensitivity. Severely malnourished children affected by pneumonia may not have fast breathing or chest in drawing because development of these signs requires normal muscular effort that may be lacking in these children. Such children also may also have other associated localized or systemic infections Respiratory rates to be measured in all infants thought to be ill or to have acute feeding problems. Apart from fast breathing and severe chest in drawing, pneumonia at this age also may manifest other features that are common to septicemia and meningitis. This includes convulsions, lethargy or unconsciousness poor feeding (if feeding well before), fever (axillary temperature of 37.5^{O}C or more) or low body temperature (axillary temperature below 35.5^{O}C), apnea episodes and a distended and

tense abdomen[35]. Cough with expectoration of sputum and chest pain are more common in older children. Signs of pneumonia may be subtle in the young. Decreased breath sounds may be present but the presence of crackles, characteristic of pneumonia in older children may be absent in infants. Pulmonary signs in older children include dullness to percussion, decreased vocal fremitus and decreased breath sounds with fine crackles over the involved area.. Chest pain may be present due to pleural irritation and extra pulmonary infection like abscess of skin, otitis media, sinusitis, meningitis, epiglottitis and pericarditis may also be present. . A comprehensive evaluation for pneumonia, septicemia and urinary tract or other site infections is therefore required.

RADIOGRAPHIC EXAMINATION

Chest radiographs remain the diagnostic mainstay in childhood pneumonia providing support to the clinical impression and defining the extent of the inflammatory process. Although it is not possible to decide from a radiograph whether a child is suffering from a bacterial or viral infection and intraobserver and interobserver variation among radiologists is common, a high quality chest film can be useful in the differential diagnosis between these entities.

Pulmonary densities classically have been divided into three patterns, depending on the presence of alveolar or interstitial disease. Alveolar or air space disease most commonly caused by pneumococcus or other bacteria and is characterized by lobar or segmental consolidation and the presence of air bronchograms. Interstitial pneumonias usually caused by viruses or mycoplasma presents as increased bronchovascular markings, peribronchial cuffing and some degrees of over aeration. Bronchopneumonia has a diffuse bilateral pattern with increased peribronchial markings and small fluffy infiltration that extend into periphery. Staphylococcal

pneumonia is frequently associated with pneumatoceles and pleural effusion that subsequently evolve to empyema[36].

The accuracy of the chest radiograph in predicting the etiologic agent causing pneumonia has been disputed. Nevertheless most authors agree that the presence of an alveolar infiltrate suggest a bacterial etiology requiring antibiotic treatment. The radiologic pattern may lag behind clinical improvement for several weeks and a routine repeat chest x-ray is usually not necessary at the conclusion of the illness unless there is clinical evidence of persistent respiratory difficulty or if the course of an acute pneumonia was complicated.

Other imaging modalities that may provide helpful information include chest ultrasonography, particularly for evaluation of pleural fluid and diaphragm motion and computed tomography (CT) or magnetic resonance imaging (MRI) which may demonstrate the precise location and extent of the pulmonary abnormality, can improve visualization of a lung abscess or rind and allows the visualization of the mediastinum and other intrathoracic structures.

DIFFERENTIAL DIAGNOSIS

In the majority of the cases of pneumonia in children a specific etiologic diagnosis will not be established. Knowledge of the clinical history, duration and severity of the symptoms, the age of the child, and the season of the year helps to narrow the differential diagnosis between bacterial and non–bacterial pneumonias. Traditionally, differentiating bacterial from viral pneumonia by clinical findings, radiology and blood counts is recommended to limit antibiotic use, especially for developed countries where pneumonia is more often of viral etiology. However the WHO recommendation that all childhood pneumonias be treated in developing countries as if of bacterial origin has merit. Firstly, etiological studies in developing

countries based on lung aspirates suggest that half to two-thirds of pneumonias are caused by bacteria. Secondly isolation of bacterial and viral agents from the same child is not uncommon. Finally, there is a considerable overlap in the clinical and radiological features of bacterial and viral pneumonias [37,38].

	Bacteria	**Viral**	**Mycoplasma**
Age	Any	Any	5 – 15 yrs
Season	Winter	Winter	All year
Onset	Abrupt	Variable	Insidious
Fever	High	Variable	Insidious
Tachypnoea	Common	Common	Uncommon
Cough	Productive	Non – productive	Non – productive
Associated symptoms	Mild coryza, abdominal pain	Coryza	Bullous myringitis

The choice of initial antibiotics and the place of treatment depend on the patient's age and clinical severity. In children between 2 months to 5 years of age Streptococcus pneumoniae and H. influenzae are the two most common bacterial agents causing pneumonia. Children with severe pneumonia require parenteral antibiotic treatment as inpatients. The WHO recommends chloramphenicol for the treatment of severe pneumonia due to its wide spectrum and low cost in developing countries. It may cause serious side effects such as aplastic anemia, but this is a rare toxic event and an acceptable risk of its use is restricted to cases of severe pneumonia.[39] An alternative is a combination of ampicillin and an aminoglycoside. Where drug availability is limited and cost is a constraint, benzyl penicillin alone also may be used. The basis of using benzyl penicillin is that most pneumococci are sensitive to it and H. influenza usually or moderately sensitive[40,41]. Other effective but relatively more expensive alternative including cefuroxime and third generation cephalosporin like cefotaxime and ceftriaxone. Poor response to ampicillin and penicillin treatments usually related to infections with beta lactamase producing H. influenza or with staphylococci. Treatment with chloroamphenicol or ceftrioxone

is appropriate for beta lactamase producing H. influenzae. Failure of patients to improve in response to chloramphenicol may indicate a resistant Staphylococcal infection. Cloxacillin or other and anti-staphylococcal agents preferably in combination with an aminoglycoside are recommended in these cases[42,43] This regime also is indicated if there are clinical or radiological features that suggest a staphylococcal etiology. Non response to antibiotics therapy simply may be due to viral etiology of pneumonia.

Tuberculosis remains an important cause of pulmonary disease in underdeveloped areas and therefore in suspected cases a MX test is indicated. Non-infectious causes of pulmonary lesions include foreign body aspiration, congestive cardiac failure, pneumoconiosis, congenital parenchymal disorders, neoplasms, radiation injury, hypersensitivity pneumonitis and non-infectious granulomatous processes.

TREATMENT

The majority of older children with pneumonia can be treated at home. The decision to hospitalize depends on the severity of the illness and the ability of the family to supply good nursing care. Pneumonia in the young infant is best treated in the hospital, because fluids and antibiotics have to administered intravenously. Furthermore, the course of illness in young infants is more variable and complications are more common. Patients with associated pleural effusion or empyema should also be hospitalized[44].

Oxygen administered promptly to patients with respiratory distress greatly reduces the need for sedatives and analgesia; it should be given before the patient becomes cyanotic. Fluid

should be administered appropriately and antipyretics when there is fever. Specific antibiotic therapy depends upon the causative organism as given below (for some common pathogens)

1)	Pneumococcal pneumonia	-	drug of choice is penicillin 100,000 U/Kg/24hr
2)	Streptococcal pneumonia	-	drug of choice is penicillin 100,000 U/Kg/24hr
3)	Staphylococcal Pneumonia	-	Penicillinase resistant penicillin like Nafcillin, cloxacillin 100mg/kg/24hr or methicillin
4)	H. influenza	-	Ampicillin 100 mg/kg/24hr Chloramphenicol 100 mg/kg/24hr Ceftrioxone 100 mg/kg/24/hr.

Antibiotics should be started and the condition of the child must be monitored every day and reviewed after 48 hours for change in antibiotic therapy. Antibiotic therapy must be given for a minimum of 5 days and continued for atleast 3 days after the child gets well. This is usually for 2-3 weeks including oral therapy which follows iv antibiotics after improvement. For Staphylococcal infection it is usually a more prolonged course of antibiotic is needed may be for 3-4 weeks. Effusion, empyema, pneumatoceles and /or pyo-pneumothorax are uncommon complications of Staphylococcal pneumonias. A shock like state also may be present. Empyema or effusion requires chest tube drainage regardless of their size so as to reduce the risk of bronco pleural fistula[45].

Oxygen therapy is indicated in the presence of central cyanosis and inability to drink offered liquids, restlessness, a respiratory rate of >70 breaths per minute and severe chest indrawing. Young infants with acute lower respiratory infections have a higher risk of apnea

and respiratory failure if they are not given oxygen when it is required. Oxygen may be given through nasal cannula, a nasal catheter or a head box. A nasal cannula may be superior to a catheter in improving hypoxemia. While using the cannula it may be better to cut off the nasal prongs. This often irritates the nose. Nasal cannula holes to be positioned directly under the nose and the cannula should be taped to the cheek bone. The child‘s nose should be kept clean of mucus. Cleaning can be done by two or three drops of salt water solution in each nostril and clearing the nose with a soft rubber bulb syringe before feeding and sleeping. Oxygen flow rates of 0.5 to 1 liter per minute are appropriate for infants younger than two months and 1 to 2 liters per minute for children 2 months or older. Humidification of the oxygen is not necessary when the cannulas are used but is desirable when catheters are employed. The container, tubing and catheter must be cleaned and dried at least twice a week to reduce the risk of bacterial contamination[46,47,48].

Feeding requires close attention particularly in developing countries. Even anorectic children accept breast milk. All feeding should be given at greater than usual frequencies. If they unable to suck at breast, expressed breast milk should be given with a cup and spoon. In children with pneumonia not requiring oxygen frequent small energy dense feeds should be given. Children sick enough to need oxygen usually do not tolerate oral and nasogastric feedings, thus requiring intravenous fluids. In a small proportion of children, pneumonia persist despite responsible antibiotic therapy. Unusual etiological agents such as Chlamydia, pneumocystis, mycobacterium tuberculosis or foreign bodies may be involved in those instances. The later possibilities should be explored[49,50].

AIM

1) To compare and assess the clinical features and outcome of pneumonia occurring in infants with traditional child rearing practices and in infants without traditional child rearing practices.
2) To assess the various factors influencing traditional child rearing practices.
3) To assess the influence of individual traditional child rearing practices with the outcome of pneumonia occurring in infants.

MATERIALS AND METHODS

STUDY DESIGN

It is a prospective case control study done in tertiary care Hospital, at the Institute of Social Pediatrics, Stanley Medical College Hospital among pediatric inpatients.

SUBJECTS

The study group included the infants in the age group of 29 days to 1 year who showed clinical and radiological evidence of pneumonia and having history of traditional child rearing practices done.

The control group included the infants in same age group admitted with clinical and radiological evidence of pneumonia and with no history suggestive of traditional child rearing practices.

PERIOD OF STUDY

This study was conducted during January'05 to December '05.

INCLUSION CRITERIA

- All infants admitted with pneumonia in age group 29 days to 1 year during the study period.

EXCLUSION CRITERIA

- Neonatal period.
- Babies institutionally delivered and admitted for some ailments during neonatal period and beyond, without discharging them.
- Infants with known history of wheezing.
- Children predisposed to pneumonia like left to right shunting, congenital malformations etc.
- Children with systemic disorders causing respiratory distress like cardiac, renal, central nervous system or metabolic problems.

METHODOLOGY

Infants with clinical and radiological evidence of pneumonia were selected as per the selection criteria. After eliciting necessary history some children were excluded using exclusion criteria.

Detailed questionnaire including various traditional child rearing practices like, Oil bath, oil instillation into nose, ear and mouth, blowing into the nose, mouth to mouth suctioning, Finger-mouth suctioning, application of irritant myrrh / sambirani fumes and giving native medications, was prepared and the accompanying person with the infant was asked.

All necessary investigations were done. X-rays were analysed during admission for evidences in the form of bronchopneumonia, patchy opacities, consolidation, pneumatoceles, and pyothorax.

Further details of family which may influence the disease outcome like type of family, religion they follow, socio-economic status, antenatal care during pregnancy, place of delivery and feeding practices were also obtained.

Nutritional status was assessed using ICMR chart.

The clinical parameters used are duration of fever after admission, if present earlier, duration of significant respiratory distress i.e Downe score >3, duration of difficulty in taking usual feeds, requirement of supplemental O_2, IV fluids and ICU setting care, any requirement

for II line antibiotics and the clinical outcome

By systematic random sampling technique a total of 80 cases and controls were taken to compare and assess the clinical features and outcome of pneumonia occurring in infants with traditional child rearing practices and in infants without traditional child rearing practices and to assess the various factors influencing traditional child rearing practices and to assess the influence of individual traditional child rearing practices with the outcome of pneumonia occurring in those infants.

The results were analyzed.

RESULTS AND DISCUSSION

DEMOGRAPHIC PROFILE OF TRADITIONAL CHILD REARING PRACTICES

TABLE 1

Age group	Total n=240(%)	Group		Significance	
		Study n = 80(%)	Control n = 160(%)		
				χ^2	P
<3 months	102 (42.5)	58 (72.5)	44(27.5)	35.47	0.001
4-6 months	72 (30.0)	16 (20.0)	56(35)		
7-12 months	66 (27.5)	6 (7.5)	60(37.5)		

During the study period, the patient attendance in out patient census was 307543.

Out of this, 240 infants had clinical symptoms and signs and with radiological signs of pneumonia. i.e. 7/1000

Out of 240, 80 infants had history of traditional CRP i.e. 33%

On analyzing all infants with pneumonia,

42.5% infants of <3 months had pneumonia when compared to the age group of 4-6 months (30.0%) and 7-12 months (27.5%) and is statistically significant. In a study by Jayakumar et al (1990) at Institute of child health found that 76% of ARI are bronco pneumonia. Male: female is 1.8:1.3 76.2% are infants. This study however includes all children and reveals the common age group infants.

Also traditional CRP is done in 72.5% of <3 months old infants when compared with other age groups and is statistically significant.

This may be due to family members visiting the house after delivery and the new

mother is afraid of doing those child rearing practices. Also, noisy breathing in early infancy is attributed to colds and in order to relieve this symptom, various CRP are done.

TABLE – 2
SEX DISTRIBUTION

Sex	Total n=240(%)	Group		Significance	
		Study n = 80(%)	Control n = 160(%)		
				$\chi 2$	P
Male	124 (51.7)	36 (45)	88 (55)	1.60	0.21
Female	116 (48.3)	44 (55)	72(45)		

Adam KA, et al ,in their study showed 44.5% of pneumonia are <1 year and male>female (84.2%)

In this study, the incidence of the traditional CRP in both sexes shows no significant difference. But earlier studies done by A Balachandran et al, in his study of 131 cases of persistent/recurrent pneumonia , showed that boys are affected twice than girls for which it was attributed that to the fact that male children enjoy a preferential care over the female children.

TABLE – 3
LOCALITY

Locality	Total n=240 (%)	Group		Significance	
		Study n = 80(%)	Control n = 160(%)		
				$\chi 2$	P
Urban	190 (79.2)	62 (77.5)	128 (80)	0.15	0.70
Rural	50 (20.8)	18 (22.5)	32 (20)		

This study shows, whether the family lives in Urban or Rural locality, there is no

significant difference in traditional CRP. This probably indicates some common factors in the family is operating these child rearing practices.

There is no comparable study in this aspect however, various epidemiological studies show that ARI is more common in urban set up.

TABLE – 4
TYPE OF FAMILY

Type of family	Total n=240 (%)	Group		Significance	
		Study n = 80 (%)	Control n = 160 (%)		
				$\chi 2$	P
Nuclear	106 (44.2)	20 (25)	86(53.8)	18.9	0.001
Combined	95 (39.6)	35 (43.8)	60 (37.5)		
Joint	39 (16.2)	25 (31.3)	14(8.8)		

In this study, influence of pneumonia associated with traditional CRP is more in combined families (43.8%) when compared with nuclear family (25%) and joint family (31.3%) and is statistically significant. This may be attributed to grand mother in the family who influences by doing or suggesting these CRP.

TABLE – 5
RELIGION

Religion	Total n=240 (%)	Group		Significance	
		Study n = 80 (%)	Control n = 160 (%)		
				$\chi 2$	P
Hindu	198 (82.5)	60 (75)	138(86.3)	5.25	0.05
Christian	25 (10.4)	9 (11.3)	16 (10)		
Muslim	17 (7.1)	11 (13.8)	6 (3.8)		

TABLE – 6
NUMBER OF CHILDREN IN FAMILY

No. of Children in family	Total n=240 (%)	Group		Significance	
		Study n = 80 (%)	Control n = 160 (%)		
				$\chi 2$	P
1	115 (47.9)	41 (51.3)	74(46.3)	0.45	0.80
2	101 (42.1)	31 (38.8)	70(43.8)		
>2	24 (10.0)	8 (10.0)	16(10.0)		

This study shows no significant difference in pneumonia associated with traditional CRP in various religions and the number of children in the family. There is no comparable study in this aspect.

TABLE – 7
MATERNAL AGE

Age of the mother (yrs)	Total n=240 (%)	Group		Significance	
		Study N = 80 (%)	Control n = 160 (%)		
				$\chi 2$	P
<20	14 (5.8)	12 (15.0)	2(1.3)	11.1	
20-30	165 (68.8)	53 (66.3)	112(70)		
>30	61 (25.4)	15 (18.8)	46(28.8)		

TABLE – 8
MOTHERS EDUCATIONAL STATUS

Mother's Educational Status	Total n=240 (%)	Group		Significance	
		Study N = 80 (%)	Control n = 160 (%)		
				$\chi 2$	P
No school	23 (9.6)	17 (21.3)	6(3.8)	15.8	0.001
Primary	127 (52.9)	31 (38.8)	96(60)		
Up to +2	86 (35.8)	32 (40)	54 (33.8)		
Graduate	4 (1.7)	0 (0)	4(2.5)		

In this study, the incidence of traditional CRP is more when the mother is young i.e. <20 years (15%) and when the mother is illiterate (21.3%). This is more when compared with mother having age 20-30 years (66.3%) and when >30 years (18.8%) and mother having some education and it is statistically significant. This may be attributed to the knowledge of bad child rearing practices and consequences of it are known to the mother as they get experienced with aging and with more education.

TABLE – 9
SOCIOECONOMIC STATUS

Socio-economic Status	Total n=240 (%)	Group		Significance	
		Study n = 80 (%)	Control n = 160 (%)		
				$\chi 2$	P
Class I	0	0 (0)	0(0)	1.24	0.27
Class II	0	0(0)	0(0)		
Class III	60 (25)	16 (20)	22 (27.5)		
Class IV	180 (75)	64 (80)	58(72.5)		

In this study most of the infants with pneumonia belong to class IV and class III of Modified Kuppusamy scale of socio-economic status. In this scale education, occupation and per capita income are taken into account and the total score is used in classifying into class I (Upper), II (Upper middle), III (Lower middle), IV (Upper lower), V (Lower). Pneumonia associated with traditional CRP is more found in class IV when compared to class III even though it is not statistically significant.

Studies done in Pondicherry by Indira Narayanan et al, showed the same features. This may be attributed to low educational status and ignorance regarding available health facilities makes them to perform these child rearing practices.

TABLE – 10

NUTRITIONAL STATUS

Nutritional Status	Total n=240 (%)	Group		Significance	
		Study N = 80 (%)	Control n = 160 (%)		
				$\chi 2$	P
Normal	69 (28.7)	21 (26.3)	24(30)	2.5	0.65
Grade I	119 (49.5)	45 (56.3)	37 (46.3)		
Grade II	40 (16.6)	12 (15)	14 (17.5)		
Grade III	7 (2.9)	1 (1.3)	3(3.8)		
Grade IV	5 (2.1)	1 (1.3)	2(2.5)		

According to ICMR

Normal > 80% of Expected Weight

Grade I 70%-80% of expected weight

Grade II 60%-70% of expected weight

Grade III 50% -60% of expected Weight

Grace IV < 50% of expected weight

In this study, nutritional status of the infants has no significant influence on outcome of pneumonia whether they are associated with or without traditional CRP. This may be attributed to more number of cases belonging to Grade I malnutrition and of Normal nutrition.

TABLE – 11
ANTENATAL PERIOD FOLLOWUP

Ante-Natal Period follow up	Total n=240 (%)	Group		Significance	
		Study N = 80 (%)	Control n = 160 (%)		
				$\chi 2$	P
Inadequate	2 (0.8)	1 (1.3)	1 (1.3)	0	1.00
Adequate	238 (99.2)	79 (98.8)	79 (98.8)		

TABLE – 12
PLACE OF DELIVERY

Delivered at	Total n=240 (%)	Group		Significance	
		Study N = 80 (%)	Control n = 160 (%)		
				$\chi 2$	P
Domiciliary	18 (7.5)	14 (17.5)	2 (2.5)	10	0.002
Institution	222 (92.5)	66 (82.5)	78 (97.5)		

Ante natal care, according to ICMR, is a minimum of 4 visits during the ante natal period to the hospital a health centre is necessary to be considered adequate along with IFA and TT. It is encouraging to note in this study that >99% had adequate ante natal care and >92% of total deliveries are institutional, because, AN care place, person conducting delivery can influence the child rearing practices. In this study, pneumonia associated with traditional CRP is more in domiciliary deliveries when compared to total pneumonia cases and is statistically significant.

TABLE – 13
DELIVERY CONDUCTED BY

Delivered by	Total n=240 (%)	Group		Significance	
		Study n = 80 (%)	Control n = 160 (%)		
				$\chi 2$	P
Relatives	1 (0.4)	1 (1.3)	0(0)	9.27	0.05
Untrained dai	23 (9.6)	9 (11.3)	7 (8.8)		
Trained dai	5 (2.1)	5 (6.3)	0(0)		
Health nurse	51 (21.2)	21 (26.3)	15 (18.8)		
Doctors	160 (66.7)	44 (55)	58(72.5)		

In this study, frequency of deliveries conducted by Doctors is good influence on reducing the incidence of traditional CRP (55%), while others have more incidences when compared to total pneumonia cases. This may be because of health education given by doctors who might have changed the knowledge and attitude of the mother towards these child rearing practices.

TABLE – 14
TRADITIONAL HEAD BATH

Traditional Head Bath	Total n=240	Group		Significance	
		Study n = 80 (%)	Control n = 160 (%)		
				$\chi 2$	P
1 / week	159 (66.3)	57 (71.3)	51 (63.8)	1.03	0.31
>1 / week	81 (33.7)	23 (28.8)	29 (36.3)		

In this study, frequency of traditional head bath is found to have no significant influence on incidence of pneumonia associated with traditional CRP. A Balachandran in his study of 131 children with PRP showed that increased incidence of PRP when the children are given more frequent head bath.

TABLE – 15
INCIDENCE OF INDIVIDUAL TYPES OF TRADITIONAL CHILD REARING PRACTICES

Study Group			
Oil Bath	Not Given	50	62.5%
	Given	30	37.5%
Oil Instillation	Not Given	47	58.8%
	Given	33	41.3%
Blowing into nose	Not Given	16	20.0%
	Given	64	80.0%
Mouth to Mouth suctioning	Not Given	3	3.8%
	Given	77	96.3%
Finger- mouth Suctioning	Not Given	8	10.0%
	Given	72	90.0%
Native medications given	Not Given	13	16.3%
	Given	67	83.8%
Sambirani Fumes	Not Given	12	15.0%
	Given	68	85.0%

In this study, incidences of individual traditional child rearing practices done are as follows:

Oil bath (37.5%), oil instillation (41.3%), Blowing into the nose (80%), Mouth to mouth suctioning (96.3%), Finger- mouth suctioning (90%), administering native medications (83.8%), and administering irritant sambirani / myrrh fumes(85.0%). More than one type of CRP is done in most infants. CRP varies from region to region. A Balachandran et al in his study of traditional child rearing practices in children with persistent and recurrent pneumonia Indian Medical Gazette CXXXIV (12); 388-391 1990 has showed that out of 131 children with PRP, Nose blowing was elicited in 90.8% and 61.3% associated with that had radiological pneumonia.

In M.D. Dissertation submitted in ICH in 1988, oil instillation was found to have done in 34.1 % and Nose blowing is found to have done in 68.9% of children.

This Study, has comparable significance.

TABLE – 17
CHILD REARING PRACTICES DONE / SUGGESTED BY

CRP done by	Study Group n = 80 (%)		Significance	
			$\chi 2$	P
Great grandmother	3	3.8%	131.98	0.001
Grand mother	43	53.8%		
Mother	3	3.8%		
Elders nearby	31	38.75%		

This study shows the incidence of pneumonia in infants associated with traditional CRP done or suggested by Grand mother in the family (53.8%) when compared with Great grand mother (3.8%), Mother (3.8%) and the Elders nearby (38.75%) and is statistically significant.

TABLE – 18
CLINICAL PARAMETERS

		Group		Significance	
		Control n = 80 (%)	Study n = 80 (%)		
				$\chi 2$	P
Fever up to	nil	5 (6.3)	6 (7.5)	12.8	0.002
	< 48 hrs	74 (92.5)	60 (75)		
	> 48 hrs	1 (1.3)	14 (17.5)		
Respiratory distress score > 3	< 48 hrs	76 (95)	26 (32.5)	67.6	0.001
	> 48 hrs	4 (5)	54 (67.5)		
O2 Supplementation	< 48 hrs	74 (92.5)	25 (31.3)	69.8	0.001
	> 48 hrs	6 (7.5)	55 (68.8)		
Difficulty in taking Feeds for	< 48 hrs	76 (95)	24 (30)	72.1	0.001
	> 48 hrs	4 (5)	56 (70)		
IV fluids needed for	< 48 hrs	74 (92.5)	31 (38.8)	57.1	0.001
	> 48 hrs	6 (7.5)	49 (61.3)		
ICU Care	< 48 hrs	72 (90)	18 (22.5)	74.06	0.001
	> 48 hrs	8 (10)	62 (77.5)		
Complications	no	74 (92.5)	46 (57.5)	26.1	0.001
	yes	6 (7.5)	34 (42.5)		
Requirement of II line Antibiotics	No	70 (87.5)	11 (13.8)	87.4	0.001
	yes	10 (12.5)	69 (86.3)		
Clinical outcome	Death	1 (1.3)	6 (7.5)	3.84	0.05
	Improved	79 (98.7)	74 (92.5)		

On comparing and analyzing the clinical parameters between pneumonia in infants associated with traditional CRP and with pneumonia not associated with traditional CRP it is found that prolonged fever (17.5%), prolonged respiratory distress >3 (67.5%), prolonged need for oxygen supplementation(68.8%), prolonged difficulty in taking feeds (70%), prolonged need for intra venous fluids (61.3%), prolonged ICU care (77.5%) was found to be associated with pneumonia in infants associated with traditional CRP. On analyzing the complications associated with pneumonia, it is found to be more in pneumonia in infants associated with

traditional CRP (42.5%). Requirement of II line antibiotics was more in pneumonia in infants associated with traditional CRP (86.3%) when compared with pneumonia in infants not associated with traditional CRP (12.5%). Death is found more in pneumonia in infants associated with traditional CRP (7.5%) when compared to pneumonia in infants not associated with traditional CRP (1.3%). But majority of the infants has improved in both the groups. This study however indicates increased morbidity pattern of pneumonia in infants associated with traditional CRP. There is no comparable study in this aspect, which clinical parameters in pneumonia are influenced more due to traditional CRP.

TABLE – 19
MULTI VARIATE LOGISTIC REGRESSION FOR OUTCOME

	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
			Lower	Upper
Oil bath	.05	9.102	1.1	33.3
Oil instillation	.997	.738	.000	
Nose blowing	.04	3.527	1.103	22.739
Mouth to mouth suctioning	.999	.702	.000	
Finger mouth suctioning	.103	14.190	.585	344.032
Vasambu	.998	.000	.000	
Sambirani	.990	.978	.031	31.280
Constant	.000	106.815		

On analysis of this study for outcome by Multi Variate logistic regression, Oil bath and Blowing into the nose has greater significance over other types of child rearing practices.

Traditional child rearing practices are being done in early infancy, the vulnerable group, irrespective if sex and locality, has hospital visits initially for minor illness like noisy breathing and the practices followed for that.

These practices are followed in families irrespective of the religion they follow. Nuclear family employs some elderly persons nearby but in combined and joint families grandmother has the influence mostly on these child rearing practices.

Mother being young and having less literacy has more influence on performing these practices as they lack knowledge about the harmful effects. Families belonging to lower socio-economic status engage more in these practices.

Knowledge about the health care providers of ante natal care and the deliveries influence these practices to reduce as these are the areas that the mother and the family has some motivation not to perform those practices.

Oil instillation into nostrils is associated with risk of development of lipoid pneumonia due to aspiration, which needs prolonged follow-up.

Native medications prepared unhygienically and given to infants after bath, which were believed to cure phlegm and to keep the infant well by aiding digestion. They are given when they cry vigorously and they tend to aspirate Sambirani (myrrh) fumes act as an irritant and cause increase in tracheo-bronchial secretions and they tend to aspirate while crying vigorously. These fumes itself are likely to cause hypersensitivity pneumonitis.

Infants admitted with pneumonia usually has fever, though fever is not well pronounced in young infants as they can present with hypothermia and in those partially treated outside with antibiotics and anti pyretics. Fever when prolonged inspite of appropriate treatment may be due to severity of the infection, drug resistant organisms, and atypical organisms.

Respiratory distress at the time of admission was assessed with Downe's scoring in which respiratory rate, chest retractions, grunt, cyanosis and air entry was taken into account and was used during the course of treatment in the ward. Those infants had only fast breathing and were taken as improved.

Oxygen supplementation was given to infants with significant respiratory distress and in those required it intermittently.

Infants those had difficulty in taking usual feeds due to their illness, was given appropriate intravenous fluids for the period of requirement. Those who have improved were started on partial intravenous fluids, guarded feeds with cup and spoon or paladey.

When the infants were sick looking and had less improvement like intermittent respiratory distress and fever observation for some more time in ICU was observed.

Infants developed septicemia features, seizures, shock empyema and pneumothorax during the illness were taken as complications of the disease and was managed appropriately.

Change of antibiotics from I line to next line of antibiotics was done in infants with complications. and after given those drugs for usual prescribed duration.

Though most cases of pneumonia improved well the mortality appears to be more in pneumonia cases following traditional child rearing practices. Overall, the morbidity these infants are more when compared to infants with pneumonia not followed by the traditional child rearing practices.

SUMMARY, CONCLUSIONS AND SUGGESTIONS

Traditional child rearing practices are still widely practiced even in this modern period.

For infants with pneumonia following traditional CRP having increased morbidity especially prolonged monitoring and treatment in ICU setting care, increases the expenditure for the Government towards these infants.

Mother's optimal age at marriage, child birth, better educational status and promoting institutional delivery may have favorable influence on reducing these traditional child rearing practices.

Most common traditional child rearing practices influencing outcome pneumonia in infants are oil bath and blowing into the nose.

There is an urgent need to systematically study the utility, futility and possible dangers of a large number of traditional health care practices done in children.

Parent Craft Centre should be established where continuing health education, demonstration and persuasion can be done to influence their knowledge.

Team approach concepts are needed and more social workers and paramedical staff should be in attendance at the out patient department to educate the mothers on various child rearing practices.

PROFORMA

Clinical Profile And Outcome Of Pneumonia Associated With Traditional Child Rearing Practices In Infants

Name of the child : Age : Sex :

Locality : Urban / Rural

Type of Family : Nuclear / combined / Joint

Religion : Hindu / Christian / Muslim

No. of children in family : 1 2 >2

Maternal age (in years) : <20 20-30 >30

Mothers Educational Status : Illiterate /Primary / Upto +2/Graduate

Socio Economic Status : Class I / Class II / Class III / Class IV

(Modified Kuppusamy Scale)

Nutritional Status : Normal / Grade I / Grade II / Grade III / Grade IV

Antenatal period & followup: Inadequate / Adequate

Delivery at : Domiciliary / Institution

Conducted by : Relatives / Untrained dai / Trained dai / Health nurse / Doctors

Traditional Practices done

Traditional Head Bath : Frequency / Week 1 / Week 2

Oil Instillation : Yes / No

Nose Blowing : Yes / No

Mouth to Mouth suctioning : Yes / No

Finger Suctioning in mouth : Yes / No

Native Medicines : Yes / No

Sambirani Fumes : Yes / No

Traditional Child rearing practices Suggested / done by :

Great Grandmother / Grand Mother / Mother / Elders near by

CLINICAL PARAMETERS

Fever upto	< 48 hrs / > 48 hrs
Respiratory distress score >3 for	< 48 hrs / > 48 hrs
Oxygen supplementation needed for	< 48 hrs / > 48 hrs
Difficulty in taking feeds for	< 48 hrs / > 48 hrs
IV fluids needed for	< 48 hrs / > 48 hrs
NICU care	< 48 hrs / > 48 hrs
Complications	Yes / No
Requirement of II line antibiotics :	Yes / No
Clinical Outcome :	Death / Improved

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