Care of the newborn—special priority in basic Health Services in Nepal.

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Introduction

Care of the Newborn starts before conception. The optimal development of an infant after birth depends to a great extent upon preconceptional factors, and conditions arising during pregnancy, labour and the neonatal period.

Biological, socioeconomic and nutritional influences that arise prior to pregnancy continue throughout pregnancy and labour and interact with obstetric conditions that may complicate the outcome.

After birth, the need for the newborn infant to adapt to an extrauterine environment introduces new factors which must be favourable to the infant to develop normally and optimally.

In a developing country like ours about 40-50 % of children die before they reach the age of 5 years, 200 out of every 1000 newborn die before they have completed one year, neonatal care should assume a special priority in our endeavour to reduce these mortality figures.

Ignorance, poverty, illiteracy, low socioeconomic status, lack of awareness regarding health, social taboos and practices may lead to the nonavailing of the available suboptimal health facilities. All these factors lead to continuing neonatal morbidity and mortality particularly in neonates, infants, children and pregnant mothers.

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Hospital and community based studies are needed for identification of the magnitude and types of problems faced by the newborn babies in our country.

Perinatal mortality is taken as an index of maternity care in a community. In the developing countries which contain 72% of the world's population, perinatal risks are several times higher than in the developed countries.

Hospital Situation Analysis

With the idea of identifying neonatal problems, a study of four thousand twenty-four (4,024) births that occurred in Maternity Hospital Kathmandu during the year 2031 was carried out. For the purpose of comparison in this paper this hospital represents the optimal standard of available perinatal care in our country.

This hospital is equipped with obstetricians, caesarian section facilities, trained nurses and midwives, anaesthetic facilities, endotracheal intubation facilities for resuscitation of newborn, and paediatricians are called out to look after babies who have problems.

There is regular antenatal clinic, postnatal clinics, underfive clinics, family planning and other outpatient clinics.

There is a small 8 bedded baby unit which is supposed to function as special care baby unit, but this is extremely deficient in nursing staff. This is manned by one qualified staff nurse and nurses aids.

Apart from these, this hospital serves as a teaching institution for the nurses and midwives for practical training.

As compared to western standard or to the standard of many teaching hospitals in India, this hospital has not been able to avail the sophisticated diagnostic facilities like amniocentesis for foetal maturity estimation and genetic study, oestriol estimation, and antibody screening. During labour amnioscopy, it is not done for foetal monitoring and foetal blood pH estimation for the diagnosis of foetal anoxia so that earliest steps to prevent foetal anoxia cannot be decided during management of labour.

The baby unit is also not having enough beds, [no trained nurse particularly in the field of neonatal care and no ventilators and other sophisticated equipments.

Findings of study of these births are presented in the following charts :—

CAUSES OF EARLY NEONATAL DEATH DURING 2031, AT MATERNITY HOSPITAL

PREMATURITY	—	58%
ASPHYXIA	—	18%
CONGENITAL ABNORMALITY	—	13%
INTRACRANIAL HAEMORRHAGE	—	1%
UNEXPLAINED CAUSES	—	4%
INFECTION	—	6%

Median Birth Weight of babies who died due to prematurity is 2.7 lbs i.e. around 1100 gm.

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ANALYSIS 4020 BIRTHS THAT OCCURED IN MATERNITY HOSPITAL DURING THE YEAR 2031

Perinatal Mortality / 1000 live births	— 70.3 / 1000
Percentage of infants weighing less than 2500 gm	— 29%
Early neonatal death / 1000 live birth	— 30/1000
Late foetal death / 1000 live birth	— 40/1000

VARIOUS MORTALITY RATES AND BIRTH RATES IN FEW COUNTRIES

COUNTRY	PERINATAL MORTALITY / 1000 LIVE BIRTH			Infant Mortality Rate	Death Rate	Birth Rate
	Total	Late foetal	Neonatal			
Sweden	18.4	9.1	9.3	13	9.3	17.1
U. K.	26.1	14.5	10.6	18.3	11.9	16.9
Srilanka	36.4	14.0	22.4	50.3	7.9	32.0
Singapore	23.5	10.6	12.8	23.4	5.5	23.8
Mauritius	67.6	45.5	22.2	69.1	9.1	31.0
Nepal*	70.3	40	30.0	20	22.0	42.0

* Perinatal mortality for Nepal applies only to births in Maternity Hospital. It does not represent whole country wide situation.

PERCENTAGE WEIGHING LESS THAN 2500 gm.

COUNTRIES	% of INFANTS WEIGHING 2500 gm. or LESS
IRELAND	5.9
POLAND	6.8
ETHIOPIA	16.5
MALAYA	16.8
SUDAN	17.3
SYRIA	19.9
INDIA	28.0
NEPAL (MATERNITY HOSPITAL)	29.0

As we can see from these two diagrams, the problems faced by developed country is quite different from developing countries.

Low birth weight tops our list. This may be due to maternal under-nutrition and lack of antenatal care. The other significant difference between the two is scanty information in our series which may be due to lack of sophisticated investigations, diagnostic and postmortem facilities and research to make accurate diagnosis of Uncommon Causes.

PATTERN OF INTRAUTERINE DEATHS IN DECREASING FREQUENCY

MACERATED BABIES

(1) INTRAPARTUM ASPHYXIA

- Prolonged second stage of labour
- Cord Prolapse and Hand prolapse
- A. P. H.

(2) PLACENTAL INSUFFICIENCY.

(3) CONGENITAL MALFORMATION.

Median weight of these babies who died in utero due to various causes was more than

1. 2.5 k. g.

2. Most frequent congenital abnormality was C. N. S. e. g. —

- anencephaly
- encephalocoele
- meningomyelocele

TREND IN MORTALITY PATTERN

3031—2032

Perinatal mortality/1000 live birth	70	65
Percentage of Infants weighing less than 2500 gm. —	29	26
Early N. N. D./1000 live birth —	30	26
Late fetal death/1000 live birth —	40	40
Total Births —	4024	4587

PATTERN OF EARLY NEONATAL MORTALITY.

Meternity Hospital
Kathmandu.

I
DEVELOPING COUNTRY.

1. Low Birth Weight.
2. Asphyxia.
3. Intracranial Haemorrhage.
4. Unexplained causes.
5. Infection.
6. Congenital Abnormality.

British Perinatal
Mortality Survey.

II
DEVELOPED COUNTRY.

1. Congenital Malformation.
2. Isoimmunization.
3. Intrapartum asphyxia.
4. Intrapartum anoxia plus cerebral birth trauma.
5. Cerebral trauma.
6. Pulmonary infection.
7. Antepartum anoxia.
8. Massive pulmonary haemorrhage.
9. Intraventricular Haemorrhage.
10. Early neonatal - no Histological lesion.
11. Unexplained.

Though these findings are from a relatively well equipped hospital in Kathmandu they are far below the average situation of many countries. Many other hospitals are not equipped to deal with complicated labours. These mortality situations and figures will be more in less well equipped hospitals.

It was mentioned earlier that lack of awareness regarding health in rural population and the availability of very meagre facilities are also one of the contributory factors for high mortality and morbidity.

TOTAL HOSPITAL BIRTHS THROUGHOUT NEPAL DURING 2032

HOSPITALS	DELIVERIES PER YEAR
Ilam	9
Bhadrapur	24
Dhankuta	20
Inerwa	20
Kosi Zonal Hospital	863
Rangaly	58
Dharan	284
Bhojpur	2
Sagarmatha Zonal Hospital	99
Kunde	5
Jiri Hospital	7
Janakpur Zonal	61
Jaleswar	122
Chautara	5
Bir Hospital	1838
Maternity Hospital	4537
Bhaktapur	271
Shanta Bhawan	682
Bharatpur	528
Hetauda	160
Kalaya	149

Gaur	33
Gandaki Zonal	382
Bandipur	10
Gorkha	10
Shining Hospital	382
Lumbini Zonal	252
Tamghas	6
Taulihawa	33
Bhairawa	293
Bheri Zonal	429
Banglug	47
Bardia	41
Total —	11772

PERCENTAGE OF BIRTHS CALCULATED TAKING CRUDE BIRTHS RATE OF 45/1000

Total Births in Hospital	—	11772
Estimated total Births/year	—	540,000
Percentage of Hospital delivery	—	2%

The above tables show clearly the number of hospital births in the year 2032 in various hospitals throughout the kingdom.. This figure is very low. Calculating lay taking crude Birth rate of 45/1000. This figure comes out to be about 2% i. e. Hospital delivery— 2%

Home delivery — 98%

This shows the tendency of the community, who either do not want to go to hospital for delivery or cannot have access to the hospital.

If we take into account of not very effecient recording and reporting system existing in our situations and if we take the CBR of 40-42/1000 the hospital delivery percentage might be slightly higher. If we make due allowances to these facts, still our figure will not be very optimistic.

If we imagine the mortality figures in the community where they would never have had a single antenatal cheak up, non trained assistance during delivery, no resuscitation what-

sooner, these mortality figures will be many times amplified. There will be many more perinatal complications with serious long term and short term sequelae.

MAJOR PERINATAL COMPLICATIONS AND SEQUALAE

1. Low birth weight.
2. Asphyxia.
3. Infection — specially tetanus.
4. Congenital malformation.

Low Birth weight Babies

Most of the births are due to intrauterine malnutrition. They are very prone to asphyxia, hypoglycemia, intracranial haemorrhage, jaundice, infection and cold injury. All of these factors if severe cause death. If they are not severe enough or if they are not detected early and treated, they can cause permanent brain damage and the result is a mentally and physically retarded child who grows to adulthood to become a burden to the family, society and nation.

Even if any of these factors are not present, prematurity itself can lead to handicap later on. The fact that neurological development proceeds at its most rapid rate during perinatal period, has led workers to suspect an association between impaired mental development and low birth weight babies due to foetal malnutrition.

Asphyxia :— Anoxia whether it is antepartum or due to prolonged labour or postpartum due to difficulty in establishing reparation can always cause brain damage which is not repairable. Anoxia due to prolonged labour constitutes the major cause of intrauterine death.

Infection

It is one of the major causes of morbidity. Most of them are treatable if they are diagnosed. That is the reason they constitute a small proportion of deaths in hospital based studies.

However, Tetanus Neonatorum is very common in non-hospital deliveries, specially in Terai region, which is almost fatal.

Neonatal meningitis is a commonly missed entity. If this is inadequately treated it can cause brain damage and mental retardation.

Community Situation Analysis

About 96 % of our population live in rural area. Many of these people have no access

essential health services specially maternity services.

The major characteristics of rural population are :—

1. Geographical isolation
2. Lack of communication
3. Unfavorable environment with exposure to communicable disease
4. Malnutrition
5. Inadequate maternity and general health facilities
6. Lack of sanitation
7. Poor educational opportunity.

The difficulty of this situation can easily be appreciated. As in other developing countries, we are also deficient in trained manpower and health institutions.

Most of the trained nurses and doctors are hospital trained and hospital oriented. The community oriented personnel in health cadre, specially in the field of maternity and child care, are public health nurses and auxillary nurse-midwives. Their ratio to the population is very low. Unfortunately, it happens in most of the developing countries that the newborn and the mother in hospital represent the smallest proportion of the mother and newborn needing care, they receive, a large proportion of medical and nursing care and service. Those in the health centres receive second highest proportion of available MCH care. Most of the health posts in remote villages and rural areas cannot have access to MCH care facilities. At these local levels there are vast areas not covered by any maternity services. Birth attendance, neighbours, 'dhamis', 'jhankris' are frequently the only providers of health care in those areas.

Health institutions and population of Nepal as well as the number of Health Manpower are shown in the following tables :

Health Institution and Population in Nepal.

Total population	— 11,555,983
Zones	— 14
Districts	— 75
Total number of Hospitals	— 51 (In 30 districts only)
Total hospital beds	— 2238
Health Centres	— 31
Health Posts	— 403
MCH Clinics	— 50
Ayurvedic dispensaries	— 82
Others	— 9

Health manpower in Nepal

Doctors	—	300
Dentists	—	8
Public Health Nurses	—	15
Trained Nurses	—	400
Auxillary Nurse Midwives	—	372
Health Assistants	—	86
Health Aids	—	400
Kaviraj	—	96
Vaidyas	—	55

The diagrams below represents situation in many developing countries. Minimum proportion of the community gets maximum benefit. Those needing maximum care and support get minimum services. It is apparant that the care pyramid is inverted to the need pyramid.

Fig- NEED PYRAMID / CARE

How to solve this situation has always remained a dilemma. Different approaches to community services are implemented in many countries. Maternal and child health services are mainly organized for mother and child care. Family planning and its important role in

maintaining family health by spacing of children and cutting down the number of unwanted births was also recognised.

With the objective of bringing the equilibrium between population growth in the socio-economic status of the country, as well as to provide care for children under five and pregnant mothers MCH & FP services started in Nepal in 1966.

The activities of these clinics were to—

Give immunisation to children under five

Give nutrition education

Antenatal care

Provide domiciliary services

To give postnatal care

To provide family planning services

With the idea of rapid population growth and to give more importance to family planning, the name of the project was changed from MCH & FP Project to FP & MCH Project in 1969. Since then this project has been doing the immunisation work in hospitals and MCH Clinics, providing antenatal and postnatal care through its about two hundred fifty clinics. As family planning was viewed as more important component of the project, care during delivery and antenatal care has not got the same amount of publicity and practice. Though this is a sad state of affairs, viewing through the angle of neonates, they might have their own reason for it.

Apart from MCH & FP Projects there are other vertical programmes as Malaria Eradication, T. B., Leprosy Control, Smallpox Eradication Project and Public Health Laboratory Services. They are also contributing a large share to provide basic health services in our country. These special health programmes have been on for some years. In all of these programmes, due to lack of trained manpower, middle level assistants and auxiliary health workers have been trained and utilised to work in field situations.

For co-ordinating these services and for their full utilization the concept of Integration of these services came into existence in most of the developing countries.

In Nepal also, in order to achieve the aim of the Fifth Five Year Plan in the current fiscal year to offer minimum health services to maximum people, integrated health services have been introduced in six districts using limited resources and facilities available. The dialogue of Fifth Plan has been to gradually introduce integrated health service. The success of this work will not only be the maximum use of limited resources and facilities, but to offer

good health services through a singular health unit as opposed to various projects that are in existence at present.

In these integrated health post ANMs are responsible for providing all antenatal care, delivery service, postnatal care, infant and child care. MCH Clinics, domicilliary services, refferrals, antenatal care at their home searching all newborns and providing neonatal care, home visiting, keeping close contacts with TBA, teaching and encouraging them to follow safe methods of delivery, antenatal, postnatal and infant care and family planning activities. She has other works to do as well, but they are relevant to the care of the newborn.

Kaski is one of the the two districts where integrated health services was first introduced as a pilot project.

In each integrated health post, there are thirteen to fifteen paramedical workers of which two are ANMs. They visit nearby villages from the health post four days a week. Their jobs are as outlined above.

There are six health posts where these services have been introduced. Forty-seven panchayats out of sixty-seven of Kaski District are benifitted from integrated health services. Integrated health service programme is yet to be expanded in four health posts and twenty panchayats of the district.

Glimpes of Kaski District

Population of Kaski District	— 164, 562
Number of Health Posts	— 10
Number of Para Medicals working in Health Posts	— 15
ANMs	— 2
Number of births attended by trained personnel	— Hospital-327 Home Deliveries- by ANMs-5
Number of expected births for 164, 562 population calculated taking Crude Birth Rate of 45/1000 = 7380	
Out of 7380, 55 were attended by ANMs in the field.	

In integrated district, started as pilot project, 7000 births occurred unattended. Only two thirds of the Panchayats are covered by Integrated Health Services at present. That also leave

us with four to five thousand unattended births even in fully integrated functioning situation.

This leaves us with a big question mark (?) Are we going to be happy with four to five thousand new born babies unattended alive or dead, in one district, proportionately in others. The mortality and morbidity situations than in full-fledged hospital will be much higher in community with its long term and short term sequelae on infant. We have to think seriously what level of perinatal care are we aiming at for the country and when are we likely to achieve it. Is the existing situation satisfactory from any standard ?

We have seen through facts and figures, the optimum in Hospital situation as well as optimum in community situation as regards newborn. These situations are far from satisfactory. Major steps must be taken and special priority must be assigned to the care of the newborn babies.

- (1) to prevent long term sequelae.
- (2) to prevent unimaginable biological loss.
- (3) to prevent maternal mortality and subsequent disruption of family.

Recommendation

Having gone through the hospital to the community situation, we have seen that the situations are far from satisfactory. Every principle seems ideal but when programmes are implemented we do not get the desired effect. So following recommendations are made :—

- (1) Epidemiological and biostatistical research must be done to ascertain areas where there is need for improvement in maternal and child health services and to assist in planning for optimum use of available resources.
- (2) Where the available resources are not utilized by the community research must be done and cause must be found out. Any bad taboos and beliefs must be eradicated.
- (3) Periodic evaluation by the community and by internal and external experts should be done. Community evaluation should not be personal, it should be for the institution as a whole to avoid prejudices.
- (4) Health Education should be given much more importance. Mother-in-laws and fathers along with mothers must be included in community health education programme. Young mother has very little say in our cultural structure as regards the approach of care of newborn. Mother-in-laws must be educated about the importance of nutrition and rest of the pregnant daughter-in-laws. They should be made aware of the fact that

if the babies of low birth weight occur due to maternal malnutrition, they are very likely either to die or to become mentally retarded. Then only our desired effect can be expected.

- (5) Mother's nutrition is one of the major factors causing prematurity. Nutrition as a field itself should be recognized. It must be one of the faculties in health services. Various surveys show that malnutrition is a major public health problem. As many as 25% of children are malnourished. Principal requirements of healthy growth and development is good nutrition. Malnourished children are even prone to infection with the existing practice of withholding food during illness, taxes upon the already existing low reserve of nutrition and makes them worse. This cycle is a vicious one. The child who lives to adolescence gets married. She has already negative nutrition balance. Pregnancy occurs. Maternal malnutrition and lack of proper antenatal care causes low birth weight babies who survive with difficulty. These babies who had low start before they were born will most likely lag behind in mental and physical development.
- (6) T. B. A. and other members of the community should be welcomed as an assistant to midwives and they should be trained aseptic techniques. But in no event they should be taken as the substitute to the qualified personnel.
- (7) Institute of medicine must produce :
 - (i) More Health Personnel of all grades and special importance to community care of newborn should be given in Midwifery curriculum.
 - (ii) Regular refresher courses of various grades in neonatology should be organized by the Institute. The contents of these courses should vary from basic courses for ANMs in health posts to the paediatricians working with sophisticated facilities. In all of these courses maximum participations must be encouraged.
 - (iii) Those who have taken training should be evaluated at the field of their work.
- (8) Neonatal Intensive Care Unit should be established at least one in each region.
- (9) At the peripheral level i. e. at health centres there should be few midwifery beds. These should be able to deal with normal labours and normal newborn. Any abnormal labours and newborns needing care should be referred to better equipped centre.

At health post level in I. H. S. the number of midwives must be increased. Their number seems small compared to the amount of work they have to do, and the existing difficulty for domiciliary services are also to be considered.

- (10) To facilitate the transport of referral patient – from difficult areas H. M. G. Health Services must have some agreement and collaboration with R. N. A. C., Roads Department, Various transport companies, Agencies, who have helicopter services, Army Health Services and the Police. Where nothing exists funds must be allotted in health posts to use whatever modes of transport are available for the transfer of mothers with complicated labours.
- (11) Laboratory services must be provided for doing basic investigations like Hb of Pregnant mothers and routine urine and stool examination even at the health post level. At the district level, clinical laboratory must be there. In each region full fledged laboratory services must be provided.
- (12) Legislation should be provided for obligatory birth and death registrations even in remote village Panchayat Then only our datas will be reliable.

Conclusion

I hope this paper will provide base line glimpse as regards the extent of neonatal problems in our country.

H. M. G. will consider these recommendation and facts while planning for health services.

Neonatal Care must have a special priority in Basic Health Services. if we aim at reducing Infant Mortality and producing healthy manpower in future. Healthy manpower can only contribute to full strength in Socio-economic Development of the country.

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