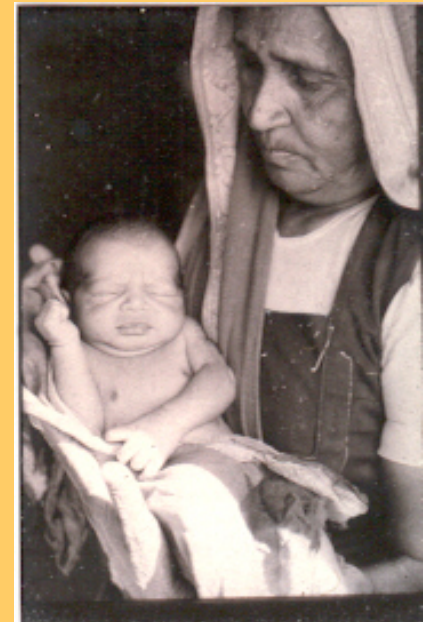


# **Birth Asphyxia**

## **Causes in high and low income countries**

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# **What is Birth Asphyxia ?**

**Birth asphyxia means that a fetus suffers from lack of oxygen during the birth process. If too severe this may affect the brain as well as other organs and in severe cases may lead to brain injury or even death**

# **Birth asphyxia in a global perspective**

**The four most common causes of neonatal death in the world:**

- Infections**
- Birth Asphyxia**
- Low birth weight**
- Congenital anomalies**

**In low income countries:**

**1/3 of the neonatal deaths**

**-> 1 mill per year - are caused by birth asphyxia**

## Estimates of global birth asphyxia

1.2 mill  
NeoDeaths  
WHO, 2001

1mill Babies with  
Asphyxia-related  
Neurological disability

2-6/1000 newborns  
Brain symptoms in high income countries  
(Neonatal encephalopathy)

4-9 mill babies with "birth asphyxia"  
WHO, 1998

?? 1.6 mill  
Intrapartum  
Stillbirths  
(WHO 2000)

# Causes of Birth Asphyxia

The major causes of birth asphyxia are due to complications during birth leading to less oxygen delivery to the fetus.

**Some causes:**

- *Cord compression*
- *Acute bleeding caused for instance by an acute abruption of the placenta.*
- *Mother is anemic or hypotensive (low blood pressure)*
- *Many (most?) cases are of unknown cause*

# Variation in Asphyxia Rate

There are large variations in occurrence of birth asphyxia throughout the world and by far most of them occur in low income countries. This is due to several factors and it is clear that the risk is increased if pregnant women are:

- 1) *Poorly nourished*
- 2) *Have infection or anemia,*
- 3) *Do not have regular antenatal check ups, and*
- 4) *Do not deliver with trained health personnel present with necessary equipment at hand.*

# The global burden of disease of birth asphyxia

## Regional differences

<b>Regions</b>	<b>America A Europa A</b>	<b>America B Europa B,C</b>	<b>America D EMRO B</b>	<b>Africa D Africa E</b>
<b>NMR/1000</b> Neonatal mortality rate	<b>&lt; 10</b>	<b>10-19</b>	<b>20-39</b>	<b>&gt;40</b>
<b>% of global neonatal deaths</b>	<b>&lt; 1</b>	<b>4</b>	<b>18</b>	<b>76</b>

Source: WHO

# Obstacles to Solve

- 1) Lack of epidemiological data from all countries and regions. Even within countries large variations in rate occur which may be difficult to register.**
- 2) Lack of a uniform definition of birth asphyxia which can be applied in areas without sophisticated diagnostic tools. Such a definition is needed in order to compare similar conditions of different studies and to make good epidemiological data.**
- 3) There are different risk factors between high and low income countries. More studies in low income countries are needed in order to specifically identify these risk factors.**

# **Birth asphyxia- lack of definition**

**The major difficulty in collecting accurate epidemiological data on birth asphyxia is the lack of common definition of the condition**

**WHO: Working Group on Birth Asphyxia, 2004**

# Definition of Birth Asphyxia

- pH < 7.0 in umbilical artery
- Apgar < 4 for > 5 min, BD  $\geq$ 12 mmol/L
- Neonatal encephalopathy
- Multiorgan system dysfunction

American College of Obstetrician and Gynecologists 1995,2004

- BD  $\geq$ 12 mmol/L in umbilical cord blood
- Apgar 5 < 4
- NE

WHO: Working Group on Birth Asphyxia 2004

# **Birth asphyxia in a global perspective**

**Causes differs between industrialised and non-industrialised countries**

**Causes of birth asphyxia in industrialised countries:**

- **Antepartal factors 50-70%**
- **Intrapartal factors 20-40%**
- **Postpartal factors 10%**

***The concept that difficult birth is the main factor of birth asphyxia and subsequent sequelae has in industrialised countries been challenged the recent years.***

***However, in developing countries intrapartum events still are the most important cause of birth asphyxia***

**Based on Badawi et al BMJ 1998 and Ellis et al BMJ 2000**

# Comparison of Nepal and Australia

- **The Katmandu study was a prospective Cohort study from 1994-98 with follow-up to 1 year (Ellis et al, BMJ 2000)**
- **The Perth Study was a population based, unmatched case-control study from 1993-95 (Badawi et al BMJ 1998)**

# Comparison of Nepal and Australia

Finding	Kathmandu, Nepal *	Perth, Australia **
Neonatal Encephalopathy	<b>6.1/1000</b>	<b>3.8/1000</b>
Case fatality rate	<b>30%</b>	<b>10%</b>
Intrapartum risk factors	<b>60%</b>	<b>30%</b>
Prevalence of fresh still births (> 2 kg)	<b>10/1000</b>	<b>1/1000</b>

\* Ellis et al, BMJ 2000, \*\* Badawi et al BMJ 1998

# Aims -1

- **Collection of data on birth asphyxia**
- **Information on mode of delivery**
- **Compare incidence of birth asphyxia**
- **Develop a research module**
- **Create a network collecting and exchanging data**

# Prevention

- 1) Identifying risk cases and eliminate risk factors (treating maternal anemia, infections, malnutrition, etc)**
- 2) Refer risk patients to specialized birth centers.**
- 3) Adequate antenatal control of pregnant women.**
- 4) Train health personnel in assessing and resuscitating newborn babies.**
- 5) Develop transport systems for risk pregnant women and sick newborn babies.**

# Aims- 2

## Prevention -Therapy

- Training health personell
- Antenatal controls
- Referral and transport system
- Deliver with trained health personell and necessary equipment
- Optimalising resuscitation

*avoid oxygen supplementation if not needed*

*avoid low blood pressure*

*temperature control: Heat and fluid loss*

*blood sugar control*

# Resuscitation

- **5-8 million newborn infants need resuscitation each year**
- **Optimal resuscitation methods may substantially reduce mortality**

# **Optimalising newborn resuscitation**

## **By avoiding pure oxygen:**

- Short term recovery is improved**
- Neonatal mortality is reduced 30 - 40%**
- Tens of thousands of new born lives may be saved annually**

# **Birth Asphyxia- the global burden**

## **Conclusion**

- **Birth asphyxia is the second/third most important global cause of newborn death**
- **Large incidence differences between industrialised and non- industrialised countries**
- **Large incidence differences due to socio-economic factors are present also in developing countries**
- **Different panorama and risk factors between industrialised and non-industrialised countries**
- **Optimalised antenatal, intrapartal, and postnatal care will save million of newborn lives**

**Small changes may lead to formidable results!**