

Exploration of Various Aspects to Complement the Formulation of the Road Map for Reducing Newborn Mortality in Madhya Pradesh

By

Sujan Saha

*Dissertation submitted for the partial fulfillment of the
MBA Human Resource Management in Health and Hospitals*

Academic year, 2015-2017



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TO WHOMSOEVER MAY CONCERN

This is to certify that Mr. Sujan Saha student of MBA Human Resource Management in Health and Hospital Management from The IIHMR University, Jaipur has undergone internship training at **National Health Mission, Madhya Pradesh** from 6th February 2017 to 6th May 2017.

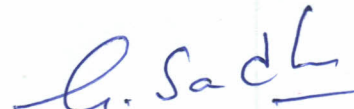
The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.



Col (Dr.) Ashok Kaushik
Dean, Academics and Student Affairs
The IIHMR University, Jaipur



Dr. Goutam Sadhu
Professor and Dean (SRM)
The IIHMR University, Jaipur

जिला स्वास्थ्य मिशन/समिति (आर.सी.एच./एन.आर.एच.एम.)छिंदवाड़ा (म.प्र.)



नस्ती क्रमांक/ 5/62
दिनांक 15/5/17

शाखा-स्वास्थ्य (रा.ग्रा.स्वा.मि.)
प्रभारी अधिकारी (मु.चि.स्वा.अधि.) / सचिव

नोट - शीट

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Sujan Saha** has successfully completed his internship in Rashtriya Bal Swasthya Karyakram. He has successfully completed his project on "A Comparative Study on pattern of deaths in SNCU of Chhindwara District".

We wish him all the best for his future endeavours.

जि।० एच.ओ.
5/62
15/5/17


Chief Medical & Health Officer
District Chhindwara, Madhya Pradesh

कार्यालय सिविल सर्जन सह मुख्य अस्पताल अधीक्षक,
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-: नोट-शीट :-

क्रमांक : 2004.....

प्रभारी अधिकारी : डॉ. जे.एस. गोगिया

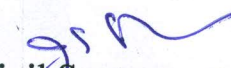
दिनांक : 15/05/12

प्रस्तुतकर्ता :

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Sujan Saha** has successfully completed his internship in Rashtriya Bal Swasthya Karyakram which is under National Health Mission. During his internship period He posted in the DEIC, in the campus of District Hospital. And he has worked under my supervision. He has successfully completed his project on “A Comparative Study on pattern of deaths in SNCU of Chhindwara District”.

We wish him all the best for his future endeavours.


Civil Surgeon
District Hospital Chhindwara, M.P.
Civil Surgeon Chhindwara
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CERTIFICATE BY SCHOLLAR

This is to certify that the dissertation titled **“Exploration of Various Aspects to complement the formulation of the road map for reducing newborn mortality in Madhya Pradesh”** and submitted by **Sujan Saha** Enroll No.: **IIHMR-U/04/2015-17/00012** under the supervision of Prof. Dr. Goutam Sadhu for award of MBA Human Resource Management in Health and Hospitals of the University carried out during the period from February 6,2017 to May, 6,2017 embodies my original work and has not formed the basis of any degree, diploma associate ship, fellowship, title in this or any other institute or other similar institute of higher learning.



Signature

THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that all ethical issues have been considered while collecting data for my dissertation titled **“Exploration of Various Aspects to complement the formulation of the road map for reducing newborn mortality in Madhya Pradesh”**



Signature of student

Acknowledgement:

I feel very lucky to have so many people in the organization during my dissertation period in Madhya Pradesh NHM.

I wish to express my indebted gratefulness and special thanks to "Mr. V Kiran Gopal, IAS, Mission Director, NHM Madhya Pradesh" who allow me do my dissertation project in their esteemed organization during my probation period.

A humble 'Thank you' Sir .

I would like to say my warm thanks to Dr. J.S. Gogia (CMHO) & also Civil Surgeon of the District Hospital, Chhindwara, who played a vital role as my mentor and also for taking part in valuable decision & giving essential advices and guidance and arranged all facilities to my project easier. I want this moment to acknowledge his contribution on my project thankfully.

I would like to thank with gratitude to Dr. Rathhi sir (In charge of SNCU) Mr. Rakesh (Data Entry Operator), clinical staffs of SNCU for their judicious and precious assistance which were extremely helpful for my study both theoretically and practically. I would also like to thank Dr.Shubham Painoli from IIHMR Jaipur, one of my batchmate cum friend and who is having knowledge about statistics. He also helps me to finalize my project at the end of the time.

I express my deepest thanks to Professor Dr. Goutam Sadhu Sir (IIHMR-U) for his guidance. He supported me about many ways related data collection and procedures of data analysis and giving his valuable suggestion on my project. He helped me all the whenever I interacted with sir to giving right directions.

Declaration

I hereby declare that the project titled “**Exploration of Various Aspects to complement the formulation of the road map for reducing newborn mortality in Madhya Pradesh**”, it is a new and genuine part of research work carried out by me under the direction and care of Dr. J. S. Gogia (Chief Medical & Health Officer), CMHO, Chhindwara District, Madhya Pradesh. The information has been collected from genuine & valid sources. My research is based on observational Study.

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Background:

Globally around 3.1 million babies per year die in the first 4 weeks of life . 30 percent of the worldwide neonatal deaths take place in India and little movement has been made plummeting in the last one and half decade .

Worldwide main causes of neonatal deaths are due to preterm births (28%) , sepsis or pneumonia (26%) and birth asphyxia (23%) . Newborn sepsis is one of the commonest causes of neonatal deaths in the rising globe accounting to 30-50% of all neonatal deaths for every year .

Evolution of concept of SNCU in India.

During the last decade , the disciplines of neonatal and pediatric critical care have rapidly progressed in India . The growth of Neonatal Intensive Care has paced the growth of Pediatric Critical Care . The substantial growth of discipline and the positive improvements in neonatal outcomes are the results of the concerted efforts of the Neonatal Forum and commitment of expatriate physicians residing in the United States . This article provides the background information regarding Perinatal, neonatal, and infant mortalities in India. It also describes the maternal child health care delivery system in the Indian subcontinent .

“The problem of premature and congenitally ill infants is not a new one”. “As early as the 17th and 18th centuries”, “there were scholarly papers published that attempted to share knowledge of interventions”. “It was not until 1922”, “however”, “that hospitals started grouping the newborn infants into one area, now called the neonatal intensive care unit (NICU)”. “Neonatology and NICUs have greatly increased the survival of very low birth-weight and extremely premature infants. “In the era before NICUs, infants of birth weight less than 1400 grams (3 lb, usually about 30 weeks gestation) rarely survived”. “Today, infants of 500 grams at 26 weeks have a fair chance of survival. “The NICU environment provides challenges as well as benefits”. “Stressors for the infants can include continual light, a high level of noise, and separation from their mothers”, reduced physical contact, painful procedures, and interference with the opportunity to breastfeed”. “NICU may be stressful for the clinical staffs as well as the internal management staffs”.

““A **neonatal intensive care unit (NICU)**, also known as an **intensive care nursery (ICN)**”, “is an intensive care unit specializing in the care of ill or premature newborn infants”.“The first American newborn intensive care unit, designed by Louis Gluck, was opened in October 1960 at Yale–New Haven Hospital, in the city of New Haven, Connecticut”.

“A NICU is typically directed by one or more neonatologists and staffed by nurses, nurse practitioners, pharmacists, physician assistants, resident physicians, respiratory therapists, and dietitians. Many other ancillary disciplines and specialists are available at larger units”.

This term ‘neonatal’ came from the word neo ‘new’ and natal, as same as birth or may its origin.

“Neonatal nurse practitioners are advanced practice nurses that care for premature babies and sick newborns in intensive care units, emergency rooms, delivery rooms, and special clinics”.

“After a time, another concept comes for the special care of new born Childs that is called SNCU (Sick Neonatal/Newborn Care Unit)”.

“The concept of this sick newborn care unit is based on the learning from the “Purulia Model” of the last decade when the first SNCU has been developed”. “For the first time this model demonstrated that the modern scientific development can be taken to the door steps of the people without diluting the principles of science”. “The core philosophy was that it not only saved life but also became the centre for teaching and training art and science of neonatal care of the entire district”. “This model is now being scaled up with various essential add-on components in various states of the country with support from NIPI under the banner of NRHM”. “It now encompasses all the other areas which are usually overshadowed in our attempts to plan the activities of the main SNCU, as for example, guidelines and protocol for housekeeping”. “In the world of antibiotic resistance the key area of importance should be to prevent infection and this would require a proper scientific way of cleaning of floors, provision for washing and drying the mops, area for keeping dirty linens, clean utility area for storage, area and equipment for autoclaving and sterilization and so on”. “Issues of providing 24 X 7 laboratory backup, storing of breast milk and data recording and interpretation are also important components”. “The proper usage of electricity and safety measures to prevent any accident including fire are also needs to be emphasized”. “Construction of such a unit requires proper scientific and architectural planning which would not only reduce the cost of antibiotic but also include the functionaries of SNCU complex”.

Studies related to SNCU of children in India (Literature Review)

“Sick Newborn Care Unit (SNCU) basically established in a district hospital in India”, “considerably concentrated the neonatal death rate in the district”; “it”, “nonetheless”, “suffered from a shortage of trained nurses”. “Local girls with 10-12 years of school education undergo structured and hands-on training for six months”, “followed by a six-month placement during the internship at the SNCU and were assigned to it as stipendiary” ‘Newborn Aides’. “Based on the results of formal examinations”, “internal on-the-job assessment and interview of doctors”, “nurses”, “and parents and their technical skills and motivation were rated very high”. “Incremental cost of training is very less but the cost of continuing them”, “that is stipend and replacing abrasion needs to be looked in”. “Trained Newborn Aides can significantly lessen Man Power limitation for SNCUs and Sick Newborn Stabilization units in smaller peripheral hospitals for care of sick newborns at an inexpensive cost”. “Around 13 crore babies born in the world of which 4 crore die in neonatal period. India is responsible for 25 % global neonatal deaths”. “In India the infant mortality rate (IMR) has been static from early nineties”, “and the status quo in the rate of neonatal mortality”, “despite may primary care-based plans and programmes at the India level in that phase”, is said to be the major reason for it. In India as a whole, neonatal deaths remained high at 62.4% and in the state of West Bengal 58.7% of infant deaths”. “Despite

state-level essential newborn-care training and Operationalization programme in West Bengal”, the neonatal mortality rate has been unresponsive. “We had findings to conclude that lessening of maternal mortality rate calls for facilities of cesarean section and blood transfusion (emergency obstetric care), in adding together to antenatal care and care at birth”. “Effective and speedy reduction in neonatal mortality rate (NMR) also requires back-up support of state-of-the-art Sick Newborn Care Units in hospitals with a massive number of deliveries”. “In poor and underdeveloped district of West Bengal-Purulia with a high neonatal mortality rate”, “an SNCU was created in the district hospital in September 2003 and is implemented by relocated staff from within the district”. “Around 6,000 annual deliveries in this hospital”. “Result number of saved lives and the projected reduction in neonatal mortality rate for the that district”, “even with a limited number of beds and staff”, “were so motivating that this model was introduced by the state government in other districts and by United Nations Children's Fund in Andaman and Nicobar Islands Port Blair”.

“The SNCU facilities gives, individual warming and close monitoring instruments”, “controlled environment”, “central oxygen”, “bedside procedures”, “Example resuscitation and exchange transfusion”, “portable x-ray”, “intravenous fluid(IV) and medications by infusion pump and “in”-house side laboratory services”. “It”, “mechanical ventilation and specialized neonatal surgery were not part of it”.

“One major limitation of ‘The Purulia Model’”, “was non availability of nursing staff in required quantity”. “Important some were made available by transferring them from other wards to the nursing-intensive sick newborn care(SNC)”. “Due to administrative and budgetary constraints Separate posts were neither created nor sanctioned for the SNCU by the state government mainly that has stopeed new recruitments”. “Problem was expected by one (DM) of the investigators proposed the concept of Newborn Aides to assist trained nurses”, “as an novel approach in sick newborn care (SNC)during the opening of the SNCU at the district hospital in Purulia”.

“In another study the impact of creating a sick newborn care unit (SNCU) in a district hospital on neonatal mortality rate (NMR)”. This study was conducted in a district hospital with 6500 deliveries a year. “A 14 bed SNCU that included controlled environment”, “individual warming and monitoring devices”, “infusion pump”, “central oxygen and oxygen concentrators”, resuscitation and exchange transfusion”, “portable X-ray and in-house laboratory was created”. “Doctors and nursing personnel were trained”. “Baseline data for 10 months were compared with 2 years data of SNCU operation”. “Compared with the baseline neonatal mortality in the district hospital, neonatal mortality was reduced by 14% in the first year and by 21% in the second year after SNCU became functional”. “Estimated neonatal deaths averted were 329”, “which would reduce NMR of the district from 55 to 47 in 2 years”. “A modern sick newborn care facility created in a district hospital can substantially reduce hospital neonatal deaths and NMR of the district”. “This model may be an effective tool to reduce NMR of the country”.

“The achievement of major reductions in early neonatal deaths will depend on provision of individualized clinical care”. “Concurrent expansion and scaling up of clinical care for sick neonates will be vital for bringing IMR (infant Mortality Rate) down”. “Strengthening and clinical services within the healthcare system is much needed but neglected component of a comprehensive intervention for reducing neonatal deaths”.

“In Madhya Pradesh, the total number of NMR (Neonatal Mortality Rate) is 39 in rural areas and 23 in urban areas according to NITI Aayog (National Institute for Transforming Data)”. “Madhya Pradesh”, “the central state of India has taken an initiative to reduce the neonatal mortality rate to setup a SNCU in every district”. “The state implemented this plan (SNCU) in the year 2013 under every block in its respective districts”. “In every districts of MP having a District Hospital which is categorized as tertiary care level health institution in the district”. “And every DHs have a setup for SNCU where Inborn & Outborn both facilities are there”. “With sophisticated equipments all the SNCUs are running smoothly”.

Problem statement:

Madhya Pradesh needs to explore the various aspects which will complement the formulation of the road map for reducing newborn mortality through SNCU which, in turn, aid to achieve MDG-4 (Millennium Developmental Goal-4).

Research Question:-

What are the various aspects which will compliment the formulation of the road map for reducing the neonatal mortality rate through SNCU which, in turn, aid to achieve MDG-4 (Millennium Developmental Goal-4)?

Objective:

1. To identify the percentage of neonatal patients coming from other blocks of the districts.
2. To draw the comparison of the outborn and inborn cases in the SNCU and bring out the indication of admission of male and female neonates .
3. To access the average duration stay of male and female neonates and calculate the death percentage of male and female neonates for two years.
4. To compare the pattern of diseases in the year 2016-17 and 2015-16 and calculate the disease specific death rate and its comparison between the two year.

Research Methodology:

- Study Design: Descriptive Study as it is describing the various aspects related to neonates admission Diseases, Indication of Death etc
- Study Setting: District Hospital of Madhya Pradesh
- Duration of Study: 90 Days
- Inclusion: (Inborn refers to infants born in that facility)
- Exclusion: (Outborn refers to infants transferred to that facility from another facility).

Method of Data Collection:

- Data Collection Procedure: The research is based on Secondary data of SNCU from District Hospital. The data has been extracted out from the HMIS system of the SNCU and the excel sheets are prepared based on the same data.
- Data Analysis Procedure: after the preparation of the excel sheet of the data taken from the HMIS system, quality of the data will be check followed by cleaning of data where, the variables relevant to the objectives will be taken into the account.

Filtering and sorting of the data has been done in order to bring out the correct numbers related to the values. These values are summarized in the separate excel sheet to draw the graph Interpretation of the graph has been done based on the findings of the bar and pie charts.

Definitions & the sign & symptoms of causes of deaths

Sepsis :

Sepsis is a life-threatening illness caused by individual body's response to an infection . The immune system of the individual protects from many illnesses and infections , but it's also possible for it to go into overdrive in response to an infection .

To be diagnosed with sepsis , you must exhibit at least two of the following symptoms , plus a probable or confirmed infection”:

- Body temperature above 101 F (38.3 C) or below 96.8 F (36 C)
- Heart rate higher than 90 beats a minute
- Respiratory rate higher than 20 breaths a minute

Severe sepsis

Individual diagnosis will be upgraded to severe sepsis if you also exhibit at least one of the following signs and symptoms , which indicate an organ, may be failing :

- Significantly decreased urine output
- Abrupt change in mental status
- Decrease in platelet count
- Difficulty breathing
- Abnormal heart pumping function

Abdominal pain

Septic shock

To be diagnosed with septic shock, you must have the signs and symptoms of severe sepsis — plus extremely low blood pressure that doesn't adequately respond to simple fluid replacement .

Causes

While any type of infection — bacterial , viral or fungal — can lead to sepsis , the most likely varieties include :

- Pneumonia
- Abdominal infection
- Kidney infection
- Bloodstream infection (bacteremia)

Respiratory Distress Syndrome :

Respiratory distress syndrome (RDS) is a breathing disorder that affects newborns . RDS rarely occurs in full-term infants . The disorder is more common in premature infants born about 6 weeks or more before their due dates .

Signs and symptoms of respiratory distress syndrome (RDS) usually occur at birth or within the first few hours that follow . They include :

- Rapid , shallow breathing
- Sharp pulling in of the chest below and between the ribs with each breath
- Grunting sounds
- Flaring of the nostrils

The infant also may have pauses in breathing that last for a few seconds . This condition is called apnea (AP-ne-ah) .

Respiratory Distress Syndrome Complications

Depending on the severity of an infant's RDS, he or she may develop other medical problems .

Lung Complications

Lung complications may include a collapsed lung (atelectasis) , leakage of air from the lung into the chest cavity (pneumothorax) , and bleeding in the lung (hemorrhage) .

Some of the life-saving treatments used for RDS may cause bronchi pulmonary dysplasia , another breathing disorder .

Blood and Blood Vessel Complications

Infants who have RDS may develop sepsis”, an infection of the bloodstream . This infection can be life threatening”.

Lack of oxygen may prevent a fetal blood vessel called the ductus arteriosus from closing after birth as it should . This condition is called patent ductus arteriosus , or PDA .

The ductus arteriosus connects a lung artery to a heart artery . If it remains open , it can strain the heart and increase blood pressure in the lung arteries .

“Congenital malformation”:

A physical **defect** present in a baby at birth that can involve many different parts of the body , including the brain, heart, lungs, liver, bones, and intestinal tract . Examples include heart **defects** , cleft lip and palate , spine bifida , limb **defects** , and Down syndrome .

Prematurity :

Premature infant is an infant born before 34 wk gestation . Full-term gestation is 40 wk (range 37 to 42 wk) . **Infants** born before 37 wk are preterm and have an increased incidence of complications and mortality roughly proportional to the degree of prematurity .

Causes of premature birth

The cause of a premature birth often can't be identified . However , certain factors are known to increase a woman's risk of going into labor early .

A pregnant woman with any of the following conditions is more likely to have a premature birth :

- Diabetes
- Heart disease
- Kidney disease
- High blood pressure

Pregnancy-related factors associated with premature birth include :

- Poor nutrition before and during pregnancy
- Smoking , using illegal drugs , or drinking too much alcohol during pregnancy
- Certain infections , such as urinary tract and amniotic membrane infections”
- Premature birth in a previous pregnancy
- An abnormal uterus
- weakened cervix opening early

Potential health problems in premature infants

The earlier a baby is born , the more likely they are to have medical problems . A premature infant may show these signs soon after birth :

- trouble breathing
- low weight”
low body fat
- inability to maintain a constant body temperature
- less activity than normal

- movement and coordination problems
difficulties with feeding
- abnormally pale or yellow skin

Premature infants may also be born with life-threatening conditions . These can include :

- brain hemorrhage , or bleeding in the brain
- pulmonary hemorrhage , or bleeding in the lungs
- hypoglycemia , or low blood sugar
- neonatal sepsis , a bacterial blood infection
- pneumonia , an infection and inflammation of the lungs
- patent ductus arteriosus, an unclosed hole in the main blood vessel of the heart
- anemia , a lack of red blood cells for transporting oxygen throughout the body
- “neonatal respiratory distress syndrome , a breathing disorder caused by underdeveloped lungs

Some of these problems can be resolved through proper critical care for the newborn . Others can result in long-term disability or illness .

Doctors perform various tests on premature infants soon after childbirth . These tests help reduce the risk of complications . Doctors also monitor infants continuously during their hospital stay .

“Common tests include”:

- Chest X-ray to evaluate heart and lung development
- Blood tests to assess glucose, calcium, and bilirubin levels .
- Blood gas analysis to determine blood oxygen levels .

Birth Asphyxia :

Perinatal asphyxia , neonatal **asphyxia** or **birth asphyxia** is the medical condition resulting from deprivation of oxygen to a newborn infant that lasts long enough during the **birth** process to cause physical harm , usually to the brain .

Causes :

Waste products (acids) build up in the cells and **cause** temporary or permanent damage . Some **causes** of **birth asphyxia** may include : Too little oxygen in the mother's blood before or during **birth**. Problems with the placenta separating from the uterus too soon

Symptoms of asphyxia in a baby at the time of birth may include :

- Baby is not breathing or breathing is very weak

- Skin color is bluish or pale
- Heart rate is low
- Muscle tone is poor or reflexes are weak
- Too much acid is in the blood (acidosis)
- The amniotic fluid is stained with meconium (first stool)
- The baby is experiencing seizures

Low Birth Weight (L.B.W) :

Low birth weight is a term used to describe babies who are born weighing less than 2,500 grams (5 pounds, 8 ounces) . In contrast, the average newborn weighs about 8 pounds. Over 8 percent of all newborn babies in the United States have **low birth weight** .

Causes low birth weight:

The primary cause is premature birth , being born before 37 weeks gestation ; a baby born early has less time in the mother's uterus to grow and gain weight , and much of a fetus's weight is gained during the latter part of the mother's pregnancy .

Another cause of low birthweight is intrauterine growth restriction . This occurs when a baby does not grow well in uterus because of problems with the placenta, the mother's health or birth defects . Babies with Intrauterine growth restriction (IUGR) may be born early or full-term; premature babies with IUGR may be very small and physically immature and full-term babies with IUGR may be physically mature but weak .

“Any baby born prematurely is more likely to be small. However, there are other factors that can also contribute to the risk of low birthweight . These include:

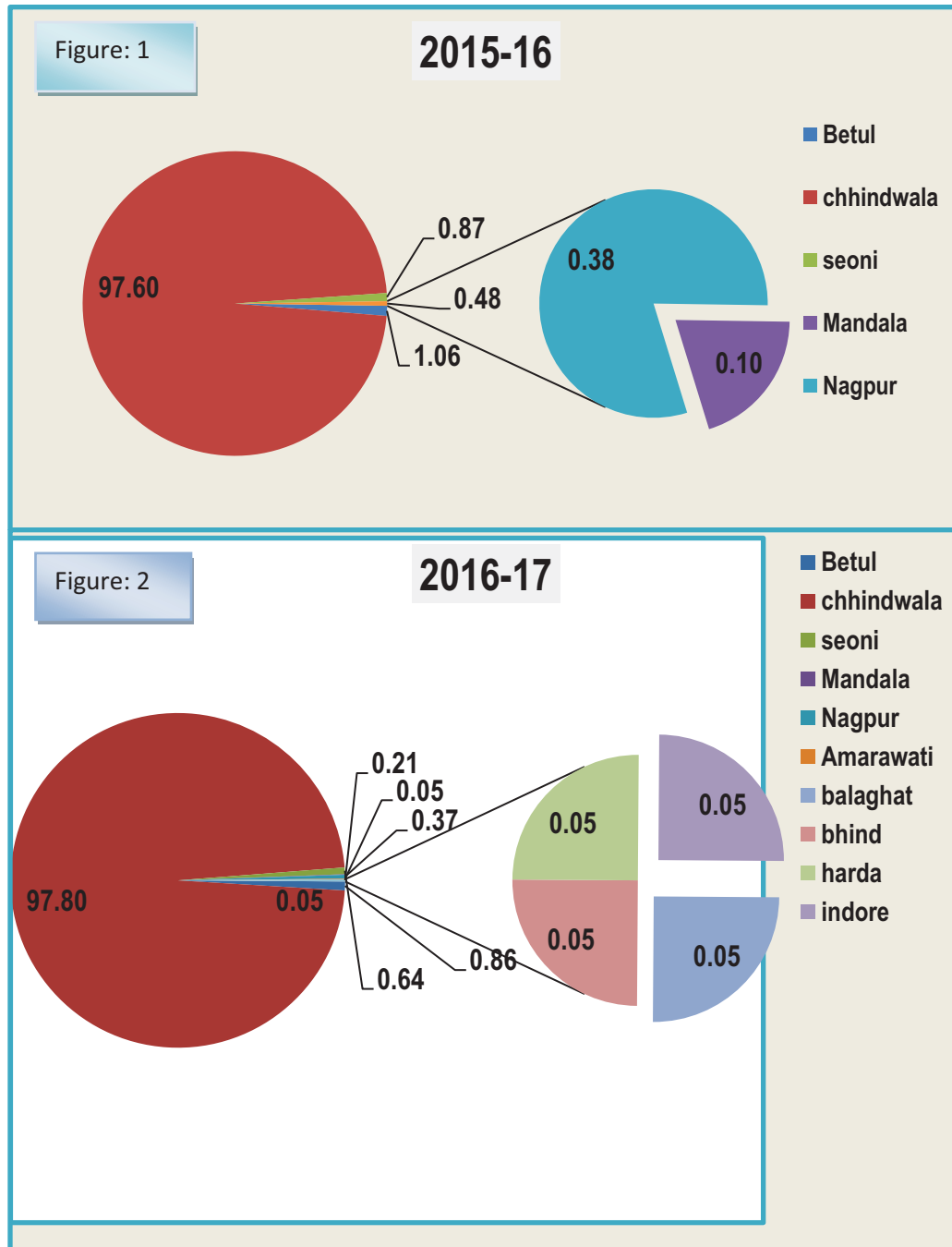
- Race – African-American babies are twice as likely as Caucasian babies to have low birthweight .
- Mother's age – Teen mothers (especially those younger than 15) have a much higher risk of having a baby with low birthweight .
- Multiple births – Multiple birth babies are at increased risk of low birthweight because they often are premature .
- Mother's health – Babies of mothers who are exposed to illicit drugs, alcohol and cigarettes are more likely to have low birthweight. Mothers of lower socioeconomic status are also more likely to have poorer pregnancy nutrition, inadequate prenatal care, and pregnancy complications — all factors that can contribute to low birthweight .

Nearly all low birthweight babies need specialized care in the Neonatal Intensive Care Unit (NICU) until they gain weight and are well enough to go home. Fortunately, there is a 95 percent chance of survival for babies weighing between 3 pounds, 5 ounces and 5 pounds, 8 ounces .

Data Analysis & Interpretation:

Analysis-

The Percentage of Neonatal Patients came from other Blocks of the Districts

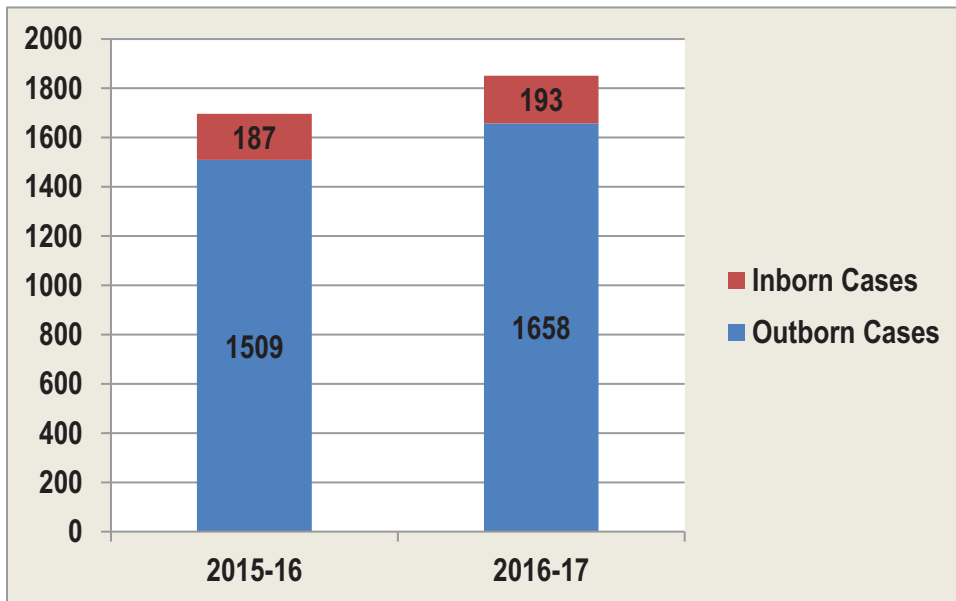


Interpretation:

Maximum of the patients came from all 11 blocks of Chhindwara Districts in both year (2015-16 and 2016-17) that is 97.60% and 97.70%.

Frequency of patients increases in 2016-17 and the patient came from other district is also increasing.

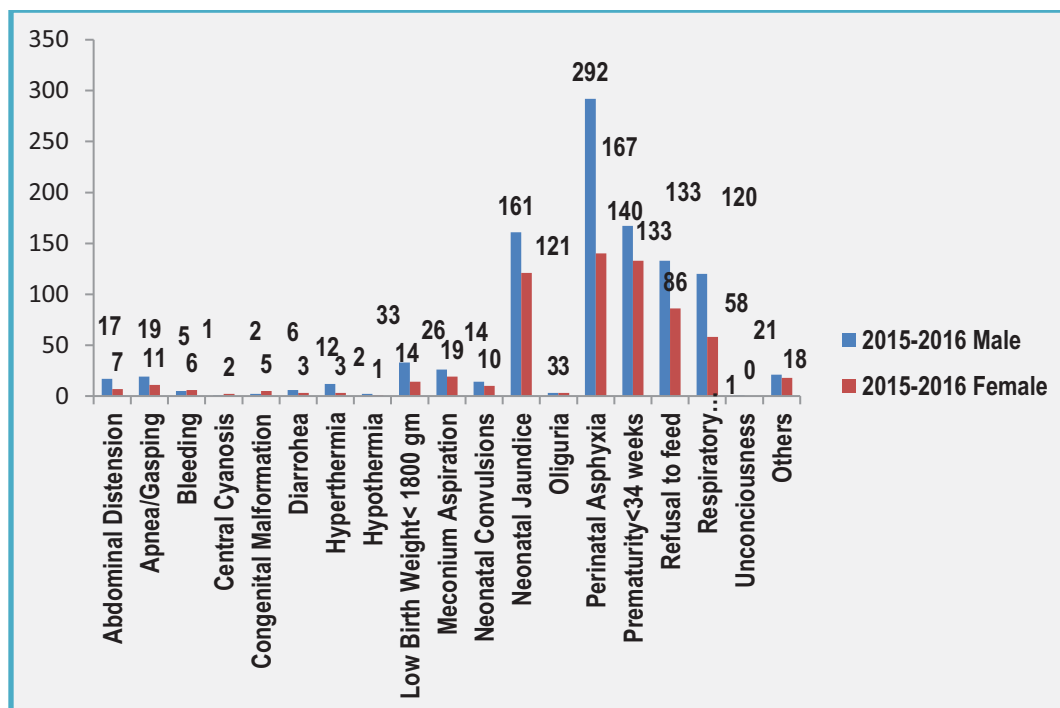
Comparison of the inborn and outborn cases in the SNCU



Interpretation:

Total numbers of inborn cases are increases in the subsequent year from 187 to 193. Outborn cases are more than the inborn cases and their number also increases from 1509 to 1658 n years 2015-16 to 2016-17.

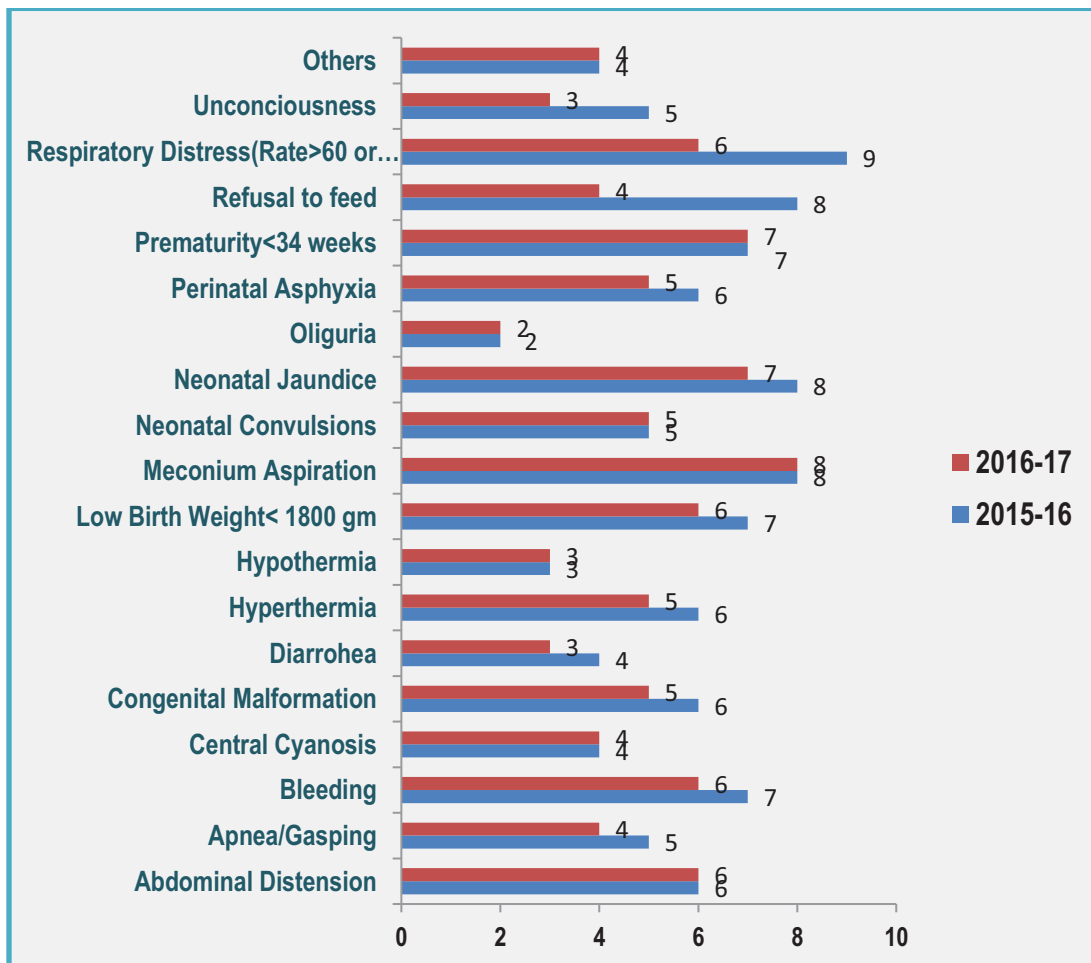
Indication of admission of male and female neonates



Interpretation:

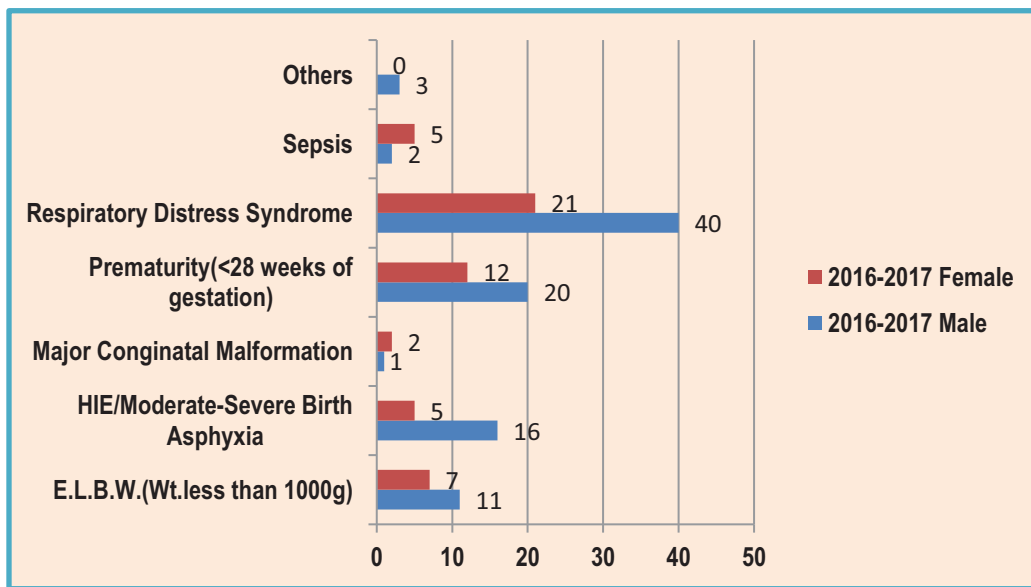
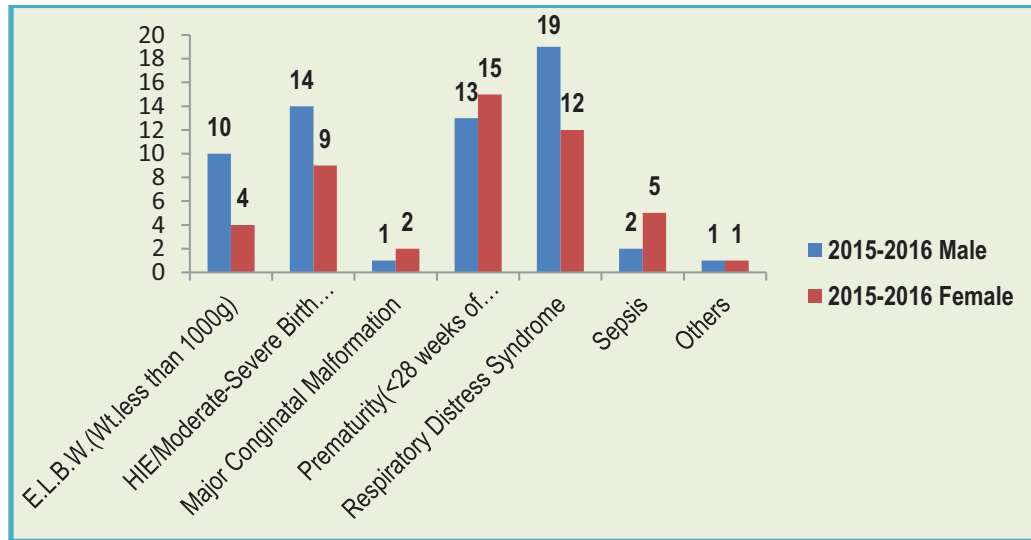
Most of the cases in 2015-16 are of perinatal asphyxia followed by neonatal jaundice, prematurity, refusal to feed and respiratory distress syndrome. Trends of all the diseases decreases in year 2016-17. Apart from that there are few other diseases whose trend seems to be decreased over a period of time.

Average duration stay of male and female neonates



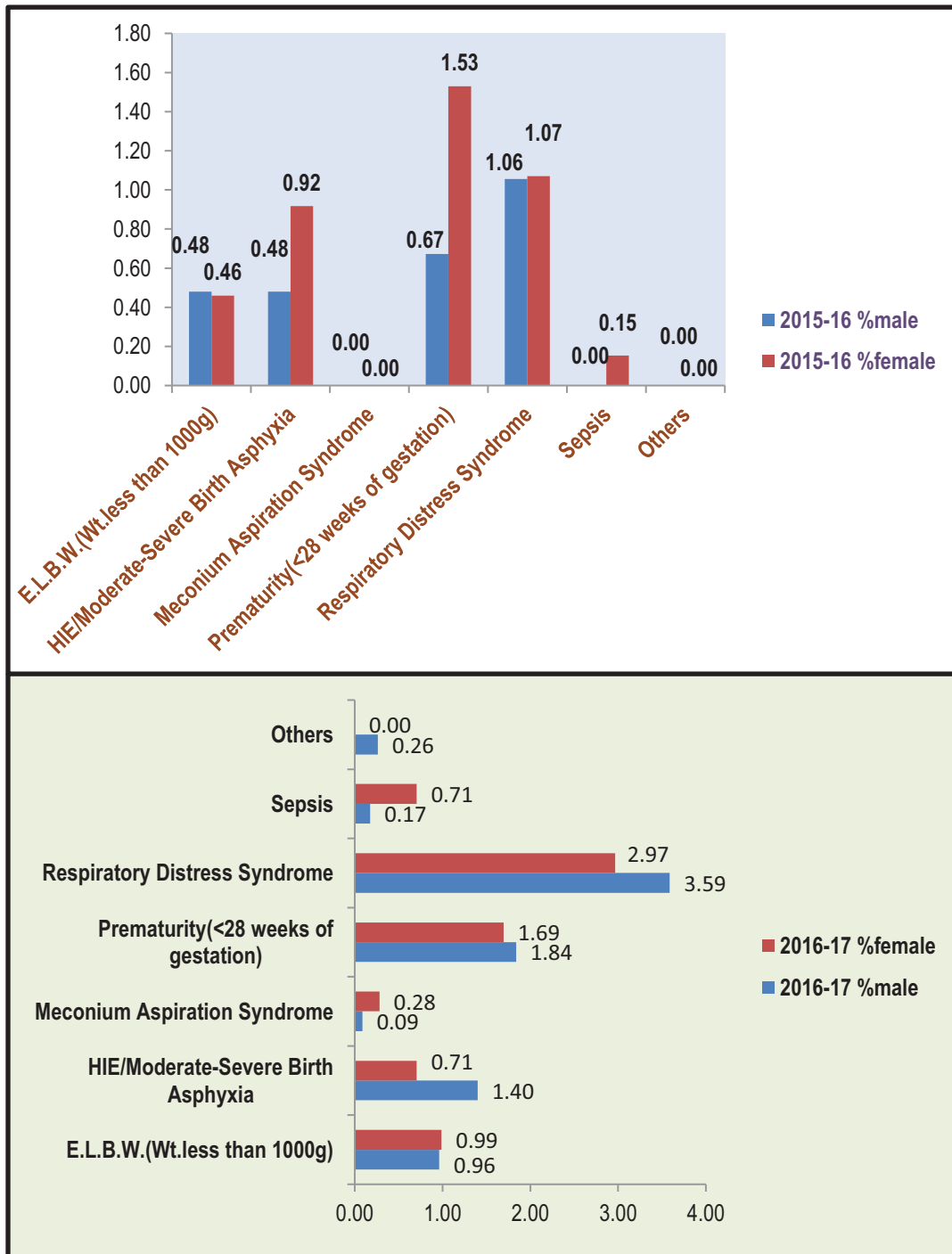
Average duration of stay for different diseases are different. Figure shows decrease trend of the pattern of disease from 2015-16 to 2016-17 and in some cases the disease found are constant.

The indication of death for male and female neonates for 2 years



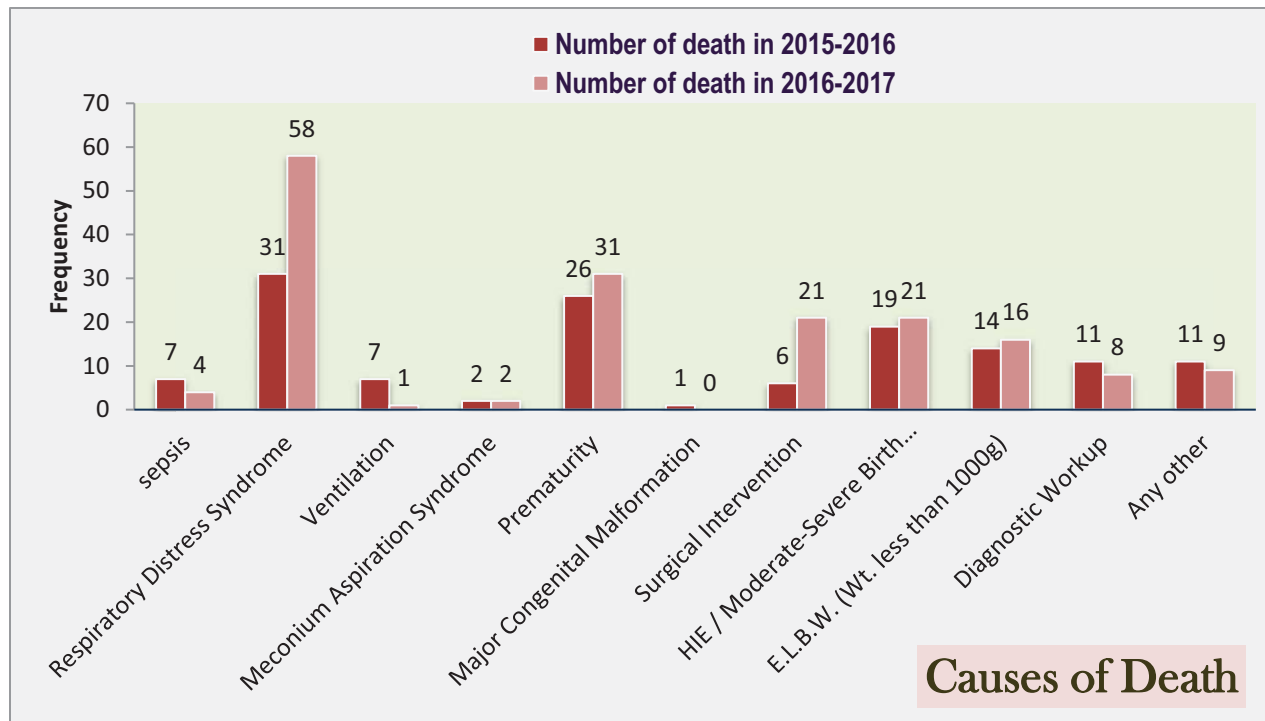
The indication of death is more for respiratory distress syndrome, prematurity and HIE in both the year and it is more for the male a compared to the female

Death percentage of male and female neonates for two year.



Death percentage is more in the case of female in 2016 as compared to 2017 where it is more for male

Comparison of causes of death between 2015-16 & 2016-2017



Interpretation:

In this graph we can see that the total number of deaths occurred due to Sepsis 7, Respiratory Distress Syndrome 58, Ventilation 1, Meconium Aspiration Syndrome 2, Prematurity 31, Major Congenital Malformation 1, Surgical Intervention 21, HIE/Moderate-Severe Birth 21, E.L.W.B (Wt. less than 1000g) 16, Diagnostic workup 8 and others 9 in the FY (2015-16).

And in the FY (2016-17), the total number of deaths occurred due to Sepsis 4, Respiratory Distress Syndrome 31, Ventilation 7, Meconium Aspiration Syndrome 2, Prematurity 26, Major Congenital Malformation 0, Surgical Intervention 6, HIE/Moderate-Severe Birth 19, E.L.W.B (Wt. less than 1000g) 14, Diagnostic workup 11 and others 11

Causes of death	Number of death in 2015-2016	Number of death in 2016-2017	Pattern of causes of deaths in 2017
Sepsis	7	4	-3 ↓
Respiratory Distress Syndrome	31	58	27 ↑
Ventilation	7	1	-6 ↓
Meconium Aspiration Syndrome	2	2	0 —
Prematurity	26	31	5 ↑
Major Congenital Malformation	1	0	-1 ↓
Surgical Intervention	6	21	15 ↑
HIE / Moderate-Severe Birth Asphyxia	19	21	2 ↑
E.L.B.W. (Wt. less than 1000g)	14	16	2 ↑
Diagnostic Workup	11	8	-3 ↓
Any other	11	9	-2 ↓

Decreases pattern of cause of death:

Sepsis

Ventilation

Major Congenital Malformation

Diagnostic workup

Any other

Increase Pattern of Cause of death:

Respiratory Distress Syndrome

Prematurity

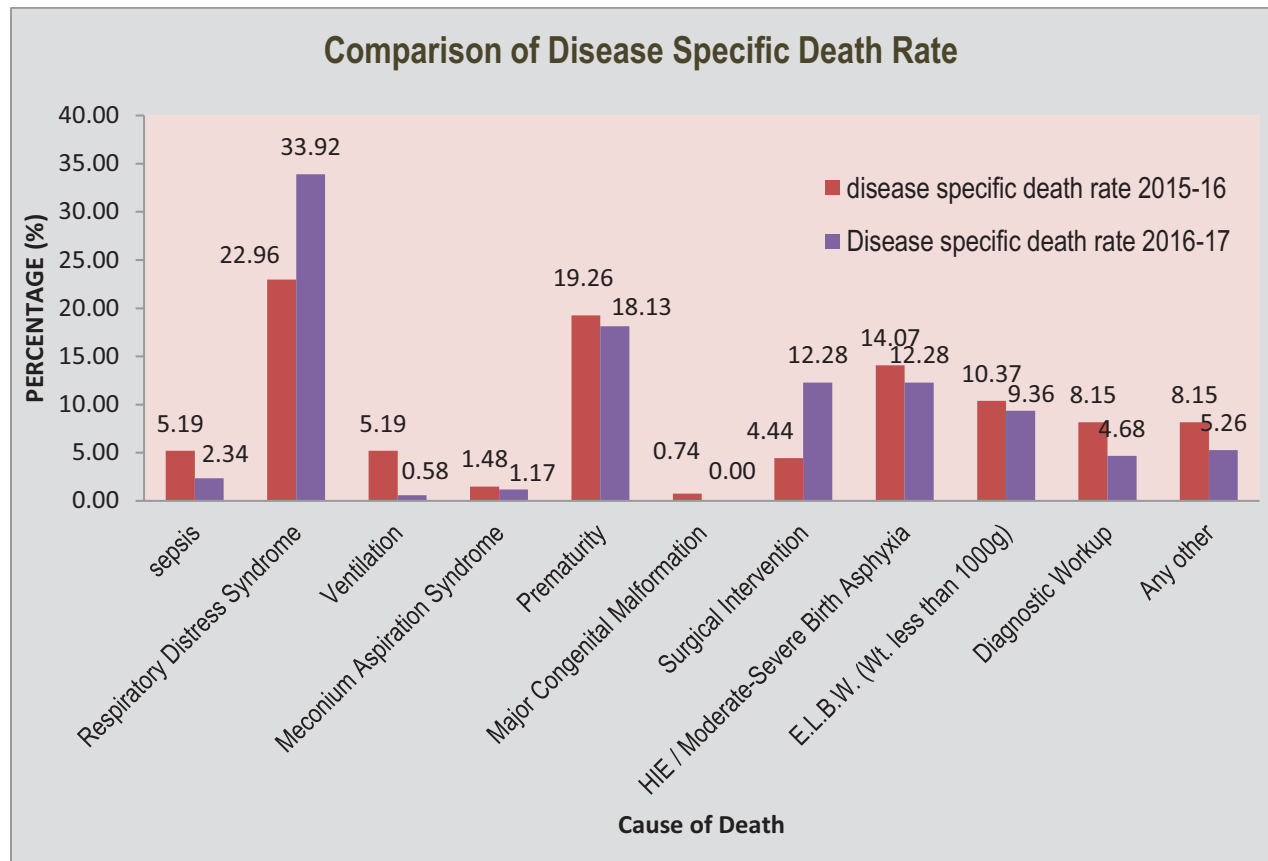
Surgical Intervention

HIE / Moderate-Severe Birth Asphyxia

E.L.B.W. (Wt. less than 1000g)

Constant Pattern of Cause of death:

Meconium Aspiration Syndrome



Interpretation:

In this graph we can see that the disease specific death rate of Sepsis 5.19, Respiratory Distress Syndrome 33.92, Ventilation 5.19, Meconium Aspiration Syndrome 1.48, Prematurity 19.26, Major Congenital Malformation 0.74, Surgical Intervention 4.44, HIE/Moderate- Severe Birth Asphyxia 14.07, E.L.B.W.(Wt. less than 1000g)10.37, Diagnostic workup 8.15 and others 8.15 in the FY(2015-16).

And in the FY (2016-17), the disease specific death rate of Sepsis 2.34, Respiratory Distress Syndrome 22.96, Ventilation 0.58, Meconium Aspiration Syndrome 1.17, Prematurity 18.13, Major Congenital Malformation 0.00, Surgical Intervention 12.28, HIE/Moderate- Severe Birth Asphyxia 12.28, E.L.B.W.(Wt. less than 1000g) 9.36, Diagnostic workup 4.68 and others 5.26.

Causes of death	Disease Specific Death Rate 2015-16	Disease Specific Death Rate 2016-17	
Sepsis	5.19	2.34	↓ -2.85
Respiratory Distress Syndrome	22.96	33.92	↑ 10.96
Ventilation	5.19	0.58	↓ -4.60
Meconium Aspiration Syndrome	1.48	1.17	↓ -0.31
Prematurity	19.26	18.13	↓ -1.13
Major Congenital Malformation	0.74	0.00	↓ -0.74
Surgical Intervention	4.44	12.28	↑ 7.84
HIE / Moderate-Severe Birth Asphyxia	14.07	12.28	↓ -1.79
E.L.B.W. (Wt. less than 1000g)	10.37	9.36	↓ -1.01
Diagnostic Workup	8.15	4.68	↓ -3.47
Any other	8.15	5.26	↓ -2.88

Decrease Pattern of Disease Specific Death Rate:

Sepsis

Meconium Aspiration Syndrome

Ventilation

Major Congenital Malformation

Diagnostic workup

Any other

Increase Pattern of Disease Specific Death Rate:

Respiratory Distress Syndrome

Prematurity

Surgical Intervention

HIE / Moderate-Severe Birth Asphyxia

E.L.B.W. (Wt. less than 1000g)

Result:

- Maximum of the patients came from all 11 blocks of Chhindwara Districts in both year (2015-16 and 2016-17) that is 97.60% and 97.70%.
- Frequency of patients increases in 2016-17 and the patient came from other district is also increasing.
- Total numbers of inborn cases are increases in the subsequent year from 187 to 193. Outborn cases are more than the inborn cases and their number also increases from 1509 to 1658 in years 2015-16 to 2016-17.
- Most of the cases for admission in 2015-16 are of perinatal asphyxia followed by neonatal jaundice, prematurity, refusal to feed and respiratory distress syndrome. Trends of all the diseases decreases in year 2016-17. Apart from that there are few other diseases whose trend seems to be decreased over a period of time.
- Average duration of stay of the diseases is around 5 days.
- Indication of death is more for the males as compared to the females and diseases having more prevalence are respiratory distress syndrome, prematurity and HIE/Severe Birth asphyxia.
- Death percentage is more for females than of males and the diseases which are more prevalent in causing death are respiratory distress syndrome, prematurity, HIE and low birth weight.
- The pattern of deaths increased due to Respiratory Distress Syndrome, Prematurity, Surgical Intervention, HIE/ Moderate-Severe Birth Asphyxia and E.L.B.W.(Wt. less than 1000g) in the FY 2016-17 than 2015-16. And the pattern of deaths decreased due to Sepsis, Ventilation, Major Congenital Malformation, Diagnostic workup and others in the FY 2016-17 than 2015-16.
- The inborn cases are very few. And the outborn cases are very high in SNCU of District Hospital Chhindwara, Madhya Pradesh.

Recommendation:

- ✓ Separate research study should be done for finding out the reasons of increasing pattern of death Respiratory Distress Syndrome, Prematurity, Surgical Intervention, HIE / Moderate-Severe Birth Asphyxia, E.L.B.W. (Wt. less than 1000g). In order to reduce their number in subsequent year.
- ✓ Efforts should be done to reduce Disease Specific Death Rate of Respiratory Distress Syndrome, Prematurity, Surgical Intervention, HIE / Moderate-Severe Birth Asphyxia, E.L.B.W. (Wt. less than 1000g) by knowing the reason of their succession in the consecutive year.
- ✓ Need to increase the quality of service care in SNCU that will improve the structure of clinical care for newborns. Because according to the data that has been found that the total number of death in the year 2016-17 is high than the year 2015-16.

Limitation:

- ✓ This research not based on the primary data. It is fully based on the secondary data where the two years data were collected from the SNCU of Chhindwara District Hospital.
- ✓ Further exploration of the reasons of death which has been increased over a period of time has not been done.
- ✓ Lack of communication with the medical staffs of other SNCUs of the District under PHCs, CHCs.

Conclusion:

Neonatal Mortality of Madhya Pradesh is 23 per 1000 in urban area of Madhya Pradesh and 39 per 1000 in rural areas of Madhya Pradesh. A cause of death has been identified through data analysis and their frequencies and Disease Specific Death rate has been calculated. The deaths which are showing positive pattern need to be explore further in order to decrease their occurrence. These leaves the research area for the researchers to explore further how to reduce deaths which are showing increase pattern in the subsequent years. This research will help us to bring a road map which will reduce NMR in the district of MP.

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