ISSN 2226-7964

PRIME MEDICAL JOURNAL

Vol- 2 No - 2 July 2012

An Official Journal of Prime Medical College, Rangpur
e-mail : pmcrang@gmail.com, web: www.pmcrang.bd.org

ISSN 2226-7964

PRIME MEDICAL JOURNAL

Vol-2 No-2 July 2012

An Official Journal of Prime Medical College, Rangpur

ISSN 2226-7964

Printed at :
United Printers
Dhap, Jail Road, Ranpur
Phone : 0521-65640

Request for re-print :
Executive Editor
Dr. Latifa Afrin Dinaher
Prime Medical Journal
Prime Medical College
Pirjabad, Rangpur.
e-mail : pmcrang@gmail.com

Contents

Stratospheric Ozone Vs Tropospheric Ozone - Their Impacts on Health

Sarker MAA[1], Moniruddin ABM[2]

We are hardly aware of living in the ever exposed continuous radiation from a huge nuclear fusion bomb that probably exploded just at the beginning of nature, several hundred billions of years ago in our solar system. The harmful radiations from this ever-burning exploded nuclear bomb-like reactor (i.e., the sun) usualy fail to penetrate all the barriers & the Earth's atmosphere to reach the Earth's surface, so that the origination, the existence & the evolution of life were possible. However still some harmful radiations reach the Earth's surface owing to human acts, causing substantial morbidity & mortality of human beings that is intimately related to ever-feared global warming & global climate crisis.

The natural stratospheric ozone is at about 15 to 50 kilometer above the Earth's surface and plays the key-role in protecting life on the Earth from the harmful non-ionizing ultraviolet rays of the sun. The major environmental problems we are facing now is its decreasing level in the stratosphere and the increasing level in the troposphere due to human actions. Ozone molecules are constantly created by chemical reactions when the ultraviolet radiation from the sunlight strikes the stratosphere. As a rule, the average amount of ozone in the stratosphere should remain fairly constant when the creative and destructive forces occurs naturally[1]. But this natural ozone has gradually been depleted in the stratoshphere and increased in the troposphere by varied anthropogenic activities that release ozone-destroying chemicals into the atmosphere. These destructive chemicals released into the atmosphere by industrial activities include chlorocrbon compounds (CCl_4 and CH_3Cl_3) Chlorofluorocarbon Compounds or CFCs ($CFCl_3$ and CF_2Cl_2) and other halogen compounds (CF_3Br and CF_2ClBr)[2]. Most of these chemical substances remain unchanged long enough to flow up to the stratosphere because they are chemically stable compounds containing halogen atoms, i.e. chlorine or bromine[3].

CFCs are used for a wide variety of industrial purposes, e.g. in refrigeration systems, air conditioners, aerosols, solvents and in the production of some types of packaging, because

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they are relatively inexpensive, highly effective, stable in the atmosphere and non-toxic to humans. But once CFCs reach the stratosphere, the solar ultraviolet radiation strikes them and release chlorine (Cl) atoms, which act as a catalyst. The chlorine atoms repeatedly interact with and break ozone molecules forming the singlet oxygen molecule and one chlorine monoxide molecule (ClO). Then, the chlorine monoxide molecule can combine with an oxygen atom to form an oxygen molecule and release the chlorine to begin the process all over again. Through this cycle, one chlorine atom can destroy up to 100,000 ozone molecules and deplete ozone much faster than nature can replace it[4]. Normally ozone effectively absorbs the Sun's harmful ultraviolet radiations (i.e. UV-C and UV-B). The protective role of the ozone layer is so vital that life on land probably would not have evolved, could not exist today without it. As the stratospheric ozone layer is depleted, higher ultraviolet radiations reach the Earth's surface and harms human health, freshwater and marine ecosystems, reduces crop yields, and affects forests[5]. The impacts of the increased UV levels include the increasing cases of skin cancers, cataracts, and impaired immune systems; decreasing growth and yields of some crops, such as corn, rice, cotton, beans, wheat, canola, barley, oats and soybeans; decreasing amount of single-celled plants, known as phytoplankton in the ocean, which could ultimately affect fish populations; reducing the construction materials used outdoor.[6]

The ground-level tropospheric ozone (located at 0-15 km above the Earth) has two major sources, i.e. intrusion from the stratosphere and production from photochemical reactions. The tropospheric ozone plays several key roles in the atmosphere but it is a dangerous greenhouse gas (GHG) because it absorbs outgoing long wave radiation contributing to the global warming that lead to global climate crisis[7]. Tropospheric ozone is formed by the interaction of sunlight, particularly ultraviolet light, with volatile organic compounds (VOCs) and nitrogen oxides (NOx), which are emitted by automobiles, gasoline vapors, fossil fuel power plants, refineries, and certain other industries. VOCs are organic compounds that contain carbon and hydrogen and can evaporate easily, e.g. octane, butane and sugars, which are mostly emitted by motor vehicles, industry, commerce, dry cleaners, and paints. Nitrogen oxides like nitric oxide (NO) and nitrogen dioxide (NO_2) are released into the atmosphere when fossil fuels like oil, coal and natural gas are burned. It is mostly emitted by motor vehicles, power plants, industrial facilities, biomass burning and lightning[8]. When released into the atmosphere, both VOCs and NOx can produce ozone and other harmful pollutants that lead to smog, which is sometimes termed as photochemical smog or photochemical air pollution.

The increased ground-level ozone causes harmful impacts on humans, plants and materials too. It can cause human health problems, e.g. eye irritation, breathing problems, lung damage, chest pain, headache, nausea, asthma and increased cardio-respiratory distresses & even deaths. This ozone causes harm to plants, trees, and crops by preventing the plant from being able to use the sun's energy by reacting with the molecular links between the carbon atoms (called the carbon-carbon bonds) in the plant's photosynthetic mechanism. Furthermore, this powerful oxidant ozone also affects materials by deteriorating and reducing the strength of products made of rubber and certain fabrics. Moreover, the dangerous green house effect of this ground-level tropospheric ozone is causing global warming & melting of ice in poles & over mountains to raise the sea level inviting natural calamities like cyclones & floods, submerging vast area of land & reducing the available land for human habitation & agriculture.[9]

As the problems of stratospheric ozone depletion and tropospheric ozone production are mostly due to human acts that release man-made chemicals containing millions of tons of ozone depleting substances. The use of CFCs have been banned in many countries and replaced by HCFCs, which do deplete the ozone layer but not as quickly as CFCs. A series of international agreements to reduce the pace of ozone depletion in stratosphere and ozone production in troposphere have been held. In 1985 Vienna Convention on the Protection of the Ozone Layer and the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, which are arranged to freeze and decrease the production CFC to certain levels. This treaty entered into force on January 1, 1989. It is believed that if the international agreement is adhered to, the ozone layer is expected to recover by 2050. But the scientific consensus of researchers is that it should immediately stopped producing ozone-depleting chemicals. Even with immediate action, models indicate that it will take 50-60 years for the ozone layer to return to 1975 levels and another 100-200 years for full recovery to pre-1950-levels[10].

Finally, the problem of both stratospheric and tropospheric ozone is not easy to solve. Its "banning" will surely be more difficult. Global awareness & prompt action are urgently sought by conscious scientists & humanitarian stake-holders.

References:

1. Ziemke JRS, Chandra LD, Oman LD, Bhartia PK. A new ENSO index derived from satellite measurements of column ozone. Atmos. Chem. Phys 2010; 10: 3711-3721.
2. Oman LD, Plummer DA, Waugh DW *et al.* Multi-model assessment of the factors driving stratospheric ozone evolution over the 21st century. J. Geophys. Res. 2010: 115, D24306, doi:10.1029/ 2010JD014362.

3. Ziemke, JRS, Chandra BN, Duncan MR, Schoeberl O, Torres M, Damon R, and Bhartia PK. Recent biomass burning in the tropics and related changes in tropospheric ozone. Geophys. Res. Lett. 2009; 36, L15819, doi:10.1029/2009GL039303.

4. Fishman JKW,. Bowman JP, Burrows *et al.* Remote sensing of chemically reactive tropospheric trace gases from space. Bull. Amer. Meteorol. Soc. June 2008; 805-821.

5. Martin RV, Sauvage B, Folkins I, Sioris CE, Boone C, Bernath P and Ziemke J R. Space-based constraints on the production of nitric oxide by lightning. J. Geophys. Res. 2007; 112 (D9), D09309.

6. Ziemke JR, Chandra S, and Bhartia PK. A 25-year data record of atmospheric ozone in the Pacific from TOMS Cloud Slicing: Implications for ozone trends in the stratosphere and troposphere. J. Geophys. Res. 2005; 110, D15105, doi:10.1029/2004JD005687.

7. Chandra S, Ziemke JR, and Martin RV, Tropospheric ozone at tropical and middle latitudes derived from TOMS/MLS residual: Comparison with a global model. J. Geophys. Res. 2003; 108(D9), 4291, doi: 10.1029/2002JD002912.

8. Chandra S, Ziemke JR, Bhartia PK, and Martin RV. Tropical tropospheric ozone: Implications for dynamics and biomass burning. J. Geophys. Res. 2002; 107(D14), doi:10.1029/2001JD00044.

9. Ziemke JR, Chandra S. Seasonal and interannual variabilities in tropical tropospheric ozone. J. Geophys. Res. 1999; 104, 21,425-21,442.

10. Ziemke JR, and Chandra S. On tropospheric ozone and the tropical wave 1 in total ozone. In: Atmospheric ozone. Vol. 1, edited by R. D. Bojkov and G. Visconti 1998; pp. 447-450.

PATTERN, RISK FACTORS AND COMPLICATIONS OF CEREBRAL PALSY

Wahed M A

Abstract:

Background: Cerebral Palsy (CP) is a term that describes a group of disorders of muscle tone & posture. This causes movement disorder due to damage or faulty development in a part of the developing brain which usually occurs around birth process. The prevalence of CP is increasing day by day as many of the dying newborn babies survive due to improved or intensive care. It is an important cause of disability in under-five children with loss of working hours, mental and physical exertion as well as anxiety of the parents.

Methodology: A retrospective and cross-sectional study was conducted on 480 children attending at Child Neurology Center of Prime Medical College Hospital from 1.5.2009 to 30.06.2012. All the children were clinically diagnosed as Cerebral Palsy by using an Interview Schedule. The samples were selected by non-random sampling from the list of register book. Relevant investigations were also done.

Result: The male and female ratio was 3:2 and average age was 3±1.5 years. Maximum number (88.9%) of cases were suffering from spastic type of Cerebral Palsy followed by ataxic type (3.4%). Among spastics, quadriplegia was present in 76.5% of cases. Perinatal asphyxia was a risk factor in 85.0% of cases and who had perinatal asphyxia 78.24% cases were delivered in home with untrained personnel with some practical experience and 78% were primigravidae. The other risk factors were low birth weight, severe jaundice, meningitis and toxoplasmosis. All the children was mentally retarded of various grades. Epilepsy was the frequent associated complication (35.0%) followed by drooling (25.0%).

Conclusion: Perinatal asphyxia is the most common risk factor in CP in our country and home delivery predisposes perinatal asphyxia. *(Prime med. j. V-2, No-2, P- 5-11)*

Key words: Perinatal asphyxia, cerebral palsy, home delivery.

Introduction:

Cerebral Palsy (CP) is a term that includes a heterogeneous group of neurological deficits. This causes movement disorder due to damage or faulty development in the brain which usually occurs around birth process[1]. The incidence of CP is 1-3/1000 live births and there has been no

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change in the prevalence over the last few decades rather it is increasing day by day as many of the dying newborn babies survive due to improved perinatal care[2]. It is an important cause of disability in under-five children in our country with loss of working hours, mental and physical exertion as well as anxiety of the parents[3,4].

There are many risk factors of CP. The important ones are perinatal asphyxia and LBW[2,5,6]. Both of these are very common in neonatal/perinatal period in our country. Because only about 18% deliveries are conducted by trained birth attendants and 88% deliveries take place in home by untrained birth attendants[7,8]. The maternal risk factors are not always detected during pregnancy. As a result, there is difficult labor and newborn babies suffer form perinatal asphyxia. Again almost 70% child bearing women suffer from various types of malnutrition and give birth to LBW babies[9]. In a tertiary care hospital, two-third of all admitted cases of neonates were suffering from these two conditions which is an indirect magnitude of the above scenario[10]. The other risk factors are intrauterine infection, severe jaundice etc which are modifiable and preventable by improving the socio-medical factors, maternal education, political commitment, target based well run programme and involvement of NGOs and civil societies.

There are various types of CP but the most common in spastic type. Here the muscles are rigid and stiff in one or more limbs and the child cannot walk, move, talk, eat or play like normal peers[11]. Then the parents seek medical advice. Paediatricians advise mothers for physiotherapy. After attending several times, many of the children do not improve according to their expectation of parents, then the parents loose confidence to the therapy and they discontinue attending the therapy center. Again many of the mothers discontinue therapy due to inability to bear the cost of the treatment as this is still a costly therapy[12]. This attitude of parents poses the child to become more crippled. Moreover, many of the patients suffering from CP have associated problems such as learning, hearing and visual problems as well as epilepsy[2,11]. In CP, most of the epilepsies are multidrug resistant and difficult to cure. Parents become economically exhausted by bearing the cost of the treatment.

One article was published in this journal by the author[13] on CP which contained several informations. This article is published as a continuation of that study protocol providing more information on CP in the children of Rangpur Division so that preventive measures become easier.

Materials and Methods:

Child Neurology Center attached to Child Outpatient Department of Prime Medical Collage Hospital provides preventive and curative services to children suffering from various types of neurological diseases. This center maintains a register of CP. From 1st May 2009 to 30th June 2012 a total of 480 children suffering from CP

attended this center. This descriptive and retrospective study was conducted on these children. An Interview Schedule was prepared from the very beginning to record the patient's information. This research instrument contained family history, socio-economic history and birth history. It also contained clinical examination, developmental assessment and investigations. A child having the criteria described by Aswal S *et al* was regarded as having CP[14]. A child not starting spontaneous respiration within 5 minutes of birth was regarded as having birth asphyxia[15,16]. Conventionally a baby having birth weight of < 2.5 kg was regarded as low birth weight and gestational age less than 37 completed weeks were regarded as preterm. As all the children came to the center for treatment and were agree to do all the investigations after counseling, a separate consent form was not fulfilled for ethical clearance but permission was taken from the authority of the hospital to conduct the study. Developmental assessment was done by modified Denver Developmental Screening Test. Computed Tomography scanning was done from the Radiology and Imaging Dept. of the Hospital. Routine and special investigations were done from the academic laboratories of the attached Medical College. Children having the complaints of visual defect were examined by an Ophthalmologist of the Hospital and hearing defects were examined from a nearby private audiological center. All the children are being followed up by personal contact with parents. All the children had mild to moderate mental retardation and this was not included in the analysis.

The results were computed by SPSS+PC and presented by simple Tables and descriptive statistical analysis was done in appropriate cases.

Results:

The male and female ratio was 3:2 and average age was 3±1.5 years. Maximum number (88.9%) of cases were suffering from spastic type of Cerebral Palsy followed by ataxic type (6.1%) (Table 1). Among spastics, quadriplegia was present in 76.5% of cases (Table 2). Perinatal asphyxia was a risk factor in 85.0% of cases (Table 3) and who had perinatal asphyxia 78.24% cases were delivered in home with untrained personnel with some practical experience (Table 4) and 78% were primigravidae. The other risk factors were low birth weight, severe jaundice, meningitis and toxoplasmosis. Cerebral plasy was present in all the districs of the administrative division (Table 5). All the children was mentally retarded of various grades. Epilepsy was the frequent associated complication (35.0%) followed by drooling (Table-6).

Table-1. Types of cerebral palsy (N=480)

Type	**No (%)**
Spastic	427 (88.9)
Ataxic	29 (6.1)
Athetoid	9 (2.0)
Unclasssified	15 (3.0)
Total	**480 (100.0)**

Table-2. Types of spastic palsy (N=427)

Type of spaticity	No (%)
Quadriplegia	327 (76.5)
Hemiplegia	66 (15.5)
Diplegia	11 (2.6)
Momoplegia	23 (5.4)
Total	**427 (100.0)**

Table-3. Risk factors of cerebral palsy (480)

Factors	No (%)
Perinatal asphyxia	408 (85.0)
LBW	48 (10.0)
Miningitis	14 (3.0)
Severe jaundice	5 (1.0)
Others	5 (1.0)
Total	**480 (100.0)**

Table-4. Place of deliveries (408)

Place	No (%)
Home	320 (78.24)
Upazilla and Dist Hospitals	47 (11.76)
District MCWC	34 (8.24)
Private clinics	7 (1.75)
Total	**408 (100.0)**

Table-5. District addresses of patients (480)

District	No (%)
Rangpur	100 (20.8)
Thakurgaon	100 (20.8)
Gaibandha	91 (18.8)
Dinajpur	70 (14.6)
Nilphamari	40 (8.3)
Kurigram	39 (8.0)
Lalmonirhat	30 (6.3)
Panchaghar	10 (2.1)
Total	**480 (100.0)**

Table-6. Associated complications (N=480)

Complications	No (%)
Epilepsy	168 (35.0.0)
Drooling	120 (25.0)
Deafness	24 (5.0)
Defective vision	24 (5.0)
Others	144 (30.0)
Total	**480 (100.0)**

Discussion:

This study shows that 88.9% of the attending children at Child Neurology Center had spastic type of CP. This is the commonest type of CP ever studied[16]. Hoimond describes that three-fourths of the cases of CP are spastic type which is consistent with the results of this study[17]. Several

law agencies have also described that the commonest sign of CP they face are those with the spasticity of voluntary muscles[18]. Another study in a series of patients has shown that 83.3% children in that series had spastic type of CP[19]. The study shows that 76.5% of the spastics had quadriplegia. This is the commonest type of spastic CP whcih has also been shown by Center for Disease Control and Prevention (CDC)[20].

Perinatal asphyxia was the commonest risk factor in this series of children. In our country, almost 82.0% % deliveries take place in home and only 18% deliveries are conducted by trained birth attendants. The risk factors are usually not detected. As a result, there is difficult labor and newborn babies suffer form perinatal asphyxia. The home management of asphyxia is also primitive[121]. As a result, there is persistent hypoxic state leading to insult of the brain. In the neonatal ward of this hospital in 2009 the highest percentage (37.88%) of neonates were admitted with perinatal asphyxia which is a reflection of the scinerio[22]. One study[21] in UK has shown that only 2.0% of the children with CP had perinatal asphyxia which is in contrast to our finding. This is probably due to the fact that ante-natal check up is mandatory in that country and the incidence of perinatal asphyxia is very low.

LBW was the second common risk factor of CP. LBW is an important neonatal health problem in our country. Almost 70% child bearing women suffer from various types of malnutrition with other co-morbidities and give birth to LBW babies. LBW babies suffer from cerebral palsy, intellectual deficits and other short-term and long-term morbidities[23]. In UK in a series of patients, a retrospective study showed that about 22% children suffering from CP were LBW with delivery within 32-37th week[24]. In a series of studies in Europe, it has been shown that LBW was associated with 6 times increased risk of developing CP[25]. LBW with IUGR is also associated with increased risk of CP[26,27,28].

This study shows that patients attended at the center for from all districts of the administrative division but mostly from Rangpur, Thakurgaon and Gaibandha. Cerebral palsy is present in all districts as the child birth practices are almost similar in this division. On study in Northen Bangladesh on married women regarding delivery practrice has shown that 97.6% of study population said that pregnancy is a period of risk and 80.6 said that home delivery is risky. Still 66.8% of that population delivered at home taking the risk of complication[29]. The difference is due to the fact that the guardians of the Rangpur district are a bit more aware due to the presence of different medical institutes as well as a Child Development Center in nearby Public Medical College Hospital and two other Paediatric Consultants from Thakurgaon and Gaibandha referred many cases to this center.

Epilepsy was the commonest associated complication (35.0%) in this series of patients. This

may seem a high prevalence but as many as 50% of children suffering from CP may have epilepsy [30,31]. Another study has shown that one-third of children suffering from CP can develop epilepsy which is also in concordance with our study[32]. Even there may be high prevalence of epilepsy in CP and one retrospective study has the prevalence as high as 62.0% in Brazil[33]. One observation in our study was that epilepsy was present mostly in children with spastic CP which is in consistent with the finding of another study[34].

Conclusion:

Perinatal asphyxia and LBW are the two main risk factors leading to CP and home delivery is the main underlying factor. As case-control study is appropriate to determine a risk factor, further studies will be required.

References:

1. Zeldin AS, Ratanawangsa B, Bassano ATF. Cerebral Palsy. e- Medicine, March 2007; www.patient.co.uk. Adopted on 2. 4. 2009.
2. Rosenbloom L. Diagnosis and management of cerebral palsy. Arch Dis in Child 1995; 72: 350-4.
3. The Danish Bilharziasis Laboratory for the World Bank, People's Republic of Bangladesh. Disability in Bangladesh: a situation analysis, Final Report May 2004.
4. Center for Disease Control and Prevention, USA. Economic costs associated with mental retardation, cerebral palsy, hearing loss and vision impairment. MMWR 2004; 53 (3): 57-9.
5. Suvanand S, Kapoor SK, Reddaiah VP, Singh U, Sundarum KR. Risk factors for CP. Ind. J Paed. 1997; 64: 677-685.
6. Pharoah POD, Cooeke T, Cooeke T, Cooke RWI, Rosenbloom L. Birth weight specific trends in cerebral palsy. Archives of Dis in Childhood 1990; 65: 602-606.
7. Sultan S. Maternal health in Bangladesh. http//:www.touchingsoulsint.org adopted on 17.05.12.
8. Kabir MA. Safe-delivery practices in rural Bangladesh and its associated facors: evidence from Bangladesh demographic and health survey-2004. East Afr J Public Health 2007: 4(2): 67-72.
9. USAID. Health: Bangladesh. www.usaid.gov.bd adopted on 20.04.10.
10. Wahed MA. Annual Report 2011. Dept of Paediaterics, Prime Medical College Hospital, Rangpur.
11. Daisy S. Cerebral Palsy. The ORION 2007; 26 (1): 431-433
12. Papavasiliou AS. Management of motor problems in cerebral palsy: A critical update for the clinician. European Juornal of Paediatric Neurology 2008, Available online 7 Sept 2008, www.sciencedirect.com.
13. Wahed M A. Pattern, risk factors and complications of cerebral palsy. Prime med. j. vol 2 (1): 3-7.
14. Aswal S, Russman BS, Blasco PA *et al.* Practice parameter: diagnostic assessment of the child with cerebral palsy: Report of the quality standards sub-committee of American Academy of Neurology and

the practice committee of the child neurology society. Neurology 2004; 62 (6): 851-63.

15. Stanley F, Blair E, Alberman E, Cerebral palsies: Epidemiology and causal pathways, London, UK: Mackeith Press, 2000.
16. Hutlon JL., Pharoah POD. Life expectancy in severe cerebral palsy. Arch Dis Child 2006; 91(3): 254-258.
17. Hoimond J. Cerebral Palsy. Medicine 1996; 80-82.
18. Cerebral Palsy diagnosis. www.cerebral-palsy-lawsuits.com adopted on 20.11.10.
19. Kolawole TM, Patel PJ, Mahdi AH. Computed Tomographic (CT) Scans in Cerebral Palsy. Pediatr Radiol 1989; 20: 23-27.
20. Center for Disease Control and Prevention (CDC). Cerebral Palsy, 4 October 2004, accessed Sept 14, 2007.
21. Francza KN, Arifeen SE, Moran AC, Caulfield LE, Baqui AH. Delivery Practices of Traditional Birth Attendants in Dhaka slums, Bangladesh. J Health Population Nutrition 2007; 25 (4): 479-487.
22. Wahed MA. Annual Report 2009. Dept of Paediaterics, Prime Medical College Hospital.
23. Bhusan V. Cerebral Palsy and Birth Asphyxia: Myth and reality. Ind J Peditr 1994; 61: 49-56.
24. Risk factors of cerebral palsy. www.neurologychannel.com adopted on 13.12.10.
25. Cerebral Palsy square. Risk factors of cerebral palsy. www.neurologychannel.com adopted on 26.04.11.
26. Wilcox AJ. On the importance and the unimportance of birth weight. Int J Epidemiol 2001; 30: 1233-1241.
27. Cerebral Palsy square. Low birth weight increases the risk of cerebral palsy. www.neurologychannel.com adopted on 26.04.11.
28. Blar E, Stanley F. Intrauterine growth and spastic cerebral Palsy: Association with birth weight for gestational age. Am J Obstet Gynaecol 1997; 182 (1): 229-37.
29. Yasmin N, Ataur K, Lahiry S, Faruqee MH, Ahmed T. Knowledge, Attitude and Practice regarding hospital delivery among rural married women in Northern Bangladesh. Ibrahim Med Coll J 2009; 3(1): 17-20.
30. Remedy Health care. Complications of cerebral palsy. www.neurologychannel.com adopted on 13.12.2010.
31. Singhi P, Jagirder S, Khandelwal N, Malhi P. Epilepsy in children with cerebral palsy. J Child Neurol 2003; 18(3): 174-9.
32. Bruck I, Antoniuk SA, Spessatto A, Schmitt de Bern R, Hausberger R, Pacheco CG. Epilepsy in children with cerebral palsy. Arq Neuropsiquiatr 2001; 59 (1): 35-39.
33. Kwong KI, Wong SN, So KT. Epilepsy in children with cerebral palsy. Pediatr Neurol 1998; 19: 31-36.
34. Zafeiriou DI, Kontopoulos EE, Tsikoulas I. Characteristics and prognosis of epilepsy in children with cerebral palsy. J Child Neurol 1999; 14(5): 289-94.

USEFULNESS OF INTRA-PARTUM BIOPHYSICAL PROFILE IN PREDICTING FOETAL WELLBEING

Akhter S

Abstract :

Objective : This study was conducted to assess the role of Intra-partum Biophysical profile (BPP) in monitoring foetal wellbeing, to find out influence of BPP on mode of delivery and neonatal outcome & influence of different components of BPP on mode of delivery & neonatal outcome.

Study Design : This cross sectional study was conducted in the Department of Obstetrics & Gynaecology of Prime Medical College Hospital, Rangpur during the period from January to December 2010. A total of 100 low risk pregnant women were taken as study population. Samples were divided into two groups. One group had BPP score >8 & another group had BPP score <6.

Result : The result showed that 75% had spontaneous labour & the rest needed induction with oxytocin. 75% had normal vaginal delivery while the rest 25% needed caesarean section (CS). The main cause of caesarean section was foetal distress (94%) followed by prolonged labour (6%). Out of 100 neonates delivered, 28 needed resuscitation & one had to be admitted in NICU. None of the neonates died or developed complications like neonatal seizure or hypoxic encephalopathy.

Conclusion : The findings of this study suggest that BPP could be a clinically useful tool for fetal monitoring during labour provided the emphasis is given not only on total score but the individual component that made this score. *(Prime med. j. V-2, No-2, P 12-20)*

Key words : BPP, APGAR score, Amniotic fluid index, Intrapartum, EFHRM, CTG.

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Introduction :

Despite major advancement in the field of medical science, a major problem remains for the obstetrician in making assessment of the condition of the fetus in intrauterine life. The development of

ultrasound, however, has largely overcome the difficulties & allowed close observation of the fetus & its activity, so that now considerable informations concerning fetal condition can be obtained from a single examination[1].

The biophysical profile (BPP) was developed as a method of real-time observation of the fetus in an intrauterine environment. Manning introduced the BPP in 1980 and since then it has been widely used as a comprehensive assessment tool for both acute and chronic fetal conditions in the antepartum period[2]. Kim demonstrated that the biophysical profile also can be used for the assessment of foetal well being during labour[3]. BPP entails the observation by ultrasound of foetal breathing movement, foetal body movement, foetal tone, amniotic fluid volume and fetal heart rate (FHR) reactivity in CTG. There are different methods for assessment of foetal wellbeing during labour. One of the popular method is electronic foetal heart rate monitoring (EFHRM) or CTG. But false positive & false negative rates of EFHRM are very high, thereby increasing the rate of casarean delivery in tertiary level hospital without maternal or neonatal benefit[4]. BPP can significantly reduce the false positive and false negative rate of EFHRM. More over, this test is non-invasive, easy to perform, requires no immediate supervision by a physician, can be quickly done in the physicians office, has no contraindications & involves no risk for the mother or the foetus. Thus it is not surprising that the BPP has gained popularity & is used with increasing frequency in the United States[5].

The main problem with the BPP is the structure of the test in which each of the five criterions is assigned in a score of either zero or two points (Table-I), despite the possibility that each of those variables may have different importance in assessing the foetal situation. The BPP variables become functional at different gestational age. Fetal tone & movement appear between 7 & 9 weeks & require activity of the brain cortex. Fetal breathing movement begins at 20 to 21 weeks and depends on centre in the ventral surface of the fourth ventricles. FHR reactivity appears between 28 & 30 weeks & probably stems from function of the posterior hypothalamus & nucleus in the upper medulla. The sensitivity of each of these centers to hypoxia is different & those that become functional earlier in fetal development are more resistant to acute changes in fetal oxygenation[6].

Each fetal function evaluation in the BPP has a different predictive values indicating foetal hypoxia, an assumption that was investigated by Manning[7].

Table-I: BPP scoring technique & interpretation (Manning 1987)

Biophysical variable	Normal (Score-2)	Abnormal (Score-0)
FBM (Foetal breathing movement)	At least one episode of FBM of at least 30 seconds duration in 30 minutes obscervation	Absent FBM or no episode of ≥30 seconds in 30 minutes.
Gross body movement	At least three discrete body/limb movements in 30 minutes (episodes of active continuing movement) is considered as single movement.	Two or fewer episodes of body/limb movements in 30 minutes.
Fetal tone	At least one episode of active extension with return to flexion of fetal limb(s) or trunk. Opening and closing of hand considered normal tone.	Extension slow with return to partial flexion or movement of limb in full extension or absent fetal movement.
Reactive FHR	At least two episode of FHR acceleration of >15 beats /minute and of at least 15 seconds duration associated with fetal movement in 30 minutes.	Less then two episodes of acceleration of FHR or acceleration of <15 beats/minute in 30 minutes.
AFV	At least one pocket of AF that measures at 1cm in two perpendicular planes.	Either no AF pockets or a pocket < 1cm in two perpendicular planes.

These investigators found that BPP scores 4 & 6 with an abnormal NST & decreased fluid volume have higher positive predictive values than does foetal movement & foetal tone, with fetal breathing having an intermediate value. They concluded that not all abnormal biophysical profile scores are equal. The serious consequences may ensure from improper management decision based on the total BPP score rather than on careful evaluation of the individual test component[8]. This problem will be lessened by a recent change made by the investigators who originally developed this test: ' A normal BPP' corresponds to a score 8 or greater but this value must include a normal amniotic fluid volume[7]. The new definition of a normal BPP will prevent the potential error associated with a score of eight when only two points are taken off in case of markedly decreased amniotic fluid volume. A

fetus with a BPP of four consists of two points for reactive non-stress test & two points because normal amniotic fluid volume is most likely perfectly normal[9]. Another problem with the BPP is that alteration in some of the test criterion occur relatively late in the process of foetal asphyxia. Decreased foetal movement & decreased foetal tone are found only when the foetal condition is severe & by the time of discovery, the value of intervention is sub-optimal[10].

Materials and Methods:

This cross-sectional study was conducted on a total 100 of low risk pregnant women (with labour pain either spontaneous or induced, at the early first stage of labour, gestational age between 37 and 42 weeks, cephalic presentation, singletone uncomplicated pregnancy) attending the labour ward of Prime Medical College Hospital. Sample were divided into two groups.

One group had BPP score >8 & another group had score <6. All malpresentation, multiple pregnancy, mentally retarded or spastic child resulting from previous delivery, previous perinatal death, pregnancy with hypertension, diabetes or any other medical disease, intrauterine growth retardation, preterm premature rupture of membrane, previous caesarean section were not included in this study. Demographic variables were maternal age, gravidity, gestational age. Obstetric & clinical variables were duration of labour at BPP, membrane status at BPP, cervical dilatation at BPP, meconium staining of amniotic fluid, type of labour. BPP variables were breathing movements, gross body movement, tone, amniotic fluid volume, nonstress test. Outcome variables are mode of delivery, APGAR score at 1 minute, neonatal resuscitation & NICU admission & neonatal complications. Data were collected with the help of a structured questionnaire which addressed all the variables of interest. Data were analyzed using SPSS version 11.5 (Statistical package for social sciences). The tests of statistics used to analyze the data were descriptive statistics, Chi-square test, Student's t-test, Z test, Sensitivity, Specificity, Positive predictive value (PPV), Negative predictive value (NPV) and Relative Risk (RR). The descriptive statistics were frequency, mean median and standard deviation. Continuous data were presented as mean and standard deviation (SD) and compared using Students t-test. Categorical data were evaluated using Chi-square or Fisher's Exact probability test. Sensitivity, Specificity and predictive value of BPP for mode of delivery (like caesarean delivery) were determined at cut-off value of -<6. Diagnostic accuracy of BPP were compared between two groups, one group with BPP -<6 and other group with BPP ->8. The level of significance was 0.05 and $p<0.05$ was considered significant. Confidential interval was 95%. The summarized information's were presented in the form of tables and charts.

Result:

The result showed that majority (95%) of the cases presented with intact membrane when doing BPP

(Fig.–1). Over three quarter (76%) had spontaneous labour and the rest needed induction with oxytocin (Table-II). Seventy five percent cases had normal vaginal delivery while the rest 25 needed caesarean section (Fig.-2).

The main cause of CS was foetal distress (94%) followed by prolonged labour (6%) (Fig.-3). Out of 100 neonates delivered, 28- needed resuscitation and 1 had to be admitted in NICU. None of the neonates died or developed complications like neonatal seizure or hypoxic encephalopathy (Table-III).

The need of caesarean delivery was observed to be significantly less in cases with BPP ≥ 8 (15.9%) than that in cases with BPP ≤ 6(40.5%, P <0.05). Neonatal resuscitation needed was also found to much less in cases having BPP ≥ 8(19.0%) than that having BPP ≤ 6(43.2%, p< 0.05). Approximately 75% of the cases with BPP ≥ 8 demonstrated APGAR score >7 at 1 minute compared to 45.9% of the cases with BPP ≤ 6(p<0.05) (Table-IV).

When combined NST & AFV score was 4, need of caesarean delivery was considerably lower (8.8%) than that needed when the combined score is ≤ 2(59.4%, p< 0.001). The sensitivity of BPP in predicting caesarean delivery increases steadily from 16% at BPP score ≤ 2 to 80% at BPP score ≤ 8, while the specificity declines gradually from 98.7% at BPP score ≤ 2 to 56% at BPP score ≤ 8. Similarly NPV increases insidiously from 77.9% at BPP ≤ 2 to 89.4% at BPP ≤ 8 and PPV decreases from 80% to 37.7% at BPP ≤ 2 and ≤ 8 respectively. False +ve and false –ve also followed a similar pattern (Table-V).

The present study demonstrated that incidence of Caesarean delivery and neonatal resuscitation were more than double in women with AFV 0 than those in women with AFV 2(P < 0.05) emphasizing that a BPP of score 8 with AFV 0 can no longer be considered as normal because AFV 0 alone carries a higher risk perinatal outcome. A foetus with a BPP score of 4 consisted of 2 points for NST and 2 points for AFV is considered perfectly normal.

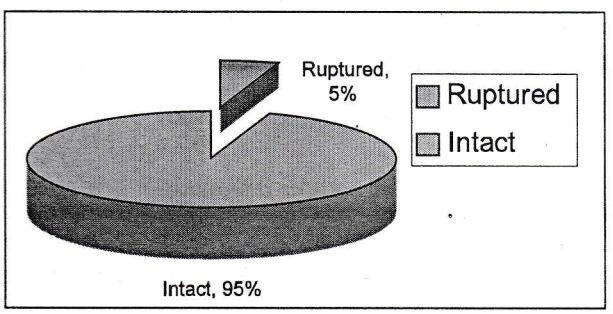

Fig-1: Showing Status of membrane at BPP (N= 100)

Table- II. Distribution of the case by type of labor (n=100)

Type of Labor	No	%
Spontaneous	76	76.0
Oxytocin induced	24	24.0
Total	**100**	**100.0**

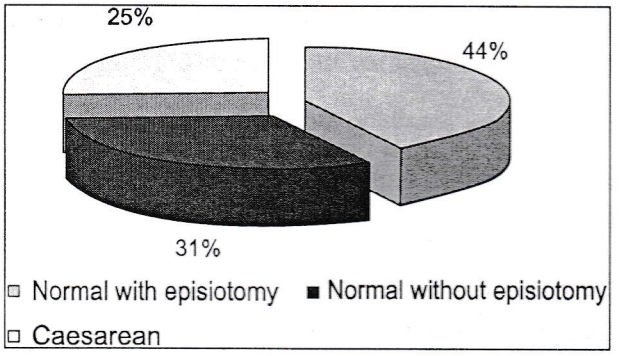

Fig-2 Distribution of case by mode of delivery (N=100)

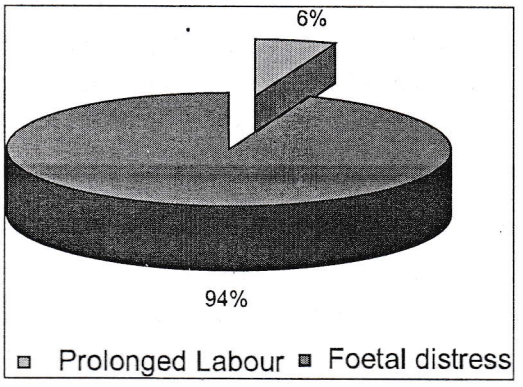

Fig.- 3: Distribution caesarean cases by their causes (N= 25)

Table- III. Detailed particulars of newborn babies (N = 100)

Neonatal profile	No	%
Sex		
Male	54	54.0
Female	44	44.4
Resuscitation		
Needed	28	28
Not needed	72	72.0
NICU admission		
Needed	01	1.0
Not needed	99	99

Table- IV. Association between PBB and outcome variables (n = 100)

Outcome variables	BPP Score		P values
	≥8 (n=63)	≤ 6 (n=37)	
Caesarian delivery			
Needed	10(15.9)*	15(40.5)	<0.05
Not needed	53(84.1)	22(59.5)	
Resuscitation			
Needed	12(19.0)	16(43.2)	0.018
Not needed	51(81.0)	21(56.8)	
APGAR score at 1 minute			
≤ 7	16(25.4)	20(54.1)	0.008
≥ 7	47(74.6)	17(45.9)	
NICU Admission			
Needed	1(1.6)	00	0.441
Not needed	62(98.4)	37(100.0)	

Table –V. Influence of NST & AFV on outcome variables (N=100)

Outcome variables	BPP Score		P values
	4 (n=68)	≤ 2 (n=32)	
Caesarian delivery	6(8.8)*	19(59.4)	<0.001
Resuscitation	16(23.5)	12(37.5)	0.147
APGAR score at 1 minute > 7	47(69.1)	17(53.1)	0.120

Discussion:

The findings derived from data analysis found that condition of amniotic membrane (ruptured or intact) and type of labour (spontaneous or induced) demonstrated significant association with BPP. A

statistically significant decrease of BPP (≤ 6) was observed with rupture of membrane ($p < 0.05$). The use of oxytocin to induce labour also resulted in higher rates of lower BPP (≤ 6). Kim et al. (2003) also found that oxytocin induced labour were associated with the higher rates of abnormal FHR tracings and that the rupture of membrane was associated with significant decrease in fetal breathing movements and gross fetal movement bearing consistency with findings of the present study[3].

In the present investigation we found 16 women with BPP 8 , although 4 (25%) of them did not fulfill the criterion for normal AFV with 1(25%) women needing caesarean delivery. However, the proportion of caesarean delivery among the rest 12(75%) with BPP 8 & AFV 2 was a bit higher (33.3%). As this crosstab analysis was performed with a sub sample of 16 patients, caution is advised to interpret the result. The present study already demonstrated that incidence of Caesarean delivery and neonatal resuscitation were more than double in women with AFV 0 than those in women with AFV 2 ($p <0.005$). A foetus with a BPP score of 4 consisted of 2 points for NST and 2 points for AFV is considered perfectly normal. In our study we found a significantly higher incidence of caesarean section in women with combined NST and AVF scores 2 or below (59.4%) than that found in women with combined scores 4 (8.8%) ($p<0.001$). Manning et al (1987) also are of the opinion that any method of risk assessment using NST alone or dynamic ultrasound variables

such as fetal breathing movement and tone,

also requires consideration AFV to achieve maximal predictive accuracy[11].

Decreased fetal movement and decreased fetal tone are concomitantly found only when the foetus is severely compromised and by the time a foetus is discovered so, the value of intervention becomes sub-optimal (Manning et al., 1999). In the present study, a significantly higher frequency of neonates with combined FT and FM 0 had APGAR < 7 (61.5%) compared to those who had a combined score 4 (32.2%). Although, such a condition occur relatively late in the process of fetal asphyxia, none of the neonates exhibited any grave complications. Rather all of the improved with institution of simple resuscitative measures.

The study observes that caesarean delivery was higher (84.2%) among cases with a non-reactive NST (score 0) compared to only 11.1% in cases with NST score 2 ($p< 0.001$). The resuscitation need was two times higher in cases with noncreative NST than that in cases with reactive NST ($p< 0.05$). Neonatal Apgar Score was >7 at 1 minute was less in nonreactive NST test than reactive NST.

The present study revealed an inverse relationship between MPP score and the likelihood of caesarean delivery ($p< 0.05$). The RR of caesarean delivery was found to be 3.62, and 2.55

at BPP ≤ 2, ≤ 4 and ≤ 6 respectively. Kim (2033) also demonstrated a risk of caesarean of 5.57 in the group with BPP scores of ≤ 4 and 8.0 in the group with BPP score of ≤ 6[3].

Hughey determined the effect of fetal monitoring on the incidence of cesarean section. At Evanston Hospital, the primary cesarean section rate had increased from 2.6% in 1968-1969 to 6.9% in 1974-1975. Only 19.2% of this increase was due to increased fetal distress; the magnitude of the increased was due to changes in other factors, notably, breech deliveries (29.5% of the increase) & dystocia (60.2% of the increase)[12].

The frequency of caesarean delivery at tertiary level hospitals, recently, has gone up beyond the manageable limit[4]. Reasons attribute to the increase might be false –positive result associated with intrapartum FHR monitoring[12] increasing use of spinal anesthesia[13] and changing perspective of medical community as well as service users[4]. Some investigators have tried to reduce the false-positive rate of intrapartum FHR by using fetal scalp blood pH or even fetal scalp oxygen saturation monitoring. Both of these methods although help improving the prediction of caesarean delivery and reducing false- positive yield, the methods, cannot apply on routine basis because of their invasive nature. As fetal heart rate monitoring alone cannot predict the need of caesarean delivery, the biophysical profile, a non-invasive, easily performed test, came forward to fill in the gap.

Comments:

This study was conducted in a teaching institute (PMCH) where all facilities are available in labour room for doing intrapartum BPP but this facilities are not available in all institute or hospital in Bangladesh. So, it cannot possible to do BPP in all labour ward. If it is possible to provide this facilities, it can significantly influence on labour management and decrease the rate of caesarean delivery.

Conclusion:

Since its introduction of BPP into the obstetric field in 1980 by Manning et al, debate has been continuing whether BPP is a better tool than nonstress test of assessment of fetal well-being. The findings of the study thus suggest that BPP could be a clinically useful tool for fetal monitoring during labour provided the emphasia is given not only on total BPP score but the individual components that made this score. More ever, additional advantage of doing intrapartum BPP is to see presentation & position of foetal head, placental location etc.

References:

1. Hylton M, Cosgrove D, Keith D, Pat F: 2001. The Biophysical Profile. Ultrasound in Obstetrics & Gynaecology. 2nd Edition. Churchil Livingstone. Harcourt Publishers Limited; Vol, pp 235-241
2. Manning FA, Platt Ld, Sipos L. 1980. Antepartum fetal evaluation: Development of a fetal biophysical profile. Am. J. Obstet Gynecol; 136:787-95.

3. Kim SY, Khandelwal M, Gaughan JP, Agar MH and Reece EA: 2003. Is the intrapatrum Biophysical Profile Useful? Obstet Gynecol; 102:471-6.

4. Goyert GI, Button SF, Treadmil MC, Nehra PC: 1989. The physical factor in caesarean birth rates. N. Engl J Med.; 320:706-9.

5. Arias F. 1992. Identification & antepartum surveillance of the high risk pregnancy. Practical guide to high risk pregnancy & delivery. Harcort Brace & Company Asia PTE Ltd. Second edition,; pp 3-20.

6. Thacker SB, Berkelman RL. 1986. Assessing the diagnostic accuracy & efficacy of selected antepartum fetal surveillance techniques. Obstet Gynecol Survey; 121-41.

7. Manning FA, Morrison I, Harman CR, Menticoglou SM. 1990. The abnormal fetal biophysical profile score V. Predictive accuracy according to score composition. Am·J Obstet Gynecol; 162: 918-27.

8. Vintzileos AM, Campbell WA, Nochimson DJ. 1987. The use & misuse of the fetal biophysical profile. Am.J.Obstet Gynecol; 156:527-533.

9. Sze-va Y, Wilkerson C. 1991. Is the biophysical profile(BPP) score of 4, reactive non-stress test(NST) and adequate amniotic fluid volume (AVF) a reliable indicator of fetal well being. Am.J.Obstet Gynecol; 164:363.

10. Manning FA, Dayal Ak, Berck DJ, Mussalli GM, Avila C, Harman CR et al. 1999. Fetal death after normal biophysical profile score: An eighteen-year experience.AM J Obstet Gynecol; 181:1231-6.

11. Manning FA, Morrison I., Lange IR, Harman CR, and Chamberlain PFC. 1987. Fetal biophysical profile scoring: Selective use of the nonstress test . AM J Obstet Gynecol; 156:709-12.

12. Hughey MJ, LaPata RE, McElin TW, Lussky R: 1977. The effect of fetal monitoring on the incidence of cesarean section. Obstet Gynecol.; 49 (5): 513-8.

13. Hawkins JI, Gibbs CP, Orleans M, Martin SG, Beaty B: 1997. Obstetric force survey, 1981 versus 1992. Anesthesia; 87: 135-43.

LIPIDEMIC STATUS AND NONALCOHOLIC FATTY LIVER DISEASE IN TYPE 2 DIABETES MELLITUS

Alam A[1], Arifin MS [2], Israt S[3], Sharif MM[4], Rahman MM[5]

Abstract:

Background: Nonalcoholic fatty liver disease (NAFLD) is emerging as the most common chronic liver condition in the world and it is commonly associated with type 2 diabetes mellitus (DM). The aim of this study was to determine the lipidemic status of NAFLD and identify the predisposing factors in Type 2 DM patients with NAFLD.

Material/Methods: A total of 256 patients of type 2 DM were included in this prospective study in a tertiary referral hospital. Patients with characteristic findings on ultrasonography were considered as having fatty Livers. They were divided into fatty liver (Group I) and non fatty liver group (Group II) and were further evaluated by measurement of body mass index, liver function tests and lipid profile.

Results: Out of 256 type 2 diabetic patients, 127 patients had fatty liver and other 129 had no fatty liver on ultrasonography. BMI, serum insulin level and lipid profile level in the Group I was significantly higher than Group II. But in logistic regression analysis lipid profile did not show any association with the presence NAFLD.

Conclusions: Physician should be made aware of NAFLD. They should be encouraged to advise patients regarding NAFLD so that preventive measures like reduction of weight & life style modification can be undertaken. *(Prime med. j. V-2, No-2, P 21-24)*

Key words: Type-2 diabetes mellitus, NAFLD, LFT, lipid profile

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Introduction:

Nonalcoholic Fatty Liver Disease (NAFLD) constitutes one of the most common forms of liver disease and is considered as the hepatic manifestation of the Metabolic Syndrome (MS) since it is also strongly associated to obesity and insulin resistance[1,2,3]. The severity of NAFLD ranges from hepatic steatosis alone to a triad constituted by steatosis, hepatocellular necrosis,

and inflammation: referred to as non-alcholic steatohepatitis (NASH)[4]. NAFLD is becoming a major public health problem due to rising incidence of obesity and type 2 DM. Most of the patients with NAFLD have minor symptoms at presentation. They may have fatigue, malaise or sensation of fullness or discomfort in right upper quadrant of abdomen. However, hepatomegaly is the only finding in the majority[5]. The definitive diagnosis of NAFLD is based on the histologic examination of liver biopsy samples. However, it is an invasive and costly procedure and is associated with many complication. The overall prevalence of NAFLD is 9-40% in Asian countries[6,7]. The aim of the study was to find out the association of NAFLD with lipidemic status in type 2 DM subjects.

Material and Methods:

The study was conducted by the Biomedical Research Group and Department of Radiology of the Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM), Dhaka during the period of July 2008 to June 2009. It was an observational analytic study with a case control design. Thirty to Fifty five aged and BMI matched healthy subjects without family history of diabetes were recruited. T_2DM with Fatty Liver: 127 subjects T2DM without Fatty Liver: 129 subjects. Data were managed and statistical analyses were performed using Statistical Package for Social Science (SPSS) for Windows version 11.1. A p value <0.05 was taken as level of significance.

Results:

A total of 256 patients of type 2 diabetes mellitus were studied. Comparison of anthropometric, liver enzymes, lipid profile between fatty liver and non fatty liver groups is presented in Table-1. The frequency of NAFLD within different age groups was not significant (p<0.54). None of the patients had histories of alcohol consumption. One hundred twenty seven patients had fatty liver whereas 129 had no fatty liver on ultrasound. The average liver size was 17.2±3.1 cm in Group I and 13±2.4 cm in (Group II). Serum SGPT and lipid profile were also significantly higher in (Group I) patients. But in logistic regression analysis lipid profile, BMI did not show any association with the presence NAFLD.

Table-1: Anthropometric measurement & biochemical parameters of the study subjects T2DM

Variables	Fatty Liver (n= 127)	Non Fatty Liver (n= 129)	t/p values Fatty Liver vs Control
Age (yrs)	43.33±6.36	42.89±5.85	0.585/0.559
BMI (kg/m²)	26.19±3.69	25.32±3.47	1.945/0.053
W/H	0.923±.060	0.918±.074	0.540/0.589
FBG (mmol/l)	6.70 (3.60-23.0)	7.1 (4.0-18.70)	1.12/0.260
SGPT (U/L)	36 (10-150)	23 (10-324)	5.05/0.001

Table- II: Lipid profile of the study subjects

Variables	Fatty Liver(n=127)	Control (n=129)	z/p Fatty Liver vs Control
Triglyceride (mg/dl)	165 (60-998)	170 (50-787)	0.003/0.998
T cholesterol (mg/dl)	181 (50-351)	179 (80-350)	0.76/0.440
HDL-c (mg/dl)	29 (11-108)	30 (16-75)	1.30/0.160
LDL-c (mg/dl)	115 (26-269)	109 (11-242)	1.03/0.299

Results were expressed as median (range). Mann-Whitney U test was performed and the test of significance at 0.05 significance level. n=number of subjects, T2 DM=Type 2 Diabetes Mellitus, TG =triglyceride, TC = Total Cholesterol, HDL-C= High Density Lipoprotein Cholesterol, LDL-C= Low Density Lipoprotein Cholesterol.

Logistic regression analysis taking NAFLD/without NAFLD as a dependent variable and other parameters as independent variables.

Table-III: Variables with values.

Variables	β value	p value
Triglyceride (mg/dl)	0.009	0.654
T cholesterol (mg/dl)	0.076	0.546
HDL-c (mg/dl)	-0.010	0.147
LDL-c (mg/dl)	0.004	0.696

Discussion:

The spectrum of NAFLD ranges from simple steatosis to nonalcoholic steatohepatitis (NASH), which can progress to end-stage liver disease. NAFLD is commonly associated with obesity, type 2 diabetes, dyslipidemia, and insulin resistance, all of which are components of the metabolic syndrome, strongly supporting the notion that NAFLD is the hepatic manifestation of the syndrome[8,9,10]. There is a strong correlation between LFTs and markers of the IRS, particularly obesity and dyslipidemia, with evidence that one-third of people with NASH have diabetes. In the present study no significant difference was found regarding the lipid profile between type 2 DM with NAFLD and type 2 DM without NAFLD. The study subjects were not dyspilidemic except slightly elevated LDL cholesterol level. In logistic regression analysis no correlation was observed between any parameters of lipid profile and presence of NAFLD in the study subjects. These findings are in contrast with those reported in the literature[11-16]. Jin HB *et al* in a study conducted in China found that fatty liver positively correlated with plasma triglyceride levels and negatively with plasma HDL-C Level, but total cholesterol did not positively correlated with fatty liver disease[17].

Conclusion:

From the present data it may be concluded that dyslipidemia is not associated with NAFLD in T2DM subjects.

References:

1. Gupte P, Amarapurkar D, Agal S, Baijal R, Kulshrestha P, Pramanik S *et al.* Non-alcoholic steatohepatitis in type 2 diabetes mellitus. *Journal of Gastroenterology and Hepatology* 2004, 19:854-858.
2. Giulio M, Brizi M, Bianchi G, Tomassetti S, Bugianesi E, Lenzi M, McCullough A, Natale S, Forlani G, Melchionda N. Nonalcoholic fatty liver disease: a feature of the metabolic syndrome. Diabetes 2002; 50: 1844-50.
3. Angulo P. Nonalcoholic fatty liver disease. N Engl J Med 2002; 346:1221-31.
4. Day C, Saksena S. Nonalcoholic steatohepatitis: definitions and pathogensis. J Gastroenterol Hepatol 2002; 17: S377-84
5. Bedogni G, Miglioli L, Masutti F, Castiglione A, Crocè LS, Tiribelli C, *et al.* Incidence and natural course of fatty liver in the general population: the Dionysos study. *Hepatology* 2007, 46:1387-1391.
6. Browning JD, Szczepaniak LS, Dobbins R, Nuremberg P, Horton JD, Cohen JC, *et al.*: Prevalence of hepatic steatosis in an urban population in the United States: impact of ethnicity. *Hepatology* 2004, 40:1387-1395.
7. Madan K, Batra Y, Gupta SP, chander B, rajan KD, Tewatia MS et al. Nonalcholic fatty liver disease may not be a severe disease at presentation among Asian Indians. Word J Gasteroenterol 2006; 12: 3400-5.
8. McCullough AJ. Pathophysiology of non-alcoholic steatohepatitis. J Clin Gastroenterol 2006; 40: S17–29.
9. Sharabi Y, Eldad A. Non alcoholic Fatty liver disease is associated with hyperlipidemia and obesity. Am J Med 2000; 109: 171.
10. Chitturi S, Abeygunasekera S, Farrell GC, Holmes-Walker J, Hui JM, Fung C, *et al.* NASH and insulin resistance: Insulin hypersecretion and specifi c association with the insulin resistance syndrome. Hepatology 2002; 35: 373–9.
11. Day CP. Non-alcoholic fatty liver disease: current concepts and management strategies. Clin Med 2006; 6: 19–25.
12. Falck- Ytter Y, Younossi ZM, Marchesini G, MCCullough AJ. Clinical features, and natural history of non- alcholic stetosis syndromes. Semin liver Dis 2001; 21:17-26.
13. Knobler H, Schattner A, Zhornicki T, Malnick SDH, Keter D, Sokolovskaya N, Lurie Y and Bass DD. Fatty liver—an additional and treatable feature of the insulin resistance syndrome. Q J Med 2002; 92: 73-79.
14. Leite NC, Salles GF, Araujo AL, Villela-Nogueira CA, Cardoso CR. Prevalence and associated factors of non-alcoholic fatty liver disease in patients with type-2 diabetes mellitus. *Liver Int* 2009, 29:113-119.
15. Nievels D, Cnop M, Retzlaff B, Walden C, Brunzell J, Knopp R, and Kahn S. The atherogenic lipoprotein profile associated with obesity and insulin resistance is largely attributable to intra-abdominal fat. Diabetes 2003; 52: 172-9.
16. Qari FA, Al Ghamdi A. Fatty liver in overweight and obese patients in Western part of Saudi Arabia: A study of sonological prevalence. Pak J Med Sci 2005; 21: 143-7.
17. Jin HB, Gu ZY, Yu CH, Li YM. Association of nonalcoholic fatty liver disease with type-II diabetes: clinical features and independent risk factors in diabetic fatty liver patients. Hepatobiliary Pancreat Dis Int 2005; 4: 389 – 92.

HEALTH CARE SEEKING BEHAVIOUR AMONG THE RURAL PEOPLE OF POLASBARI UPAZILLA OF GAIBANDHA DISTRICT

Masuma J[1], Tazreen[2], Asraf[3], Samad[4], Wahed M A[5]

Abstract: The delivery of Primary Health Care (PHC) services to the rural masses is the main target of the government's present health policy. The UHC is working as the essential unit of PHC system. Utilization of health services is a complex behavioral phenomenon. This descriptive and cross-sectional study was carried out on 380 systamaticaly selected house holds during the period of 26th February to 1st March 2012 at the Palashbari Upazilla of Gaibandha District with the objective to determine the prevailing disease pattern and health care seeking behaviour in rural Bangladesh. Among the study people majority (44%) suffered from diarrhea, followed by respiratory diseases (33%), fever, common cold (8%) and heart diseases (6%). Majority (71%) bought ORS from private shops. In addition to public health facilities, BRAC health centres was a preferable place for health service. EPI coverage were 92%, 66% used FP methods, 61% pregnant mother visited for ANC and majority 60% delivered at home. During referral 95% follow and used that. Majority (60%) of death was due to aging process, during death time 54% were kept at home. This study concludes that it is important to impliment a need based health care delivery system and actions should be taken to improve the overall scenerio to develop health system of rural Bangladesh. *(Prime med. j. V-2, No-2, P 25-30)*

Key words: Disease patern, Health care seeking behavour, Rural Bangladesh

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Introduction:

Bangladesh, with an area of 1,47,570 sq.km, is inhabited by a population of 142.3 million and has one of the highest population densities in the world (964 persons per sq.km). Average annual growth rate is 1.34%. Sex ration is 100.3 which indicates equal number of males and females. The adult literacy rate is 60%; and average life expectancy is

64 years. The majority of our population resides in rural areas (77%). There are 68,000 villages, 4.451 unions, 484 upazillas, 64 districts and 7 divisions[1]. So the morbidity, mortality and disease pattern will be different in our country than the prosperous ones. Thus information on the existing disease pattern and health seeking behaviour is essential to provide need based health care delivery to any population. This information is not always available in our country. Mainly hospital data are available for disease pattern. Community based study can only reflect the true picture of disease pattern in a given community and what are their preferences in seeking health services[2].

The delivery of PHC services to the rural mass is the main target of the government's present health policy. The UHC is working as the essential unit of PHC system[3]. Despite the impressive improvement is health sector over last 25 years, much remains to be done in this sector. Quality and coverage of PHC are not expected. About half of the population is still out of the health care facilities. The problem of communicable and nutritional diseases are common, Maternal and child health service is inadequate. Population explosion is a continous hazard. Basic sanitation is at its lowest level with lack of safe water supply. Besides these, non communicable diseases like CHD, renal diseases, cancers, DM are increasing. People involvement is central to all aspects of human development of which health is one. Health education and behaviour change communication (BCC) is also important as people's knowledge and an attitude is very essential for proper utilization of services[4].

Health seeking behaviour means seeking of individual's centers or institutes of the remedy of a patient illness[5]. It involves a group of factors releted to type of illness and severity, pre-exsiting belips about illness position, the range and accessibility of the therapeutic action available, percived effecacy, convenance, oportunity costs and quality of services, staff attitude aswell as age, gender and social circulmastance of the individual[6].

In allmost all the developing countries, the public and private sector co-exist. There is also medical pleuralism i,e. the existance of sevral distinct therapeutic systems in a single cultural settings, which is also an important feature of health care system in Bangladesh. So, health care seeking behaviour is also different varying from village to village, town to village and locality to locality[7].

So, monitoring of health service practice (specially in rural area) should continue as renewed efforts to know their current condition and improve the health system thereby. This study may contribute in knowing the overall picture of health seeking practice of our rural people.

Method & Materials:

This community based descriptive and cross-sectional study was carried out on a total number of 380 subjects during the period of 26th February to 1st March 2012 at Jalingi and Amlagasi village of Mehedi Union of Pllashbari Upazilla of Gaibandha

District. Sampling technique was purposive and data ware culected face to face interview of the selected respondence. Key variables were morbidity pattern & utilization of health care facilities. Data were collected by a semi-structured questionnaire through face to face interview of the respondent after taken informed consent of head of the house (male or female). This study was carried out after approval of the institution, as a part of course curriculum of 2nd professional examination of Prime Medical College, Rangpur. Data were edited and entered into a master sheet. All the statistical analysis was performed by calculator.

Data on types of health care sought were obtained by asking the respondent about the nature and place of treatment measures undertaken. This treatment places were subsquently grouped into six categories. The category 'home treatment' comprised traditional and modern forms of self-treatment such as analgesic and anti-pyretic tablets, ORS, antacids etc. which are commonly available in rural shops, and taken without prescription. 'Traditional methods' included treatment seeking within faith healing and traditional system of medicine, including, Kabiraji Hakimi & Homeopathy. 'Private Para-professional' category of treatment seeking consisted consultiations with palli chikitsoks (village Practitioners), Medical Assistans & community health workers. The category 'qualified private practitioners' include graduate doctors, either Government service holder who practice outside office priod or private practitioners. 'Government health facility' refers to all categories of health facilities run by government. 'Private hospitals' include NGO Hospitals, Private Clinics etc.

Result:

In our study population majority suffered from diarrhoeal diseases (44%), next were respiratory diseases (33%), heart diseases (6%), Fever & common cold (8%) (Table-1).

Table No-1: Common diseases among the study population (n=380).

Type of Diseases	Frequency	%
Diarrhoeal disease	167	44
Respiratory disease	125	33
Fever and common cold	30	8
Heart diseases	23	6
Others	35	9
Total	**380**	**100**

n = Number of responden

Among 380 respondents 71% people bought ORS from private shops, 18% made at home and only 11% got from govt. supply. Regarding second common problem respiratory diseases, 71% received treatment from government facilities and 29% from private places. Study revealed that only 4% were identified as TB patient which occupies only 1.09% of the total population, of them 2(50%) were diagonosed and treated at BRAC centre, 1(25%) at clinic and 1(25%) by private practitioners. Three hundred and fifty-one (92%) had said that their children were under

Table-2: Health Care Seeking Practices among the study population (% of subjects) n=380

Types of services	Home Treatment	Traditional Methods	Private Para-professional	Qualified Private Practioners	Govt. Health Facility	Private Hospitals
Diarroea	18	-	71	-	11	-
Resp. diseases	-	-	-	29	71	-
TB treatment	-	-	-	25	25	50
EPI	-	-	-	-	92	-
FP	-	-	-	-	66	34
ANC	-	-	-	-	60	40
Delivery	60	-	-	-	20	20
Referral system	5	-	-	-	95	-

n = Number of respondent

EPI coverage. & rest 8% unimmunized. Majority of the total population i.e. 66% take family planning method and 34% of the population takes no contraceptive methods at all. The study shows that, 61% of the female population visited for ANC and 40% pregnant women didn't visit for ANC. One hundred fifty-six women take antenatal care, 60% from public health centers and 40% from private health centers. The numbers of delivery in the study area during last 5 years were 118. Among them majority (60%) was placed in home, 20% in public health centres and 20% in private health centres. Regarding utilization of referral system 95% took the facility and 5% stay at home (Table-2).

The number of death in last 1 year was 46. Majority (54%) stayed at home, 35% hospitalized, 8% admitted at clinic and 3 % at other places (Table-3).

Table-3: Utilization of Health Care during death (last year) in the families of the study population. n=46

Care During Death	Frequency	%
At home	25	54
Hospitalized	16	35
Private clinic	4	8
Other	1	3
Total	**46**	**100**

n = Number of death

Discussion:

In this study the three most frequently reported diseases were diarrhoeal diseases, respiratory tract infections and fever. Ahmed *et al* found the same disease pattern in their study[8]. Most of the villagers know about ORS and treatment of diarrhoea. Our study shows that 89% of the subjects bought ORS from near by private shops & only 11% got from govt. health facilities. Most of the people of Bangladesh are aware the treatment

of diarrhoea as diarrhoeal disease control programm (CDD) and IMCI Programm are continuing training programm for health care providers to educate the parents of children about the home management of diarrhoea. As shops are frequently available within a short distance from home, the parents prefer to buy ORS pakets from these shops instead of govt. hospitals to save the transport cost.

Regarding respiratory diseases 71% of patients took treatment from govt. hospitals and only 29% appeared to qualified doctors. Most of the the patients were children and of low socio-economic status. Parents percieved that treatment of children is a specialised mater and Govt. Hospitals are better place for there children. This is in contrast with the findings of the study conducted in Pakistan[9].

Prevalence rate of TB was 1.09% which was correspondent to the TB prevalence rate in Bangladesh. The EPI coverage in our study population was nearly 92% which was alsmost semilar to national EPI coverage[10]. Majority of the population that is 66% used different types of family planning methods.The study showed that 61% of the women visited for ANC. Among them 60% got the service from public health centres 40% from private centres.The results are higher than the perspective of rural Bangladesh. This may by due to the fact that this study area was visited previously by sevaral groups of medical students as this area is a residencial field side training (RFST) area of Rangpur Medical College. Probably those visits created awarness of mothers.

Sixty percent of the delivery took place at home, 20% at public health centres and 20% at private health centres. Percentage of home delivery in our study population was much lesser than the perspective of rural Bangladesh. It may be due to the health awareness of the area and avaibility of health facilities.

Regarding referral system 95% cases utilized the Upazilla health complex & district hospitals and 5% were kept at home. Out of 46 deaths last year 50% causes were due to aging process. Majority (54%) of death kept at home during their end of life time which need to improve by hospitalized, which was only 35% in our study finding.

Conclusion:

Utilization of health care services is a complex behavior phenomenon. The study concludes that it is important to establish a need based health care delivery system of rural Bangladesh.

References:

1. Statistical pocket book of Bangladesh-2010, Bangladesh Bureau of statistics (BBS).
2. Rahman M, Islam MM, Islam MR, Sadhya G, Latif MA. Disease Pattern and Health Seeking Behavior in Rural Bangladesh. Faridpur Med. Coll. J. 2011; 5(1): 32-37.
3. The DGHS website (http: // WWW.dghs.gov.bd).

4. A National survey on maternal health care seeking behaviour in Bangladesh.
5. Cristman N. The head seeking proces. Cult. Med. Psychiatr 1997; 1(4); 1357-68.
6. Helman C. In culture, health and illness 3rd ed. oxford: Butterwroth -Heinemann 1995. p-101-145.
7. Sadiq H, Muynek AD. Health care Seeking behaviour of Pulmonary tuberculosis patients visiting Rowalpindi. J Pak Med Asso 2002: 51; 10-16.
8. Ahmed SM, Adams AM, Chowdhury M, Bhuiya A. Gender, socioeconomic development and health-seeking behavior in Bangladesh Social Science & Medicine 2000; 51: 361-71
9. Hussain S, Malik F, Hameed A, Ahmad S, Riaz H. Exploring health seeking Behavior, medicine use and self medication in urban and rural Pakistan. Southern Med Review (2010) 3; 2: 32-34.
10. WHO. Immunization Profile - Bangladesh. global EPI coverage 2012. www.who/int
11. Country team of the Future Health Systems Research Programme Consortium at ICDDR,B, Dhaka, Bangladesh. Healh Seeking Behaviour in Chakaria FHS RESEARCH brief. Bangladesh 2008; 1: 1-4.

ROLE AND CRITERIA OF SHORT ANSWER QUESTIONS ON STUDENT'S ASSESSMENT

Begum A A

Abstract:

At the aim of implementation of objective assessment system SAQ and MCQ are introduced in the written examination of both undergraduate and post graduate courses of our country. In order to avoid faulty use of these questions we should have adequate knowledge about these types of questions. Our present topic is to highlight SAQs. SAQs are those questions asking students for a definition, term, facts, figures and can be answered by a word, phrase or numerals or a draw and label. The types of SAQS are completion items, definitions, unique answers, Draw and label a diagram, numerical problems, problem solving and with some freedom of answer the 'open ended' SAQs. The advantages of SAQs are that they are less time consuming to construct than MCQs, objective in nature, can cover much topic and syllabus than essay questions within a short time and can assess learning outcome of recall, understanding, application and analysis. Disadvantages are that they are less objective than MCQ and can cover fewer topics and syllabus than MCQ. SAQs also cannot test knowledge of higher cognitive domains like essay questions. For construction of SAQs, first we should choose the topics we want to cover and than determine level of knowledge intended to test. As SAQs can test a wide variety of test item with relatively short time, can test lower to mid level of knowledge and due to its objective nature can be marked with high degree of reliability, they are more valid test. So, as a tool for assessment SAQ is a good compromise between MCQ and Essay questions. *(Prime med. j. V-2, No-2, P 31-36)*

Key words: SAQ, Assessment

Introduction:

Medical education is changing in our country and also all over the world. Like other educational system, the aim of this change is to increase the level of cognitive domain. The prime need of which is to shift the assessment system from *subjective* to *objective* type. Because, we know the assessment system is the 'Key' that regulate the mode of learning. At the aim of implementation of this '*objective*' type of assessment system MCQs and SAQs are introduced in the written

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examination of both undergraduate and postgraduate course in our country. As these types of questions are being used in the examinations, it is obvious that we should have adequate knowledge about MCQ and SAQ. Otherwise, faulty use of these instruments would hamper our aim. Our present topic is to high light SAQ.

SAQ is the abbreviation of 'Short Answer Question'. Most of the people mean it 'Short Essay Question'. That is why they treat it as 'Short Essay Question'. But this is fact that 'Short Answer Question' and 'Short Essay Question' are qualitatively two different types of question. The basic difference is – SAQ is *objective* in type whereas 'Short Essay Question' (not SEQ which means 'Structured Essay Question') is *subjective* in type. In terms of subjectivity 'Short Essay Question' is worse than Essay type questions. So, it is alarming if people confuse it with SAQ.

Definition of SAQ:

Short answer questions are those which ask for definitions, terms, facts, figures etc. The student is expected to provide a word, phrase or numeral in response to a question. It may also ask the student to draw and label a diagram[1,2] .

SAQ also allows some degree of variation in the nature of the answer depending on the way in which the answer is presented. It can test a wide variety of test item of relatively simple learning outcome[1]. It is preferably suitable for testing the recall of knowledge. It can also test understanding and problem solving capacity of a student. 'Short Answer Question' can act as a good compromise between 'Multiple Choice Question' (MCQ) and 'Essay Type Question'[3]. This type of question is less affected by the gambling nature of MCQs[4]. While both SAQ and MCQ essentially assess skill of lower cognitive domain (recall, comprehension, application and analysis) [3].

Type of SAQs:

1. **Completion items:** These consist of incomplete statements. The examinee having to supply the missing words, terms, symbols etc. These are also called fill in the blanks type questions.
2. **Definitions**
3. **Unique answers:** These take the form of actual question. The examinee has to supply a specific answer.
4. **Draw and label a diagram**
5. **Numerical problems**
6. **Open ended SAQs:** They are similar to unique answer unique answer questions. They allow for some variation in the nature of the answer either in terms of its intrinsic contents or in terms of the way in which it is presented.
7. **Problem solving item**[2]

Examples: completion type

- The muscles of first pharyngeal arch are supplied by _____.
- The sign of lesion of abducent nerve is ___.
- Parietal cells of gastric gland secrets ___ .

Examples: Definitions

- Define synovial joint.
- Define bronchiole.
- What is decidua?

Examples: Unique answer

- Name the nerve supplying the muscles of first pharyngeal arch?
- What is the sign of lesion of abducent nerve?
- What is the function of parietal cell of stomach?

Examples: Draw and label a diagram.

- Draw and label a Graafian follicle
- Draw and label lumbar plexus of nerves.
- Draw and label a plasma cell

Examples: Numerical problems

- To prepare 1 litre of home based oral saline, the following are needed (mention in gram) Water _____ Sugar _____ Salt_____
- Calculate mean pressure when systolic pressure is 140 mmHg and diastolic pressure is 80 mmHg.

Examples: Open ended SAQs

- Mention the role of periosteum on bone growth
- Why radial artery is the artery of choice for recording pulse?
- Why clavicle is called an atypical long bone?

Examples: Problems

- A medical student during a clinical examination was asked to place a finger on patients back to indicate the position of the lower level of subarachnoid space within the vertebral column. Where would you place your finger?
- A 45 years old woman having her yearly physical examination was found to have a hard painless lump on the upper outer quadrant of the left breast. On examination with his arms at her sides, the left nipple was seen to be higher than the right and a small dimple of skin was noted over the lump. On examination of the left axilla which group of lymph node could be palpated as hard discrete nodule?
- A pregnant woman visited an antenatal clinic. A vaginal examination revealed that the sacral promontory could be easily palpated and that the diagonal conjugate measured less than 4 inches.
    i) What is diagonal conjugate?
    ii) Why anatomical conjugate is not useful during treating patient?
    iii) On the basis of your anatomical knowledge, do you think that the patient would have a normal labour?

Advantages of SAQs:

1. Reasonably easy to construct and less time consuming as compared to MCQs.
2. Answers are more specific than essays and thus more reliable.
3. They can test many test items in a considerably short time as the answers are quicker.

4. It does not alter the scoring significantly in a reasonably well constructed SAQ which increases its objectivity and reliability.
5. SAQs are less affected by the guessing nature than MCQs.
6. SAQs are often an accepted compromise between essay type questions and MCQs which are extremely time consuming to construct and often are not well accepted.
7. It is possible to construct a checklist for responses to reduce inter examiner variation and thus make it more objective[2].

Disadvantages of SAQs:

1. Generally they are used to test only the recall of knowledge and not the application of knowledge.
2. Cannot cover as much syllabus as MCQs.
3. A well constructed SAQ take much longer time to construct.
4. Taking significantly longer time to elicit the same information about the examinee's knowledge than MCQ.
5. Specialist professionals are still required for marking and some subjective judgments for nearly correct answer.
6. SAQs cannot be used for measuring higher cognitive skill like synthesis and judgement[2,3].

Methodology to construct SAQs:

Determining the overall purpose and content of the item

i) Identify the topic to be covered in the question

ii) Identify the specific learning out come to be assessed in the question[5].

Instructions for construction of SAQs:

It is obligatory that SAQs should be prepared with care, if they are to serve as effective instrument for assessment.

1. Select the specific answer first and then frame the question to which that answer is the only appropriate response
2. The completion items should be worded carefully to require a single unique response and try to put the blank at the end of the sentence.
3. Preferably use direct question.
4. There should not be any clue to the intended answer.
5. Word the question as briefly as possible without losing specificity of response.
6. The question must be in positive form
7. Avoid using the conventional wording which may trigger the memory.[5]
8. The weightage for each question in terms of mark allocation should be given along with the question.

SAQs as a tool for assessment:

Validity

A test is valid if it measures what we really want to measure. Short answer question can test a wide variety of test items of relatively simple learning out come[1]. So, in term of content sampling as compared to essay questions short answer question are more valid. Essay questions can test learning outcome of higher cognitive domain like

synthesis and evaluation. But what actually happened as we get from previous question papers that traditional essay questions conventionally used for recall of knowledge which losses its validity in terms of content sampling.

Well constructed SAQs are suitable for assessing learning outcome of lower to middle part of cognitive domain that is it can test recall, understanding, application and analysis of knowledge which increases its validity.

When compared with MCQ, both of them essentially assess skill of lower to middle part of cognitive domain. But, short answer questions are supposed to test recall rather than a mere recognition and considered to be more demanding and valid test of achievement[3,5].

Reliability and Objectivity

Short answer questions are more specific (objective) than essay and thus more reliable. Due to its objective nature it can be marked with a high degree of reliability. A well constructed SAQ is equally objective like MCQ and does not alter the scoring significantly and can reduce inter examiner variation. So, the objectivity and reliability of marking increases sharply[6]. Objectivity is inversely proportional with the length of the answer, that is shorter the answer greater the correlation and marking efficiency between the examiners[3].

Feasibility

It is easy to construct and less time consuming and laborious than MCQ.

Conclusion:

Short answer question is useful if examiners do not accept MCQ tests but still wish to sample widely than essay questions. Short answer questions are suitable for assessing learning out come of lower to middle cognitive domain, which can test recall, understanding, application and analysis of knowledge. SAQs act as a compromise between the traditional essay questions and multiple choice questions. The questions are objective in nature and can be marked with high degree of reliability. Partial knowledge which might enable the students to give the answer by guessing or to choose the answer is not sufficient to give the answer of SAQs. Limitations of SAQ are that they cannot judge the knowledge of higher cognitive domain like synthesis or evaluation. It lacks the ability to judge the depth of knowledge, power of presentation, writing ability and language of students. Still, short answer questions have a place in our assessment system.

References:

1. Gronlound NE. Linn RL. Measurement and evaluation in teaching. 6th edition. New York: Macmillan Publishing Company; 1990.p.142-9
2. Sbherwal U. Short Answer Questions. In: Sood R, Paul VK, Sahni P, Mittal S, Kharbanda OP, Adkoli BV, *et al* editors. Assessment in Medical Education, trends and tools. New Delhi: K.I. Wig Centre for Medical Education and Technology; 1995.p.27-34

3. Talwar D, Khosla A. Assessment of ophthalmic health care personnel using short answer questions. In: Khosla PK, Garg SP, Talwar D editors. Assessment strategies in ophthalmology, a panaromic view. New Delhi: Ideal Impression PVT. LTD.; 1993.p.154-8

4. Webber RH. Structured short answer question: an alternative examination method. Medical Education 1992;26:58-62

5. Sbherwal U. General principles for construction of short answer questions. In: Khosla PK, Garg SP, Talwar D editors. Assessment strategies in ophthalmology, a panaromic view. New Delhi: Ideal Impression PVT. LTD.; 1993.p.159-63

6. Cox KR. What type of written examination should I use? In: Cox KR, Ewan CE. Editors. The medical teacher. Edinbergh: Churchill Livingstone; 1985.p.197-9

ANALGESIA FOR LABOUR

Maruf A A

Abstract:

Labour may be the most painful experience for women ever encountered and methods to relieve pain depend upon the techniques available and the personal choice of the individual. Different techniques, like non-pharmacological, pharmacological and regional are available for labour analgesia. Non-pharmacological methods have relative ease of administration and minimal side effects, but they are not effective enough and some may be costly. Systemic pharmacological techniques are the most frequently employed methods. Inhalation of nitrous oxide relives labour pain to significant degree. Among opioid analgesics pethidine is most frequently used agent but its limited efficacy and side effects are well documented. Regional techniques represent the gold standard for labour analgesia. Low-dose epidural analgesia, walking epidurals and combined spinal epidural (CSE) have being practiced all over the globe with great success when compared with other methods. None of the existing methods can give absolute analgesia without side effects. A sound knowledge of problem, cautious approach and careful monitoring are the basics of effective labour analgesia. Now a days techniques and drugs available to the obstetric anaesthesiologist are vastly superior to what existed previously. The future of labour analgesia lies in refining these techniques and drugs to make labour analgesia even safer and more effective. *(Prime med. j. V-2, No-2, P 37-49)*

Key words: Labour, Annalgesia, Technique.

Introduction:

The labour pain is often stated by women the most painful experience of their lives. It was rated more painful than cancer pain and as painful as amputation of a digit without anesthesia[1]. Labor pain when unrelieved can have adverse effects on the course of labour as well as on the fetal wellbeing[2]. Several groups of people think that God has made this process painful and no interference should be done in it[3]. Different options of analgesia must be available for such wide

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variation in the pain experienced. Analgesia should be directed at particular circumstances and resources available. It is always the mother's decision as to whether she will have any treatment for labour pain, but this can only be done in an informed fashion, if she is educated about her pain control options.

Historical Background

Early attempts of labour pain relief included the use of abdominal pressure, opium and alcohol. Naturally occurring opium was first used in China to relieve labour pain. With isolation of morphine from opium in the 1800's and subsequent invention of the hypodermic needle it was used for labour pain. However neonatal side effects diminished its use. Later a combination of morphine and scopolamine produced a "twilight sleep" in which women endured little analgesic effect amidst an amnesic stupor during labour, although neonatal respiratory depression remained a concern, this regimen was popular for many years [4]. On January 1847, James Simpson, a professor of Midwifery at the University of Edinburgh, used ether during a difficult vaginal delivery[5]. He used chloroform later that year. Use of labour analgesia has gained wide spread popularity ever since the three famous women, Fanny Longfellow wife of famous American poet Henry Wadsworth Longfellow (1847), Emma Darwin wife of Charles Darwin the eminent Naturalist, and Queen Victoria wife of Prince Albert (1853) not only accepted but strongly endorsed the use of analgesia during birth process[6]. Moral and religious objections to anaesthesia in childbirth declined after Snow's administration of chloroform to Queen Victoria in 1853. Later on Simpson experimented with chloroform in more than 30 painless births and presented it at a scientific session of the Medical-Surgical Society of Edinburgh[7]. Regional techniques were introduced from the early 1900 s, and have gained popularity since 1960[8]. History of development of different techniques used in labour analgesia shown in table-I[9].

Table-I: History of Development of Different Techniques Used in Labour Analgesia.

Year	Method
1847	Ether
1853	Chloroform
1881	Nitrous Oxide
1900	Spinal with Cocaine
1902	Morphine and Hyoscine
1909	Caudal Epidural
1930	Sacral Epidural
1940	Pethidine
1943	Continuous Caudal Epidural
1949	Continuous Lumbar Epidural
1958	Psychoprophylaxis
1980	Transcutaneous Electrical Stimulation(TENS)

Physiological Considerations of Labour Pain

As any type of severe acute pain, a stress response is mounted in labour. The woman experiences anxiety and fear; she may become pale, sweaty and hyperventilate. Maternal hyperventilation can shift maternal oxyhaemoglobin curve to the left and cause uterine vasoconstriction due to hypocarbia. These two factors reduce foetal oxygenation and cause foetal acidosis. The autonomic response to pain will lead to an increase in the cardiac workload with tachycardia and vasoconstriction. Adrenaline release causes maternal hypertension and lactic acidosis. There is delayed gastric emptying which may lead to nausea and vomiting. The progress of labour may be impaired due to severe pain as a result of inefficient and in coordinate uterine contractions and ultimately prolong labour[10,11].

Mechanism of Labour Pain

Labour has been divided into three stages. The first stage occurs from onset of cervical change to 10 cms dilatation. It can be divided into latent and active phases. The latent phase can last up to 8 hrs, without the need of intervention, while the active phase is associated with a faster rate of cervical dilatation and usually begins at 2-4 cms dilatation and the duration varies from 2 to 6 hrs. The second stage occurs from full cervical dilatation (10 cm) to delivery of the baby. Normally the second stage lasts for 2 hours in a primipara and 1 hour in a multipara. The third stage occurs from delivery of the baby to separation and expulsion of placenta and the membranes. Perception of pain during the first stage of labour begins with nociceptive stimuli arising in the uterus and cervix[12] which is cramping and visceral in nature, diffuse and poorly localized and transmitted by T_{10} -L_1. Second stage of labour occurs from full cervical dilatations to delivery of baby and here somatic pain becomes predominant, due to distension and traction on the pelvic structures, the pelvic floor and the perineum and is carried via the pudendal nerve (S_{2-4}) [13]. In third stage there is minimal uterine pain. Pain pathways of labour and different type of regional blocks are shown in figure-I and table-II.

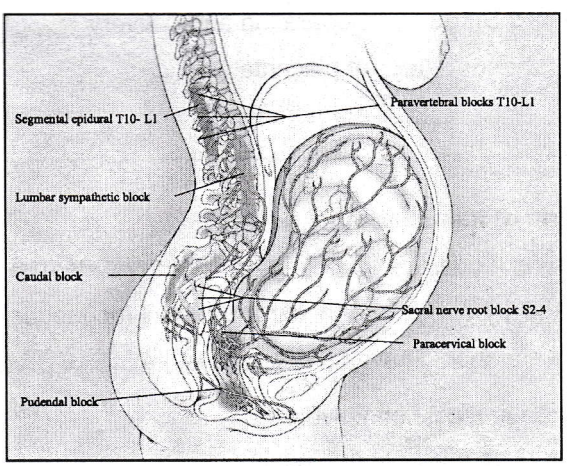

Fig 1: Pain pathways of labour and different type of regional blocks.

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Table II: Mechanism and pathway of pain and degree of discomfort in different stages of labour.

Stages of Labour	Mechanism of Pain	Pathway of Pain	Degree of Discomfort
1. First Stage			
Latent phase	Mild uterine contractions	T_{10}-L_1	Mild uterine pain, fear and anxiety
Active phase	Uterine contractions and dilatations of cervix	T_{10}-L_1	Mild to moderate uterine pain may lead to severe pain
2. Second Stage			
Early	Uterine contractions	T_{10}-L_1	Moderate to severe uterine pain
Late	Distension and traction on the pelvic structures and pelvic floor	S_{2-4}	Moderate to severe perineal pain
3. Third Stage	Separation and delivery of placenta and membranes	T_{10}-L_1, S_{2-4}	Minimal uterine and perineal pain

Criteria of Ideal Labour Analgesia

Different modalities of analgesia are available to manage labour pain. An ideal method for labour analgesia should have following criteriae:

1. Safe and cost effective.
2. Produce effective analgesia.
3. No depressant effect on maternal respiratory or cardiovascular system.
4. No depressant effect on the process of labour.
5. No depressant effect on the baby before or after delivery.
6. No unpleasant maternal side effect.
7. High technical success rate.

Actually none of the available process or method fulfills all the criteria. Some of them reach near the best.

Methods for Labour Analgesia

Different methods chosen to relieve pain depends upon the techniques available locally and the personal choice of the individual. The different methods for labour analgesia are shown in Table-III.

Table III: Methods of Labour Analgesia

Non Pharmacological	Pharmacological	Regional
1. Transcutaneous electrical nerve stimulation (TENS)	**1. Inhalation methods.**	**1. Epidural analgesia**
2. Acupuncture.	a. Nitrous Oxide(Entonox)	a. Lumbar epidural
3. Hypnosis	b. Other volatile agents	b. Double catheter technique
4. Relaxation and breathing technique-psycho prophylaxis	i. Trichloroethylene	**2. Spinal analgesia**
5. Psychological preparation of the parturient and her partner.	ii. Methoxyflurane	**3. Combined Spinal epidural analgesia (CSEA).**
6. Positioning and movement.	iii. Isoflurane	**4. Alternative regional anaesthetic techniques**
7. Aromatherapy	iv. Enflurane	a. Paravertebral lumbar sympathetic block.
8. Hot and cold showering, massage	v. Sevoflurane	b. Caudal analgesia
	2. Systemic analgesics	c. Paracervical block.
	a. Opioid analgesics	d. Pudendal block
	i. Pethidine	e. Perineal infiltration.
	ii. Morphine	
	iii. Fentanyl	
	iv. Diamorphine	
	b. Opioid agonist antagonist	
	i. Nulbuphine	
	ii. Butorphanol	
	iii. Buprenorphine	
	c. Tramadol	
	d. Dissociative drug-ketamine	
	e. Non-steroidal anti inflammatory drugs(NSAIDS)	
	i. Diclofenac Sodium	
	ii. Ketoprofen	

1. Non Pharmacological Method

Non pharmacological techniques are easily available, simple and have minimal side effects. But these are costly, time consuming and have little evidence to support the efficacy. Commonly use non pharmacological methods are:

A. Transcutaneous electrical nerve stimulation (TENS): Two sets of Electrodes are placed over either side of the spinous

process of T_{10}-L_1 and S_{2-4} and current transmitted. Analgesia thought to be achieved through stimulation of A-fiber transmission and local release of endorphins. However there is no evidence that TENS provides more analgesia than placebo.

B. **Acupuncture:** The needles are inserted along definite meridians and manipulated manually or low voltage current is passed through the needle to achieve analgesia. Acupuncture analgesia thought to be mediated by release of endorphins or serotonin. However, acupuncture provides incomplete and unpredictable analgesia.

C. **Hypnosis:** It is claimed that the hypnosis achieves analgesia, and shortens labour. The failure rate is very high. Side effects include anxiety, and even frank psychosis.

D. **Relaxation and breathing (Psycho prophylaxis):** The basis of psycho prophylaxis is the belief that labour pain can be suppressed by reorganization of cerebral cortical activity. It is observed that by using this technique mothers experienced 30% less pain in labour and reduced the incidence of forceps delivery.

E. **Psychological preparation of the parturient and her partner:** Combination of techniques and teachings to parturient and her partner, which may reduce anxiety and pain during labour.

F. **Positioning and movement:** Pain relief requirements may decrease up to 30% if the mother is mobile during labour.

G. **Aromatherapy, hot and cold showering, and massage:** All are harmless techniques that may provide additional comfort.

2. Pharmacological Methods:

A. **Inhalation agents:**

Nitrous oxide (Entonox): N_2O was introduced in obstetric practice in 1880 by Klikevicj, while Dr. RJ Minritt developed a system for its premixing in 1933[14]. Later in 1961, Tunstall demonstrated that under a pressure of 2000 Psig Oxygen mixed with N_2O can behave as a single gas Entonox[15]. Entonox provides analgesia within 20-30 seconds of inhalation. Current clinical data suggest that it relieves labour pain to significant degree in most women, however it does not provide complete and predictable analgesia and atmospheric pollution is a concern. The side effects of Entonox include disorientation or confusion and nausea.

Other volatile agents: Isoflurane, enflurane, sevoflurane and desflurane are used but limited due to side effects and requirement of specific vapourizers and scavenging.

B. **Systemic analgesia**:

Opioid analgesics: Some of the commonly used parental opioids for labour analgesia are pethidine, morphine, fentanyl, sufentanil, altentanil and remifentanil (Table-IV).

Table IV: Doses of systemic analgesics

Drugs	Dose IV/IM	Onset of action IV/IM	Duration IV/IM
Pethidine	25/100 mg 10-15 mg PCA bolus	5/20-30 min	20-40/90-120 min
Morphine	5/10-15mg	5/20-30 min	30-60/120-180 min
Fentanyl	20-50/100 μg 10-25 μg PCA bolus	2/10 min	20-40/30-60 min
Nalbuphine	10-25 mg/ 1-3 mg PCA bolus	2/15 min	120-240 min
Butorphanol	1-2 mg	5-10/10-30 min	120-240 min
Remifentanil	0.1-0.5 mg/kg PCA bolus	0.5-1 min	2-3 min
Tramadol	100 mg IM	10-30 min	180 min

Pethidine: It causes dose dependent respiratory depression and delayed gastric emptying. Babies of women administered pethidine during labour have shown to be sleeppy, less attentive and incapable to establish breast feeding despite normal APGAR scores. Despite these disadvantages, pethidine remains popular in many obstetric units as it is easy to administer and may be a useful analgesic modality where other methods are not available or contraindicated[16,17].

Morphine: Shares many of side effects of pethidine and rapidly crosses the placenta.

Fentanyl: A highly potent synthetic opioid, useful for patient controlled analgesia (PCA).

Diamorphine: A more potent drug than pethidine, but currently supply is inadequate.

Use of opioid by patient controlled analgesia (PCA): If regional analgesia is unavailable, patient controlled intravenous analgesia may be useful method for painless labour[18]. Many opioids have been used in PCA devices including fentanyl and more recently remifentanil[19]. However, close monitoring, supplementary oxygen and naloxane should be available.

Opioid agonist-antagonist analgesics: Nulpuphine, butorphanol, buprenorphine all have been used as systemic analgesics for labour analgesia. Drowsiness, dizziness, nausea and vomiting etc. have limited the widespread use of these analgesics in labour.

Tramadol: It is a central analgesic with a low affinity for opioid receptor and inhibits noradrenalin uptake, and causes serotonin release. Perenteral tramadol offers a safe alternative to opioid[20].

Dissociative drug (Ketamine): In sub-anaesthetic dose ketamine[21] has been used in late labour or at delivery, and should be avoided in hypertensive disorders of pregnancy, cardiovascular disease, epilepsy and psychiatric disorders.

Non steroidal anti-inflammatory drugs (NSAIDS): Perenteral administration of NSAIDS such as ketorolac and diclofenac are not recommended because they suppress uterine contractions and promote closure of the foetal ductus arteriosus[22].

3. **Regional Methods:**

Regional techniques represent the "Gold standard" for labour analgesia.

A. **Epidural analgesia:** Epidural analgesia can provide complete analgesia for labour and delivery as well as for caesarean section.

(i) Lumber epidural: Effective analgesia during the first stage of labour can be achieved by blocking the T_{10}-L_1 dermatomes with low concentration of local anaestheic with or without added opioids. The block has to be extended up to S_{2-4} dermatomes in the second stage of labour. Recent evidence suggest that there is minimum to no alteration in duration and / or incidence of surgical intervention in labour with epidural analgegia[23]. There is no increase in the need for labour augmentation with oxytocins[24], neither there is any difference in the rates of normal vaginal delivery[25].

(ii) Double catheter techniques: Using an epidural catheter at T_{10-12} level during first stage and a caudal catheter at S_{2-4} level during the second stage allows selective, properly timed, rapid and intensive analgesia. This technique is rarely used in cases where minimal sympathetic block is required (cardiac patients) because of hazards and discomforts of the two needle and catheter insertions.

Techniques for maintenance of epidural analgesia (Table-V):

(i) Intermittent top-up: Ideally a low dose mixture of local anaesthetic and opioid is used. It is relatively safe and simple method of delivery and does not require complex infusion devices.

(ii) Continuous epidural infusion: A low dose infusion of local anaesthetic and opioid is titrated to achieve desired block height with an infusion device.

(iii) Patient controlled epidural analgesia (PCEA): It allows the patient to match dose of analgesia to amount of pain as labour progresses with individual variability. Advantages include reduced amount of local anaesthetic and opioid requirement, and maternal satisfaction[26].

B. **Spinal analgesia:** Single shot spinal block is not adequate for whole duration of labour, though it may be useful in very advanced stage of labour and for instrumental delivery. Continuous spinal analgesia (CSA) with micro catheters[27] offer better analgesia but has complications, like cauda equina syndrome and may be more dangerous than the other two techniques.

Table V: Drug doses for various epidural analgesia maintenance techniques

Technique	Concentration and dosing schedule
Intermittent bolus	0.1%-0.25% bupivacaine + Fentanyl 3μg /ml + Epinephrine 1:200,000:(5+5 ml) Boluses as needed
Continuous infusion	0.044%-0.125% bupivacaine + Fentanyl 1.5-2 μg/ml at 8-14 ml/hour
PCEA with basal infusion	0.625%-0.125% bupivacaine + Fentanyl 2 μg /ml at the following settings: basal rate 8-12 ml/hour. Bolus dose 5ml lockout 10 min, hourly limit 30ml
PCEA without a basal infusion	0.125% bupivacaine + Fentanyl 2 μg /ml at the following settings: 8 ml Bolus dose; lockout 15min; no hourly limit

C. Combined spinal epidural analgesia (CSEA): The CSEA technique[28] has gained increasing popularity in recent years[29]. It has selected advantages of both spinal and epidural techniques without increased complications. It provides rapid onset of analgesia with minimal local anaesthetic doses and has the flexibility and unlimited duration of an epidural technique (Table-VI). It allows ambulation of parturient and it has been called the "Walking Epidural"[30] or "Ambulatory Analgesia in Labour" (also refers to any epidural or spinal technique which allows for ambulation). Walking during labour may have three theoretical advantages; gravity may affect the rate of cervical dilatation, the movement of pelvis may encourage correct positioning of foetal head to increase spontaneous delivery rate and being upright may decrease tendency to aortocaval compression.

Table VI: Suggested drugs doses and mixtures for CSE labour analgesia

Administration	Local Anaesthetic	Opioid
Intrathecal injection	Bupivacaine 1.0-2.5 mg (Isobaric 0.1% - 0.25%)	Fentanyl 20-25 μg or sufantanil 3-5 μg
Epidural top-ups	Bupivacaine (0.1%-0.125%) 10-15mg for first stage of labour, for second stage or assisted delivery this dose is sufficient	Fentanyl 20-25 mg or sufentanil 5-10 mg

(i) Local anaesthetics used in spinal and epidural block: Bupivacaine provides excellent sensory block and has

been used for labour analgesia for many years. Ropivacaine has been associated with reduced incidence of operative vaginal delivery and less motor block when compared with bupivacaine[31]. Recently it has been shown that both ropivacaine[32] and levobupivacaine[33] appear equipotent to bupivacaine and considered significantly less cardiotoxic[34] and neurotoxic, and more suitable agent for labour pain. Chlorprocaine and lignocaine is not suitable due to short duration of action and tachyphylaxis.

(ii) Opioids used in spinal and epidural block: The addition of epidural and spinal opioids to local anaesthetic has a synergetic effect as opioid directly act on opioid receptors in the spinal cord and reduce local anaesthetic requirements. Various opioids have been used. Fentanyl, sufentanil and alfentanil are all being currently used for labour analgesia.

(iii) Nonopioid adjuncts in spinal and epidural block: Adrenaline[35], clonidine, tramadol, and anticholinesterase neostigmine[36] all have been used as epidural and spinal adjuncts but they have not yet gained wide acceptance for labour analgesia.

D. Altrernative regional anaesthetic technique:

(i) Paravertebral lumber sympathetic block: This provides only first stage labour analgesia and requires expertise to perform this block.

(ii) Caudal analgesia: Caudal block fastens onset of perineal analgesia and useful in imminent vaginal delivery. This technique is currently not popular due to high failure rate, potential contamination of injection site, and risks of accidental foetal injection.

(iii) Paracervical block: This technique blocks transmission of pain impulses through paracervical ganglion during first stage of labour. However it has a short duration of action, does not relieve second stage labour pain and may cause prolonged foetal heart rate deceleration.

(iv) Pudendal block: This technique may be indicated who require analgesia for spontaneous vaginal delivery or instrumental vaginal delivery. Presently it is not popular due to high failure rate, vaginal injury, systemic local anaesthetic toxicity and foetal trauma.

(v) Perineal infiltration: Local anaesthetics are injected into posterior fourchette to provide rapid perineal anaesthesia for episiotomy repair.

The alternative techniques do not have the flexibility of epidural or CSEA, they are technically difficult to perform and produce more frequent complications. However they can be used in special circumstances like failed or inadequate

neuroaxial analgesia, or in contraindication to neuroaxial techniques e.g. spinal deformity, previous spine surgery.

Complications of regional analgesia in labour: Some immediate serious complications of obstetric regional analgesia include[37] (1) massive misplaced injection; intrathecal or subdural, (2) high or total spinal block, (3) hypotension, (4) local anaesthetic induced cardiac arrest, and (5) local anaesthetic induced convulsions. Delayed complications include; (1) post dural puncture headache (PDPH), (2) transient backache, (3) urinary retention, (4) epidural haematoma, abscess, (5) meningitis, and (6) permanent neurologic complications. Other than PDPH, transient backache and urinary retention are fortunately rare.

Labour Analgesia Service in Bangladesh:

In Bangladesh, the awareness is still lacking and except few centers that run a comprehensive labour analgesia program, the national awareness or acceptance of pain-relieving options for women in labour virtually does not exist. At present mainly perenteral injections are practiced for labour analgesia and lumber epidural with top-ups through catheter in very special cases[38]. This analgesia is always provided in a labour unit which should be always within a hospital. An ideal labour analgesia unit should consist of dedicated obstetrician, anaesthesiologist and obstetric nurses along with available methods for labour analgesia and resuscitation equipments to combat any complication. So there are many scopes remain for anaesthesiologists to work in this area for better improvement.

Conclusion:

Labour analgesia is different from other types of analgesic care because of the physiological changes in parturient and presence of foetus. None of the existing methods can give absolute analgesia without side effects though regional techniques represent the "Gold standard" for labour analgesia. The success of labour analgesia depends on skill and experience of anaesthesiologist, willingness of parturient and her mental makeup. Administration of any regimen must be considered and the technique should be tailored according to the individuals needs. Considering all factors objective should be directed to give analgesia to parturient adequately without causing harms to mother and foetus.

References

1. Melzack R. The myth of painless child birth The John J Bonica lecture. Pain. 1984;19:321–327.
2. Lederman RP, Lederman E, Work BA Jr, McCann DS. The relationship of maternal anxiety, plasma catecholamines, and plasma cortisol to progress of labor. *Am J Obstet Gynecol.* 1978;132(5):495–500.

3. Cohen J. Doctor James Young Simpson, Rabbi Abraham De Sola, and Genesis Chapter 3, verse 16. Obstet Gynecol 1996; 88:895-898
4. Lavender L, Bricker T, 2002. The nature and management of labour pain: Peer-reviewed papers from and evidence based symposium. American Journal of Obstetric and Gynecology, 186(5), 1-37.
5. Snow J. (1958): On chloroform and other anaesthetics: their action and administration. John Chordill, London (Reprinted by the American Society of Anaesthesiologists, Chicago, 1959).
6. A brief history of pain relief in labor. Available at http://www.papapetros.com.au/HistoryPain Relief.pdf. Accessed on 21 July 2013.
7. Simpson, JY (1847): Account of a new anesthetic agent as a substitute of supphouric Ether in Surgery and Midwifery. Sutherland and Snow. Edinburgh. (Reproduced by the Wood Library Museum of Anesthesiology, Park Ridge, 1976).
8. M Zenz, W. Horester, H. Chr. Niesel. Regional Anaesthesia. 2nd ed. USA. Mosby Year Book. 1990:148:149.
9. Kotari D, Bindal J. Impact of obstetric analgesia (Regional vs Perenteral) on progress and outcome of labour: A review. Jurnalul Roman de Anestezie Terapie Intensiva 2011;18(1):34-40.
10. Rudra A. Pain relief in labour. Retrieved on 1 June 2005. http://update. anaesthesiologists. org/wp-content / uploads / 2009 / 09/ Pain-Relief-in Labour-Review -Article.pdf. Accessed on 21 July 2013.
11. Maria I. Supporting woen in labour. Health Science Journal 2012;6(3):385-391.
12. Bonica JJ, Mc Donald JS. The pain of Childbirth, In: JJ Bonica, Editor, The management of pain Lea & Febiger, 2nd edn, Philadelphia 1990:1313-1343.
13. Crawford JS. Principles and practice of obstetric analgesia and anaesthsia. 5th edn, Blackwell publishers, Oxford 1985:24-38.
14. Bonica JJ. Obstetric analgesia and anaesthesia. Springer-Verlag Berlin, Heidelberg, New York 1972. 31-33.
15. Tunstall ME: Obstetric analgesia. The use of a fixed Nitrous Oxide and oxygen mixture from one cylinder. Lancet 196; (2): 964.
16. Way WL, Costley EC, Way EL: Respiratory sensitivity of the newborn infant to meperidine and morphine. Clin Pharmacol Ther 1965; 6:454-461.
17. Kuhnert BR, Kuhnert BM, Tu ASI, et al: Meperidine and normeperidine levels following meperidine administration during labor: Fetus and neonate. Am J Obstet Gynecol 1979; 133:909-914.
18. D'Angelo R. Thomas JA. Regional analgesia in obstetrics. In; Palmer CM, D'Angelo R and Paech MJ, Editors, Hand book of obstetric Anaesthesia, BIOS Scientific Publisher ltd. 2002;42-67.
19. Evron S, Slezerman M, Sadam O *et al*, Remifentanil; a novel systemic analgesic for labour pain. Anesth Anal 2005; 100(I); 233-38.
20. Viegas OA, Khow B, Ratnam SS. Tramadol in labour in primiparous patients: A prospective comparative clinical trial. Eur J Obstet Gynecol Repord Biol 1993;49(1):131-35.
21. Gupta S. Relief of pain in labour, In; Gupta S Ed, Obstetric Anaesthesia, Arya publications 2004: 193-241.
22. G. Edward Morgan, Jr. Maged S. Mikhali, Michael J. Murray. Clinical Anesthesiology. 4th ed. USA. McGraw-Hill, 2006:895.
23. Halpern SH and Leighton BL. Misconceptions about neuroaxial analgesia. Anesthesiol clin N Am 2003; 21: 59-70.

24. Lewis NL, Plat E, Qureshi AM. Syntocinon and epidurals in labour-which comes first? Acta Anaesthesiol Scand 2003; 58: 1249-1250.
25. Reynolds F. Russell R, Porter J, Smeeton M. Does the use of low dose bupivacaine/opioid epidural infusion increase the normal delivery rate? Int J obstet Anesth 2003; 12:156-163.
26. Ledin Eriksson, Gentele C, Olofsson CH et al. PCEA compared to continuous epidural infusion in a ultra-low dose remifentanil for labour pain relief; a randomized study. Acta Anaesthesiol Scand 2003; 47: 1085-1090.
27. Okutomi T, Kikuchi K, Amano K *et al.* Continuous spinal analgesia for labour and delivery in a parturient with hypertrophic obstructive cardiomyopathy. Acta Anaesthesiol Scand 2002; 46(3): 329.
28. Rowan N, Van Zundert A. Holmstton B *et al.* Combined spinal epidural technique. Regional Anesth and Pain Med 1997; 22:406-23.
29. Farragher R Datta S. Recent advances in obstetric anesthesia, J Anaesth 2003; 17: 30-41.
30. Tilton CD. Ali P, Mushambi MC. "Walking extradurals" in labour; A Step forward? Br J Anesth 1997; 79(a):551-54.
31. Asik I, Goktug A, Gulay I *et al.* Comparison of bupivacaine 0.2% and ropivacaine 0.2% combined with fentanyl for epidural analgesia during labour, Eur J Anaesth 2002; 19(4):263-70.
32. Lee BB, WD Ngan Kee, FF NG *et al.* Epidural infusions of ropivacaine and bupivacaine for labour analgesia; a randomized, double-blind study of obstetric outcome. Anesth Analg 2004; 98(4):1145-52.
33. Supandji Mia, Alex TH, Sia MMED and Ocampo CE. 0.2% ropivacaine and levobupivacaine provide equally effective epidural labour analgesia, Canadian Journal of Anesthesia 2004; 51:918-922.
34. Morrison SG, Dominguez JJ, Frascarolo P, Reis S: A comparison of the electrocardiographic cardiotoxic effects of racemic bupivacaine, levobupivacaine, and ropivacaine in anesthetized swine. Anesth Analg 2004; 90:1308-14.
35. Polley LS, Colomb MO Naughton NN *et al.* Effect of epidural epinephrine on the minimum local anaesthetic concentration of epidural bupivacaine in labour. Anaesthesiology 2001; 96:1123-28.
36. Roelants F, Lavan d'homme, PM, Mercier-fuzier V. Epidural administrations of neostigmine and clonidine to induce labour analgesia; evaluation of efficacy and local anaesthetic sparing effect. Anaesthesiology 2005; 102(6):1205-1210.
37. Wong C. Neurologic deficits and labor analgesia. Reg Anesth Pain Med 2004; 29(4):1-16.
38. Requirements of Standard Operating Theatres and Related Services: Recommendations for Bangladesh. Booklet of Bangladesh Society of Anaesthesiologist 2005:27-28.

College News

List of Topics of Integrated Teaching Presented

Sl.	Name of Topics	Name of Department	Date of Presentation
1	Thyriod function & its disorders	Physiology	28.04.10
2	Postoperative fluid therapy	Surgery	06.10.10
3	Childhood immunization update	Paediatrics	27.10.10
4	Antharx	Community medicine	03.11.10
5	Hypertension	Medicine	10.11.10
6	Rational use of Drug	Pharmacology	17.11.10
7	Staphylococcal infections	Microbiology	08.12.10
8	Streptococcal infections	Microbiology	15.12.10
9	Granulomatous inflammation & Granulomas	Pathology	22.10.10
10	TB	Community Medicine	29.12.10
11	Cell Injury	Pathology	05.01.2011
12	Chromosome	Anatomy	09.02.2011
13	Childhood Cancer	Paediatrics	23.02.2011
14	Fate of RBC and Jaundice	Physiology	02.03.2011
15	Lipid Profile	Biochemistry	23.03.2011
16	Wound and Wound Repiar	Pathology	13.04.2011
17	Death due to acute Organophosphorus poisoning cases in Rangpur Division	Forensic Medicine	22.06.2011
18	RFST (Residential Field Site Training) Program	Community Medicine	10.08.2011
19	Pregnancy with Diabetes	Gynae & Obs.	28.09.2011
20	Pre-anaesthetic Assessment for Premedication	Anaestheology	21.10.2011
21	Physiotherapy Management of Knee Osteoarthritis	Physiotherapy	26.10.2011
22	Shock Management and Infection Control	Microbiology	16.11.2011
23	Cerebral Palsy	Paeditrics	19.07.2012

External Examiners in Different Professional Examinations

First Professional Examination (July 2012)

Prof. Bulbul Afroz
Professor, Department of Anatomy
Rangpur Medical College, Rangpur

Prof. Nazmul Haque
Professor, Department of Physiology
Northern International Medical College, Dhaka

Dr. Wadud Mostofa
Professor, Department of Physiology
Community Medical College, Rangpur

Dr. Selina Anwar
Assosicate Professor, Department of Anatomy
Rangpur Medical College, Rangpur

Dr. Chandra Rani Sarker
Assosicate Professor, Department of Physiology
Rangpur Medical College, Rangpur

Dr. Khandoker Abu Rayhan
Associate Professor of Anatomy
Popular Medical College, Dhaka

Dr. Abdur Rahim
Associate Professor, Department of Biochemistry
Northern Private Medical College, Rangpur

Dr. Newaz Ahmed
Assistant Professor, Department of Biochemistry
Rangpur Medical College, Rangpur

Dr. Rashedul Haque Rahel
Assistant Professor, Department of Biochemistry
Rangpur Medical College, Rangpur

Second Professional Examination (July 2012)

Dr. Md. Mojib Uddin
Associate Professor (Pharmacology)
Rajshahi Medical College

Dr. Abu Saleh Md. Musa
Associate Pofessor
Department of Microbiology
Rajshahi Medical College

Prof. Md. Abdus Salam
Department of Forensic Medicine
Community Medical College, Rangpur.

List of New Students
4th Batch (Session : 2011-12)

1. Korobi Mohonta
2. Azmin Nahar Linda
3. Sandeep Kumar Roy
4. Fatema Tuj Johora
5. Sabrina Nasrin
6. Md. Mehedi Hasan
7. Nowshin Rashid
8. Md. Shahiduzzaman Sujon
9. Md. Khaled Saifullah
10. Md. Abdus Sattar
11. Md. Sharifuzzaman
12. Sharmin Sultana Pinki
13. Md. Nazmul Hossain
14. Md. Al-Imran
15. Khairun Sadikah
16. Riman Islam
17. Farah Farzana
18. Afsana Hossain
19. Tawhida Akter (Tithi)
20. Most. Afrida Islam
21. Most. Armin Akter Ani
22. Md. Raziul Islam
23. Aratul Akter
24. Most. Mahfifa Akter Movi
25. Most. Hasina Begum Tumpa
26. Rukhsana Akter
27. Zinat Rahman
28. Ovishek Adhikari
29. Shushmita Roy
30. Md. Iqbal Humayun Razib
31. Debsree Pal
32. Moushumi Shohani Lizi
33. Md. Abir Hasan Bilash
34. Shekh Md. Mohaiminul Islam
35. Dipok Roy
36. Shubhra Bormon
37. Most. Rakiba Nasrin
38. Most. Samira Zahan
39. Afjana Sharmin Rani
40. Md. Asadul Habib Kazal
41. Mohammad Ali
42. Wahiduzzaman
43. Proma Nibedita (Billu)
44. Md. Nazmul Hossain
45. Md. Arnab Sarker
46. Md. Nagib Farhana Diptee
47. Akhi Afroz
48. Nazmin Naz
49. Aramana Jebin Kanta
50. Mohammad Latifur Rahman
51. Jerina Akhter
52. Sanjida Akter Sabur
53. T. M. Abdullah Al-Mamun
54. Sifat Sobnam Mou
55. Mourin Hossain
56. Md. Mahmudul Hasan
57. Shushmita Mondol Tanni
58. Md. Tofiqul Islam
59. Md. Abdullah-Al-Loman
60. Akila Anjum
61. Tania Rahman
62. Most. Afsana Afroz Asha
63. Shamima Nasreen Taposy
64. Md. Saidur Rahman
65. Md. Golam Rabbani
66. Abida Binte Mahbub
67. Joynal Abedin
68. Md. Mohsin Hossain
69. Hasnat Tanjila Himu
70. Md. Mazharul Islam
71. Shah Sifat-E-Azam
72. Md. Abdul Momin
73. Rukaia Firdaus
74. Md. Niamul Solayman
75. Rafsan Rafat Bin Rahmot (Angkon)
76. Tara Mostfiz
77. Deboki Roy Tumpa
78. Mithun Roy
79. Nazneen Nahar
80. Jakia Jannat
81. Abida Aanjum
82. Nilufar Yasmin Shithil
83. Md. Masum Mehbub
84. Umme Rayhana
85. Linia Farin Ditsha
86. Lam-Eya Meem
87. Most. Tasmin Jannat Anamika
88. Md. Amirul Islam
89. Tanjum Hossain tinni
90. Urmila Bhattacharia
91. Jannatul Fatema Meem
92. Naim Us Shafi
93. Md. Redwanul Islam
94. Aisha Jaman Gulshan
95. Fatematuj Johora
96. Hamira Haidar
97. Md. Rezwanul Kabir
98. Aisha Siddiqa Papia
99. Sharira Shubha Arthi
100. Kaniz Fetema

Visits & Inspections

Inspection from BCPS:

A high powered inspection team from BCPS visited this college on 28-06-2012 to extened the recommended period of residency training from 6 months to one year in the subjects of Medicine, Surgery, Gynae & obs. and Paediatrics and to recommend residency training in cardiology for the first time. The recommend preiod of residency training in this college and attached are as below

Subject	Recommend Period	Period Applied for
Medicine	6 months	2 Years
Surgery	6 months	2 Years
Obs & Gynae	6 months	2 Years
Paeditrics	6 months	2 Years
Cardiology	Nil	1 Year

Visits form University of Rajshahi

A high powered inspection team from University of Rajshahi made a visit to this college on 05-06-2012 to extened the recommended period of affiliation for the session 2012 -13 and beyound. There was also a visit at the same time to grant this college as a center / sub-center for second and to extend the priod of First Professiona Examination.

Information for the Contributors

The Prime Medical Journal is published twice a year in the months of January & July. The Journal publishes Original articals, Review Articals, Case Reports, Procedures in Practice, Letter to the Editors etc. in all branches of Medical Science.

Editorial scope:

- The Prime Medical Journal (PMJ) is intended to promote prompt publication of concise scientific article based on the study in all fields of medical and health sciences.
- Submitted manuscripts should not be previously published or being considered for publication elsewhere.
- All submitted articles will undergo double blind peer review as per recommendations by subject specific experts selected by editors.
- Reviewed manuscripts will be sent to the corresponding author for appropriate response if it is indicated.
- Acceptance is based on significance, originality clarity and fulfillment of the criteria of the publication policy of this journal.
- The Editor- in- Chief will make all final decisions regarding acceptance.
- Selection of the reviewed and accepted manuscripts intended for publication in a particular issue will be decided by Editorial Board.
- Rejected manuscript will be returned if accompanied by stamped or self- addressed envelop.
- Upon acceptance for publication the copy right of the paper automatically transfers to the PMJ and will not be published elsewhere either in part or whole without written permission of the copyright holder.
- Review article should be written by a subject expert.

Ethical aspects:

- Manuscripts based on the study should have been conducted according to the ethical standards laid down in the 1994 Declaration of Helsinki revised 2000.
- Manuscript must contain a statement in the method section that all human subjects involved in studies have been approved by appropriate ethical committee after careful examination of the ethical aspects.
- Permission of the patients or their families to reproduce photographs of the patients where identity is not disguised.
- Author should obtain written permission to reproduce any table, illustration from any other source.
- Information within the individual article are the responsibility of the outhor(s), the editorial board accepts no liability what so ever for consequences of any such incurate and misleading information, opinion or statement.

Manuscript submission:

Manuscripts prepared following the "Uniform Requirements for Manuscripts to Biomedical Journals" is acceptable to this journal for publication. The authors are requested to strictly follow the guide lines below for submission of manuscript to PMJ for publication. The following documents with manuscripts are to be submitted for publication.

- A covering letter addressed to the Editor-in-Chief of the journal (Sample given at the end).
- Abstract and key words in the first page followed by the text
- Authors must submit 2 hard copies of all documents and one copy in electronic form preferably written in a IBM compatible CD with adequate labeling.
- In special case, submission through E-mail with file attachment of all documents is acceptable.

Covering letter:

- All authors must sign after seeing the manuscript with the Statement that they only
- authors they are the only authors.
- The corresponding author should mention the contribution of each author to the work.
- It should contain a declaration that this manuscript has not been submitted else where or not under consideration in any journal.
- It should clearly indicate the publication type (Original/Review/Case report/Letter etc).
- It should be also mention the expected benefit of the medical science from publishing of this article.

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Typing

- Double spaced throughout with Justified and 2.5 cm margins in the left and top.
- Font type is Times New Roman with size 12.
- Printed on a good quality A4 80 gm on one side of paper.
- Manuscript should have uniform style, correct journal format, carefully proofread for grammar, spelling and punctuation.

Manuscript format

In general, original article should be divided into following sections: Title page, Abstract Text, Tables with titles and foot notes, alternatively Graph with title and Illustrations with legends. Each of the sections is to start on a separate page. Pages should be numbered consecutively beginning from the abstract.

Title page:

- Title of the article (Not exceeding 60 characters).
- Names of all authors with their designation and institutional affiliations Name of the department and institute where the study was undertaken
- Name of the corresponding author with contact address, telephone number, Email address.
- Disclosure of conflict of interest (if any).
- Disclosure of sources of funding or sponsor

Abstract:

- Structured with headings (Background, Objectives, Methods with statistical analysis, Result & Conclusion).
- Authors name should not be given.
- Preferably within 250 words.
- Avoid abbreviations in the title and abstract except standard abbreviation.
- A non structured abstract is suggested for review article and case report.

Text:

- Text should be arranged into Introduction, Materials & Methods, Results, Discussions, Acknowledgement & References (IMRDAR).

Introduction:

- Statement of the problem with a short discussion of its importance and significance.
- Review of the literature related to the problem with pertinent reference.
- Objectives/ hypothesis/ benefits expected stated in 1-2 paragraph.

Materials & Methods:

- Study type, place and time.
- Description of study variables.
- Description of study subjects and grouping.
- Selection criteria
- Approval of the study involving human subjects by ethical review committee and description of the ethical aspects in such study
- Description of procedure, methods, apparatus, drugs or chemicals as applicable.
- Description of statistical procedure with enough detail to enable a knowledge able reader with access to the original data to verify the reported results

Results:

- Present result in logical sequence in text, table and illustration with most important finding first.
- Describe without comment.
- Restrict number of table and figure needed to support assessment of paper.
- Do not duplicate data in table and figure.

Table:

- Simple self explanatory with brief title, not duplicate in text.
- Each table should be numbered in Romans and printed in separate page.
- Do not use internal horizontal and vertical rules.
- Uses o9f many tables are not encouraged.

Illustration:

- All illustrations must be numbered consecutively in English numerals as they appear in the text.
- Submit print photograph of each Illustration along with its electronic file.
- Figure number, title of manuscript, name of the corresponding author and arrow indicating top should be written on a sticky label affixed on the back of each photograph.
- Scanned picture, graph, chart with title and figure number should be printed on separate page and its original data presentation file should be inserted in the CD along with text.

Legend:

- Must be typed in a separate sheet of paper.
- Photomicrograph should indicate the magnification, internal scale and the method of staining.
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Acknowledgement:

- Individuals, Institutions, Sponsors, Organizations of bodies can be acknowledged in the article for their contribution or financial or any form of assistance to the work.

References:

- For reference, use author number style (Vancouver) which is based on an ANSI standard adapted by the National Library of medicine (NLM).
- References should be numbered consecutively in the order on which they are first mentioned in the text.
- Identify references in the text, tables and legends by English numerals in superscript.
- All citations to electronic references should be presented in numbered references following the text.

The titles of the journals should be abbreviated as

- Coding to the style used in Index Medicus.
- Write names of 6 authors followed by et al, if authors number is more than six.
- The reference list is also checked by the editorial staff or reviewer. So, it is the responsibility of author to provide accurate information.

Standard journal article:

Example:

Khalil M, Chowdhury MAI, Rahman H, Mannan S, Sultana SZ, Rahman MM, etal Splenic Mass and its relation to age, sex and height of the individual in Bangladeshi People. J Bangladesh Soc Physiol 2008;3(1):71-78.

Journal article with organization as author:

American diabetes Association. Diabetes Update. Nursing, 2003 Nov; Suppl: 19-20.

Journal article with multiple organization as author:

American Dietetic association; Dietitians of Canada; Position of Dietetic association and Dietitians of Canada Nutrition and Women's health. J Am Deet Assoc 2004 Jun; 104(6): 948-1001.

Journal article with Governmental body as author:

National Institute on Drug Abuse (US); Caribbean Epidemiology Centre; Pan American Health Organization; World Health Organization. Building a collaborative research agenda: drug abuse and HIV/AIDS in the Caribbean 2002-2004. West Indian Med J. 2004 Nov; 53 suppl 4: 1-78.

Standard book with initials for authors:

Eyre HJ, Lange DP, Morris LB. Informed decisions: the complete book of cancer diagnosis, treatment and recovery 2nd ed. Atlanta: American Cancer Society; 2002.768p.

Contributed chapter of a book:

Rojko JL, Hardy WD. Feline lukemia virus and other retroviruses. In: Sherding RG, editor. The cat: diseases and clinical management. New York: Churchill Livingstone; 1989. p 229-332

Conference Proceedings:

Pacak K, Aguilera G, Sabban, E, Kvetnansky R, editors. Stress: current neuroendocrine and genetic approaches. 8th symposium on Catecholamines and Other Neurotransmitters in stress: 2003 Jun 28-July 3; Smolenice Castle (place of conference), Slovakia. New york (place of publication): new York Academy of Sciences (publisher); 2004 Jun. 590 p.

Scientific and Technical Reports:

Page E, Harney JM. Health hazard evaluation report. Cincinnati (OH) (Place of publication: National Institute for Occupational Satety and Health)(US)(Publisher); 2001 Feb.24p (Total number of pages). Report No: HETA2000-0139-2824.

Dissertation & Thesis:

Entire Reference

Kempner JL. Aching heads. making medicine gender and legitimacyin headache (title) [dissertation] [Philadelphia] University of Pennsy lvania;2004.271p.

Alam M. Study of Heart Rate Variability in Adolescent Athletes [M Phil Thesis]. [Dhaka]: Bangabandhu Sheikh Mujib Medical University; 2008. 178p.

Part of Dissertation & Thesis:
Mackowski MP. Human factors: aerospace medicine and the origins of manned space flight in the United States [dissertation]. [Tempe (AZ)]: Arizona State University; 2002 May. Part 2, Space medicine; p. 188-377.

Alam M. heart Tate Variability in Adolescent Athletes[M Phil thesis].[Dhaka(Bangladesh)]: Bangabandhu Mddical University;2008 July. Appendix (Name of the part 4(Number of the part),Classification of Physical Activity Intensity (Title of the part).p.7 (Location of the part).

Standard journal article on the Internet:
Kaul S, Diamond GA. Good enough: a primer on the analysis and interpretation of noninferiority trials. Ann Intern Med [Internet]. 2006 July 4 [cited 2007 Jan 4];145(1):662-9. Available from:http:// www.annals.org/ cgi/reprint/145/1/62.pdf

Journal article on the Internet with organization (s) as author:
National Osteoporosis Foundation of South Africa. Use of generic alendronate in treatment of osteroporosis. S Afr MedJ[Internet].2006Aug[cited 2007 Jan 9];9(8):696-7.Available from:http:/blues.sabinet.co.za/WebZ/Authorize?

Journal article on the Internet with governmental body as author
Centers for Disease Control and Prevention (US), National center for HIV/AIDS, Hepatitis, STD, and detention and control of tuberculosis in correctional and detention facilities: recommendations from CDC. Endorsed by the Advisory Council for the elimination of tuberculosis, the national Commission of Correctional Health Care and the American correctional Association. MMWR R Rep[Internet].2006 July 7[cited2007Jan9];55(RR-9):1-44. Available from:http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5509al.htm

Journal article on the Internet with no author:
Prevention strategies for asthma-secondary prevention.CMAJ [Internet]2005 Sept[cited2007Jan5]; 173(6Suppl): S25-7.Available from:http//www.cmaj.ca/cgi/content/full/173'6_suppl/S25

Journal article on the Internet without standard volume, issue or article number:
Jacobs JL, Lee MT, Lindberg M, Kamin C. Problem based learning, multimedia paucity of behavioral issue learning Med Educ. Online [Interner].2005[cited2005]: [5p]. Available from:http:www.med-ed-online.org/pdf/10000006.pdf

FORWARDING LETTER FOR SUBMISSION TO PRIME MEDICAL JOURNAL

Date .....

To
The Editor-In-Chief
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Prime Medical College, Rangpur

Sub: Submission of manuscript

Dear Sir,
I/we are submitting our manuscript entitled, ...by
.....
.....

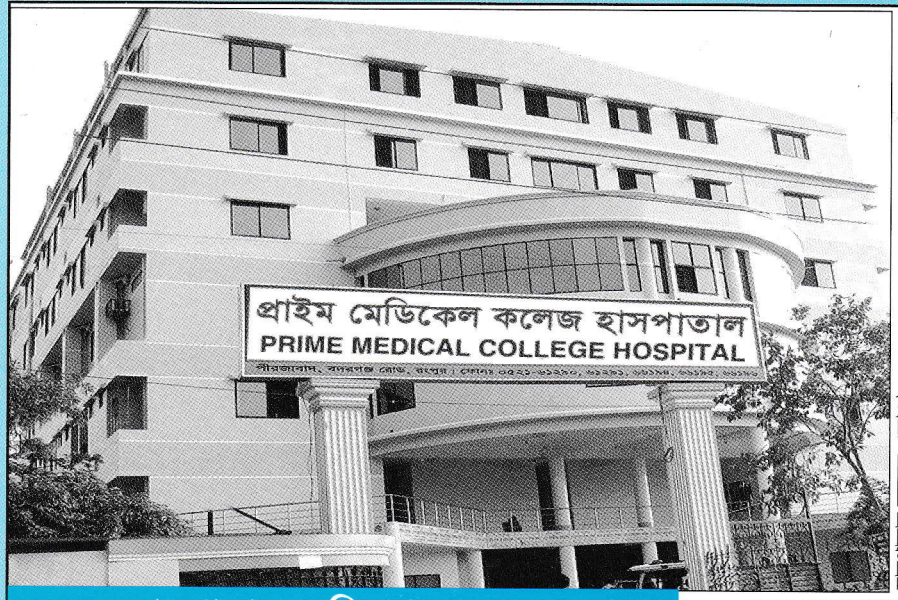
for publication in your journal. This article has not been published or submitted for publication elsewhere. There is no conflct of interest between the authers.

We believe that this article may be of value to medical professionals engaged in Biochemistry/Internal medicine/ Surgery/Gynae/..... We are submitting 2 copies of manuscript along with an electronic version (CD).

We, therefore, hope that you would be kind enough to consider our manuscript for publication in your journal as Original Articles/Review Article/Special Article/ Case Report.

Thanks and best regards

Signature of author/authors



হাসপাতাল ভবনের একাংশ

প্রাইম মেডিকেল কলেজ হাসপাতাল, রংপুর
(৭৫০ শয্যা বিশিষ্ট পূর্ণাঙ্গ
বেসরকারী মেডিকেল কলেজ হাসপাতাল)

হাসপাতালের বিভাগ সমূহ

- মেডিসিন বিভাগ
- সার্জারী বিভাগ
- স্ত্রীরোগ ও প্রসূতি বিভাগ
- শিশু ও নবজাতক বিভাগ
- অর্থোপেডিক্স বিভাগ
- চক্ষু বিভাগ
- নাক,কান ও গলা বিভাগ
- ইউরোলজি বিভাগ
- হৃদরোগ বিভাগ
- নিউরোলজি বিভাগ
- ক্যান্সার বিভাগ
- ডায়াবেটিক সেন্টার
- শিশুসার্জারী বিভাগ
- রিহ্যাবিলিটেশন সেন্টার
- ফিজিওথেরাপী সেন্টার
- দন্ত বিভাগ

প্রাইম ডায়ালাইসিস সেন্টার

সম্পূর্ণ নতুন ৬ টি জাপানী টরে মেশিনের সমন্বয়ে **ডায়ালাইসিস সেন্টারে** ২৪ ঘন্টা ডায়ালাইসিস করার সু-ব্যবস্থা

প্রাইম সিসিইউ

হৃদরোগীদের সু-চিকিৎসার জন্য অত্যাধুনিক যন্ত্রপাতি ও বিশেষজ্ঞ চিকিৎসকবৃন্দের সমন্বয়ে "প্রাইম সিসিইউ" **সিসিইউ এর সার্বিক তত্ত্বাবধানে রয়েছেন অধ্যাপক ডাঃ নওয়াজেস ফরিদ, বিভাগীয় প্রধান, হৃদরোগ বিভাগ, প্রাইম মেডিকেল কলেজ ও হাসপাতাল, রংপুর।**

প্রাইম আইসিইউ

উত্তরবঙ্গে এই প্রথম আইসিইউ। মুমূর্ষ রোগী, জটিল অপারেশন পরবর্তী নিবিড় পরিচর্যা ও সু-চিকিৎসার জন্য অত্যাধুনিক যন্ত্রপাতি ও বিশেষজ্ঞ চিকিৎসকবৃন্দের সমন্বয়ে "প্রাইম আইসিইউ"

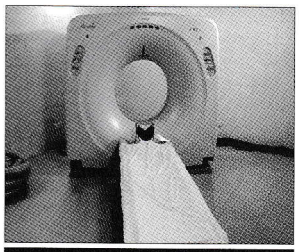
প্রাইম স্টোনক্রাশ সেন্টার

উত্তরবঙ্গে এই প্রথম কোনপ্রকার অপারেশন ও কাটা-ছেঁড়া ছাড়া ব্যথামুক্তভাবে কিডনীর পাথর অপসারনের সু-ব্যবস্থা।

নবজাতক নিবিড় পরিচর্যা কেন্দ্র

নবজাতক শিশুদের নিবিড় পরিচর্যা ও জন্ম পরবর্তী জটিলতার চিকিৎসার জন্য সার্বক্ষণিক নিওনেটাল আইসিইউ।

২৪ ঘন্টা সকল এ্যম্বুলেন্স ও প্রকার পরীক্ষা-নিরীক্ষার সু-ব্যবস্থা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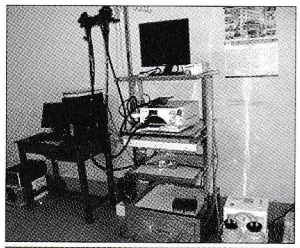
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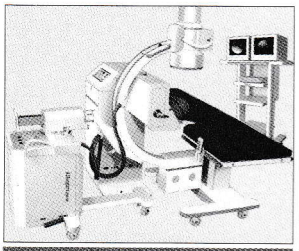
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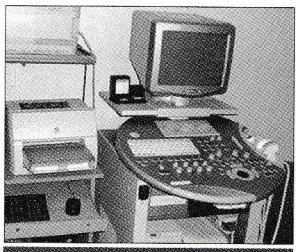
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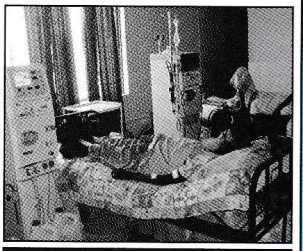
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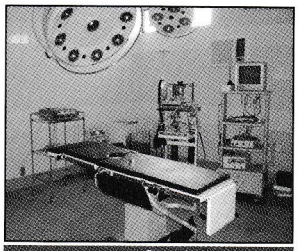
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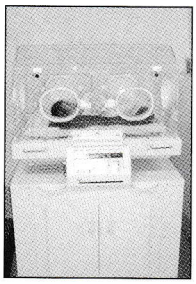
নিওনেটাল আইসিইউ

সর্বাধুনিক প্রযুক্তির সেবাসমূহ

- সিটি স্ক্যান
- ভিডিও এন্ডোস্কোপ
- ডিজিটাল 4-D কালার ডপ্লার
- ডিজিটাল ইকোকার্ডিওগ্রাম
- ডিজিটাল আল্ট্রাসনোগ্রাম
- ডিজিটাল এক্স-রে
- স্পেশালাইজ্ড প্যাথলজি
- সাইটোলজি ও বায়োপসি

প্রাইম মেডিকেল কলেজ হাসপাতাল, রংপুর

পীরজাবাদ, বদরগঞ্জ রোড, রংপুর (কেন্দ্রীয় বাস টার্মিনালের অর্ধ কিলোমিটার পশ্চিমে)

ফোন ঃ ০৫২১-৬১২৯০, ৬১২৯১, মোবাইল ঃ ০১৭৩০০৩৩১১০, ০১৭১৮৫৩২৪৩৮, ০১৭১৯২০৮৭৪৭