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Pediatric Education and Research

July - September 2014
Volume 2 Number 3

Contents

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This century will be the century of the brain. Intelligence will define success of individuals; it remains the main ingredient of success. Developed and used properly, intelligence of an individual takes him to greater heights. Ask yourself, is your child intelligent! If yes, is he or she utilizing the capacity as well as he can? I believe majority of people, up to 80% may not be using their brain to best potential. Once a substantial part of life has passed, effective use of this human faculty cannot take one very far. So, parents need to know how does their child grow and how he becomes intelligent in due course of time. As the pressure for intelligence increases, the child is asked to perform in different aspects of life equally well. At times, it may be counter-productive. Facts about various facets of intelligence are given here. Other topics like emotional intelligence, delayed development, retardation, vaccines, advice to parents and attitude have also been discussed in a nutshell. The aim of this book is to help the child reach the best intellectual capacity. I think if the book turns even one individual into a user of his best intelligence potential, it is a success.

PEDIATRICS COMPANION

By Dr. Rajesh Shukla

ISBN: 81-901846-0-1, Hb, VIII+392 Pages

Price: Rs.250/-, US$50

Published by **World Informations Syndicate**

This book has been addressed to young doctors who take care of children, such as postgraduate students, junior doctors working in various capacities in Pediatrics and private practitioners. Standard Pediatric practices as well as diseases have been described in a nutshell. List of causes, differential diagnosis and tips for examination have been given to help examination-going students revise it quickly. Parent guidance techniques, vaccination and food have been included for private practitioners and family physicians that see a large child population in our country. Parents can have some understanding of how the doctors will try to manage a particular condition in a child systematically. A list of commonly used pediatric drugs and dosage is also given. Some views on controversies in Pediatrics have also been included. Few important techniques have been described which include procedures like endotracheal intubations, collecting blood samples and ventilation. I hope this book helps young doctors serve children better.

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Volume 2 Number 3, July - September 2014

ASHA is in for Neonates in Pediatrics (New Born Care)

Gupta S.N.*, Gupta Naveen**

In 1947, the IMR was nearly 200.This means that one in five. The principle causes of infant death are: diarrhea, pneumonia, malnutrition, measles, tetanus, whooping cough which can be controlled by ORS (clean water, hand washing), antibiotics, nutritional supplement, vaccination, vaccination (clean birth) and vaccination respectively. Nearly 4 million neonates globally die each year; 96% are in developing countries. In India in 2007, Neonatal Mortality Rate (NMR) is 36 per 1000 live birth. Fifty percent deaths are occurring in the 1st month while rests of the 50% ones are under five years of age. One million dollar question is as to why neonates are not receiving health care. The common answers are (a) custom to stay at home with newborn, (51% home based deliveries), (b) parents are not aware of danger signs in case of newborns and more importantly, (c) no access to health care locally. Financial reasons also dominate the several precipitating factors. That is why preventing newborn deaths emerge as the biggest challenge. Every newborn needs care immediately at birth and in the first 28 days of life, irrespective of mode of delivery or weight of baby, the basic aspects of the newborn care. So, ASHA is an important link between community and facility.

ASHA is an *Accredited Social Health Activist;* an honorary incentive based woman[1] which is selected by the community to serve as a resource because she understands their needs, their beliefs and practices, the social factors, where the poor and needy live, and what people want from health services. ASHA knows a lot about the community in which she lives. However in order to be an effective resource, she needs additional knowledge and skills; learns about health rights and entitlements, the causes and treatment of common illnesses, and type of treatment available at different facilities. She needs to develop the skills to communicate health related information to people in the community, to counsel them on prevention of illness and to adopt healthy behaviors, to treat minor ailments and the leadership ability to help people negotiate access to rights and entitlements. She has three-fold roles: (i) to be a facilitator of health services and link people to health care facilities, (ii) to be a provider of community level health care, and (iii) an activist, who builds people understands of health rights and enables them to access their entitlements. It is quite established that Infant Mortality Rate (IMR) cannot be reduced to less than 30/1000 live births without reducing Neonatal Mortality rate (NMR). Now, ASHA is in for neonates in Pediatrics for home based newborn care (HBNC) and facilitating the facility based newborn care (FBNC). We know the FBNC is costly and inaccessible to all, particularly, the vulnerable ones. Therefore, for newborn care when visiting the newborn at home, she would provide:

a. Counselling and problem solving on breastfeeding;
b. Keeping the baby warm;
c. Identification and basic management of LBW (Low Birth Weight) and pre-term baby
d. Examinations needed for identification/ first contract care for sepsis and asphyxia

Care of the Normal Baby

Immediate care of the newborn at birth

Immediate care at the time of birth involves clearing the nose and mouth of mucous, to allow the baby to breathe. Sometimes, the newborn can die immediately after birth due to asphyxia (difficulty in breathing). The ANM or the doctors attending the birth usually clear the airway and resuscitate the baby. In case of a home delivery, where there is no skilled birth attendant she should immediately refer the baby to the nearest health facility, as in such circumstances the time to save the baby is very short.

Normal care at birth

Drying the newborn: Baby should be cleaned gently with a clean soft moist cloth and the head be wiped dry with a dry soft clean cloth.

Ensuring warmth: The baby should be kept warm and in close skin to skin contact with the mother. It should be wrapped in several layers of clothing or woollen clothing depending upon the season. The room should be warm enough for an adult person to just feel uncomfortable; free from moisture and strong wind. The family and mother should be counselled to avoid bathing the baby till at least first seven days after birth. A newborn loses body heat very quickly and if it is left wet or exposed, its body temperature may fall suddenly and cause sickness which can kill the baby.

Early initiation of breastfeeding: Mother should be encouraged to start breastfeeding immediately after delivery. This is beneficial for both the mother and baby since it not only makes the baby stronger but also helps in quick delivery of placenta and reduces bleeding. The first yellow thick milk of the mother known as colostrum should be fed to the baby and not discarded as it prevents the baby from infections.

Avoiding pre lacteal feeds: Honey, sugar water etc. should not be given to the baby since they can cause infection or diarrhoea. Only breast milk should be fed to the baby.

Weigh the baby: Baby should weighed immediately after birth. If the weight of the baby is 2500 gms then it is a normal baby. But if the weight is less than 2500 gms, esp less than 2000 gms, it is a High Risk Baby (HRB).

Home visits for the care of newborn

You should undertake home visits to ensure that the newborn is being kept warm and breastfed exclusively. Encourage the mother to breastfeed, discourage harmful practices such as bottle feeds, early baths, giving other substances by mouth. Frequent home visits will help her to identify early signs of infection or other illnesses in the newborn.

For institutional births-visit on Days - 3, 7,14, 21, 28 and 42.

For home deliveries visit on Days - 1, 3, 7, 14, 21, 28 and 42.

Care of the High Risk Baby

A *high risk baby* is the one who is:

1. Having less than 2000 gms birth weight.
2. Not able to suckle or breast feed properly on day.
3. Pre term baby - born before completion of 8 month 14, days.

These babies need extra care. She you should visit such babies on daily basis in the first week after birth. Visit the baby once every three days until she is 28 days old. If the baby is improving, then one visit is undertaken on the 42nd day.

Care for the high risk baby includes:

Extra warmth: You can advise mother and family to adopt the Kangaroo Mother care_KMC (Skin to skin contact)- method to keep the baby warm. The mother has to sit or recline comfortably if possible in a private place, and loosen her upper garments. Place the baby on mother's chest in an upright and extended posture, between her breasts, so that the baby skin is in direct contact with the mother skin. Turn baby's head to one side to

keep airways clear. Cover the baby with mother's blouse, 'pallu' or gown; wrap the baby mother together with an added blanket or shawl. If mother is not present then she can advise father or any other adult of the family to provide kangaroo care (KMC) to the baby. The head of the baby should be covered with a cloth or cap to prevent heat loss.

Kangroo Mother Care (KMC)

Caution during bathing: For Low birth weight (LBW) and Pre-term babies, bathing should be delayed after the usual seven days, till a steady weight gain is recorded and the baby attains a weight of over 2000 gms.

Frequent breast feeds: Babies with low birth weight may not be able to breastfeed in the beginning and need to be given expressed breast milk using a spoon. As they gradually learn to suckle they should be put to breast as often as possible.

Early identification and referral for danger signs: Counsel the mother to identify the following danger signs. If any of the following danger signs appear in the baby then it should be immediately referred to a well -equipped health facility for proper care.

a. Poor sucking of breast
b. Pus on Umbilicus
c. Pus filled boils
d. Develops fever
e. Fast breathing/difficulty in breathing/ chest wall in drawing
f. Develops diarrhoea or has blood in stool
g. Pallor of palms/soles (jaundice)
h. Blue palms/soles
i. Remains excessively drowsy or cries incessantly
j. Feels cold or hot to touch
k. Bleeding from any site
l. Abdominal distension/vomits often
m. Abnormal movements (convulsions)
n. No urine passed in 48 hours
o. Cracks or redness on the skin folds (thigh axilla/buttock)

Precautions during referral:

1. Choose the fastest mode of transport.
2. Keep the baby warm during travelling.
3. Mother should accompany and stay close to the baby and breast feed the baby whenever required.

Other precautions to be taken for newborn care:

a. The cord of the baby should be kept clean and dry at all times. Nothing should be applied on the cord of the baby, it should be kept clean and dry at all times.
b. Nothing should be put in the eye of the baby.
c. Newborn baby should be kept away from people or children who are sick.
d. The newborn baby should not be taken to very crowded places.

Breastfeeding

Breastfeeding should be started within half an hour after the birth. Baby should be put to the breast even before the placenta is delivered. The first thick milk – *colostrum* - should always be fed to the baby, as it is *the first immunization* for the baby. Many people discard this milk due to cultural beliefs but it should never be discarded. Colostrum builds the immunity of the baby and protects from diseases.

Facts about breastfeeding

- The baby should be exclusively breast fed till *six months* of age and no other outside feed should be given.
- Breast milk provides for all the dietary needs of the baby. It also provides sufficient water to the baby, thus baby should not be given water even on summer days.
- It is safe, builds immunity against illnesses, helps in keeping the baby warm and helps develop a bond between mother and baby.
- Feeding other than breast milk may cause infections and malnutrition due to poor nutritious content. The baby may have difficulty in digesting such foods resulting in diarrhoea and vomiting.
- Breastfeeding should be done as often as baby wants and for as long as the baby wants, through the day and night.
- The more often the baby is fed, more milk will be produced.
- Breastfeeding helps in contraction of the uterus, expulsion of the placenta and also reduces the risk of excessive bleeding after delivery.
- At six months of age other foods should be introduced. Breastfeeding can be continued till the child is 1-2 years of age.

Correct positioning for breastfeeding

The mother's hand should hold the baby supporting the baby's bottom, and not just the head or shoulders. The baby's face should face the breast, with nose opposite the nipple, chin touching the breast, mouth is wide open and the lips upturned. To obtain maximum benefit of breastfeeding, the baby should be held in the correct position and be put correctly to the breast. Explain to the mother the correct position for breastfeeding. The pictures below explain how the baby is held in different positions.

Breastfeeding Positions: Four positions (a, b, c and d)

Cradle Position (a)

Side-lying Position (b)

Underarm Position (c)

Alternate Underarm Position (d)

Mother should follow the following steps while breastfeeding the baby every time:

Clean the nipple of the breast with warm water before feed. 1 Hold the baby horizontal on the lap or besides if the mother is lying on side. Hold the breast at the root of the nipple. Put the baby's mouth to the breast so that the baby gets a full hold of the nipple now. Make sure the baby's head and body is held facing the breast without turn and twist. Support the baby's head and bottom.

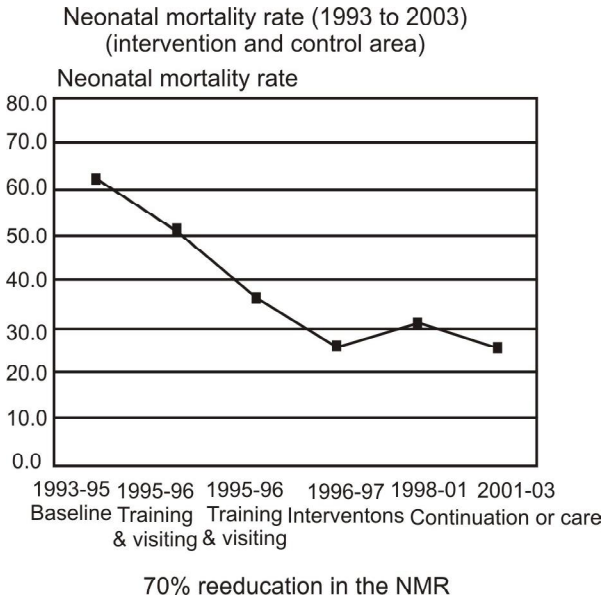
Common problems in breastfeeding

Some mothers may find it difficult to breast feed their baby normally. She should counsel such mothers and encourage them. Listen to them, understand their problems and give advice clearly and simply. The common problems reported are:

- Not enough milk
- Sore nipples and
- Engorged and painful breasts
- Encourage the mother to continue breastfeeding when she complains of not enough milk. Maintaining the correct position during breastfeeding will prevent sore nipples. If the baby is not able to attach, apply warm compresses to breast, gently massage from outside toward the nipple and express some milk until the areola is soft, then put baby to the breast, making sure that the attachment is correct. If the problem persists refer the mother to ANM for advice.

  There are 8, 34, 922 ASHAs working across 31 states and union territories including the High focus states like Andhra Pradesh, Delhi, Gujrat, Haryana, J & K, Karnataka, Kerala, Maharashtra, Punjab, Tamil Nadu, West Bengal and four UTs viz, Andaman Nicobar islands, Dadra and Nagar Haveli, Lakshdeep, Daman and Diu. In the High states ranges from 80 to 99% and the drop out rate iis 0.8 to 11 while in non-high focus states, the drop out rate is 2.5 to 22%. Still the progress rate is good in handling routine and state specific programs involving ASHAs[2].

  But before we close, some of the examples will also help in removing the doubts about community health worker (CHW) like the Arogaya Doots as CHWs in Gadchirloli_Maharashtra wherein Home Based Newborn Care concept evolved as a result of field trial in Gadchiroli in 37 naxalite infested villages. This model produced results in 70% reduction in NMR from 60 plus to 20 plus per 1000 live births in 1993 to 2003[3].



- Similarly, Mitanin Programme as Health Sector Reform in Chhattisgarh, over 60,000 women are working as community health worker and giving health support at the village level and this program is going on satisfactorily and producing the desired results.

Reference

1. Induction Training Module for ASHAs, (National Rural Health Mission), National ASHA Mentoring Group and State Nodal Officers for ASHA and Community Processes. Ministry Of Health and Family Welfare, India.

Sl No.	Heads of Compensation	Amount in Rs/case
1.	JSY financial package (NEW uniform package)	
a)	For ensuring antenatal care for the woman	Rs. 300 for Rural areas Rs. 200 for Urban areas
b)	For facilitating institutional delivery	300 for Rural areas 200 for Urban areas
2.	Reporting Death of women (15-49 years age group) by ASHA to Block PHC Medical Officer. **(New Revised incentive)**	200 for reporting within 24 hours of occurrence of death by phone to Block Medical Officer
II	**Child Health**	
	Undertaking six (in case of institutional deliveries) and seven (for home deliveries) home - visits for the care of the newborn and post- partum mother	Rs.250
III	**Immunization**	
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2	Complete immunization for a child under one year	Rs.100.00
3	Full immunization per child upto two years age (all vaccination received between 1st and second year age after completing full immunization after one year	Rs 50
4	Mobilizing children for OPV immunization under Pulse polio Programme	Rs.75/day

2. Progress of the ASHA program; update on ASHA program, Jan2014, NHM, Ministry Of Health and Family Welfare, India.
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Review Article

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Study on Age at Menarche and Factors Affecting it

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Abstract

Background: Menarche is viewed as an excellent physiological marker of adolescent maturation.[1] It is apparent that the age at menarche is a developmental milestone, which is highly variable and highly sensitive to a variety of internal and external forces. Knowledge of the age at menarche will help the government to design and implement programmes about reproductive health of women, to set laws about age at marriage, family planning, abortion etc and to decide the appropriate age at which the topics like the sex education, contraception and sanitary practices can be incorporated in schools. The present study attempts to find the age at menarche in girls from Gulbarga city of Karnataka. We also investigated whether the age at menarche is associated with mother's menarcheal age, socioeconomic status,BMI. The findings are reported here. **Design**: Observational cross sectional study. **Methods**: the study was conducted among school going girls aged between 10 and 16 years.246 girls participated in the study on voluntary basis.A predesigned questionnaire was administered and girls were briefly examined.Data collected was analysed using MS excel and EPI info version 4. **Results**: Out of 246 cases studied 152 cases were having menstruation, most frequent age of menarche being 12 years when 46 cases (18.7%)had its onset and 13years when 46 cases (18.7%) had its onset. The lowest age was 10 years and highest was 14 year. Mean age at menarche was found to be12.14 (± 1.086). There seems to be definite association of various factors which modify the age at menarche like mother's menarcheal age,socio-economic status. **Conclusion**: There was a positive correlation between menarche and maternal age at menarche and socioeconomic status.

Key Words: Mean age at menarche; Body mass index; Menarche; Socio-economic status.

Introduction

Menarche is considered a distinct benchmark for sexual maturation. It is also considered as an indicator of quality of life of a population since a number of biological & socio-economic factors influence.[2]

Menarche is affected by genetic fac-tors, race, environmental conditions, nutrition, physical activity, geographic location, urban or rural residence, health status, psychological factors, body mass index (BMI), family size, socioeconomic status, parental educational level, occupation of parents, loss of parents, child sexual abuse, physical stress, tea consumption, and passive smoking.[3]

There have been reports that there is a fairly good correlation between the age of menarche

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of mothers' and their daughters'.[4,5]

Variation in the timing of puberty (onset/ timing of menarche) are marked between well of and under privileged population with a marked delay in menarche reported in under privileged girls.[6]

Girls with early menarche were more likely to be overweight at ages 7, 11, and 16 years than those with late menarche, although early menarche was also reported by girls who were underweight or of average weight.

These findings support the hypothesis that in well nourished populations the relation between menarche and body size is largely regulated by genetic factors and that nutrition is less important.[7]

The present study aims at reporting the mean age at menarche among the girls of Gulbarga, Karnataka and to assess the influence of parameters like mother's age at menarche, socioeconomic status and body mass index.

Methods

The present study was conducted among 246 adolescent girls in age group of 10 and 16 years, randomly selected from schools of Gulbarga. 246 schools girls were selected from July 2014 to august 2014, thus completing sample size of 246. The present study was undertaken to study the mean age at menarche and effect of factors like mother's monarchial age, socioeconomic status and BMI on the onset of menarche among girls of Gulbarga. Every case was examined physically to exclude the presence of any disease. The girls were interviewed separately and privately. Their ages were recorded and their weight & height taken. Information regarding their socio-economic status was calculated according to Modified Kuppuswamy Scale. This is cross sectional descriptive study.

Results

Table No.1 shows age distribution of cases having menstruation, girls from 10 to 16 years were examined and out of total 246 cases, 152 cases having menstruation and 94 cases not having menstruation were reported. At 10 years of age only 10 cases (4.1%) were having menstruation like this at 11 years i.e 35 cases (14.2%) ,at 12 years and 13 years ,46 cases(18.7%) each at 12 and 13 years and at above 14 years, 15 cases (6.1%) having menstruation

Table 1: Girl's age at menarche

Girl's age at menarche	Number of girls	Percentage
10 years	10	4.1%
11 years	35	14.2%
12 years	46	18.7%
13 years	46	18.7%
= 14 years	15	6.1%
Total	152	61.8%

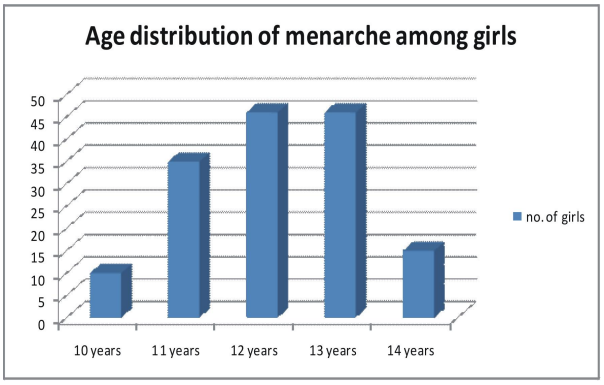

Table 2: Showing mean age, lowest and highest age at menarche for girls and for the mothers

	Mother's age at menarche (years)	Girl's age at menarche (years)(n=152)
Mean (±SD)	13.52 (± 1.315)	12.14 (± 1.086)
Minimum	11years	10years
Maximum	18years	14years

Table 3: Showing distribution of mother's menarcheal age

Mother's age at menarche	Number of mothers	Percentage
= 11 years	10	4.1%
12 years	44	17.9%
13 years	79	32.1%
14 years	56	22.8%
15 years	40	16.3%
16 years	13	5.3%
17 years	3	1.2%
18 years	1	0.4%
Total	246	100.0

Table 4: Comparing girl's menarcheal age with that of mother's menarcheal age

Mother's age at menarche (in years)	Girl's age at menarche (in years)				Total
	11	12	13	14	
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
11	4 (50.0)	1 (12.5)	3 (37.5)	0 (0.0)	8 (100.0)
12	8 (30.8)	10 (38.5)	7 (26.9)	1 (3.8)	26 (100.0)
13	20 (40.0)	17 (34.0)	9 (18.0)	4 (8.0)	50 (100.0)
14	13 (19.1)	18 (26.5)	27 (39.7)	10 (14.7)	68 (100.0)
Total	45 (29.6)	46 (30.3)	46 (30.3)	15 (9.9)	152 (100.0)

$\div^2$ =15.709, df=9, r=0.275, P<0.01

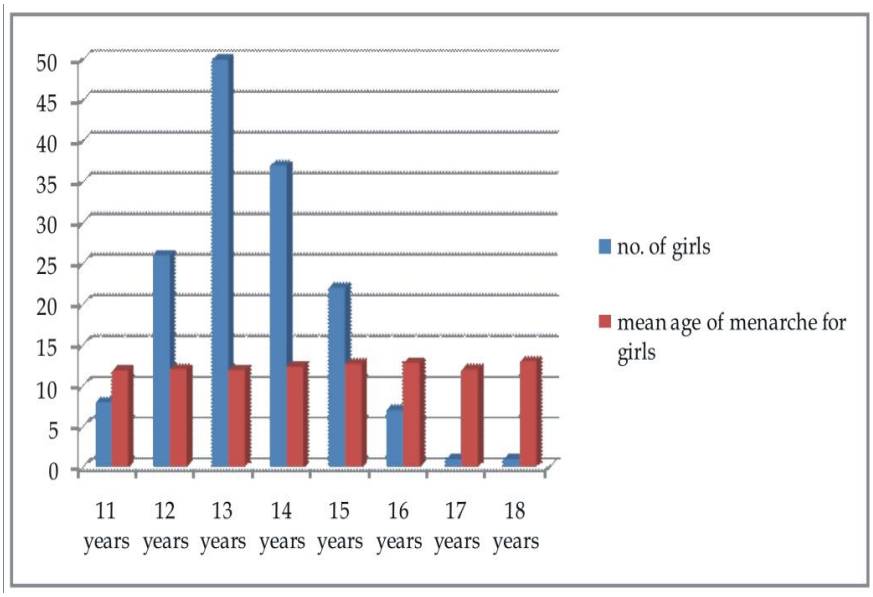

Table 5: Showing association between girls menarcheal age and socioeconomic status

SES	Girl's age at menarche (in years)				Total
	11	12	13	14	
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
class 1	15 (28.8)	15 (28.8)	18 (34.6)	4 (7.7)	52 (100.0)
class 2	27 (35.5)	18 (23.7)	22 (28.9)	9 (11.8)	76 (100.0)
class 3	2 (14.3)	6 (42.9)	6 (42.9)	0 (0.0)	14 (100.0)
class 4	1 (10.0)	7 (70.0)	0 (0.0)	2 (20.0)	10 (100.0)
Total	45 (29.6)	46 (30.3)	46 (30.3)	15 (9.9)	152 (100.0)

$\div^2$ =17.491, df=9, P<0.01

Table 6: showing girls mean menarcheal age among different socioeconomic classes

SES	No. of girls	Mean (±SD) age at menarche(in years)
Class 1 (upper)	52	12.21 (±0.957)
class 2 (upper middle)	76	12.17 (±1.051)
class 3(lower middle)	14	12.29 (±0.726)
class 4 (upper lower)	10	12.30 (0.949)
Total	**152**	**12.20 (0.979)**

Table 7: showing association between girls menarcheal age and BMI categories

BMI categories	Girl's age at menarche (in years)				Total
	11	12	13	14	
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
1	25 (37.3)	18 (26.9)	17 (25.4)	7 (10.4)	67 (100.0)
2	15 (22.4)	23 (34.3)	22 (32.8)	7 (10.4)	67 (100.0)
3	5 (27.8)	5 (27.8)	7 (38.9)	1 (5.6)	18 (100.0)
Total	45 (29.6)	46 (30.3)	46 (30.3)	15 (9.9)	152 (100.0)

$\div^2$ =4.705, df=6, *P*>0.01

The most frequent age of menarche is between 12 and13 years when 46 cases (18.7%) had their onset The lowest age of menarche was found to be 10 years & the highest age was 14 years, Only one case had its onset at 15 years .Mean age of menarche was found to be 12.14 (± 1.086).

The most frequent age of menarche among mothers is at 13 years when 79 cases (32.1%) had their onset . The lowest age of menarche was found to be 10 years & the highest age was 17 years, Only one case had its onset at 18 years .Mean age of menarche was found to be 13.52 (± 1.315).

The above table shows that there is a positive correlation between girls menarcheal age with that of mother's menarcheal age.

Socio-economic status is assessed according to Modified Kuppuswamy Scale, mean age at menarche among girls of class I, II, III,IV is 12.21 (±0.957), 12.17 (±1.051), 12.29 (±0.726), 12.29 (±0.726)years respectively.

The above table shows that menarcheal age was earlier in higher socioeconomic class compared to lower socioeconomic class.

Similarly body mass index is measured by taking the weight & height of girls, mean age at menarche in underweight, normal, overweight & obese girls is 12.09 (±1.026), 12.31 (±0.941), 12.22 (±0.943) respectively.

Discussion

The mean menarche age in the present study is 12.14 (± 1.086). This is in agreement with Purushathan[8], Amrita *et al[9]* and Banerjee *et al[10]* they found the mean age at menarche as 12.78 years, 12.6 years and 12.3 years respectively.

In present study findings are consistent between 10 to 15 years in which maximum incidence is seen between 12 to 13 years when 92 cases (37.4 %) had its menarche.

Table 8: showing girls mean menarcheal age among different BMI categories

BMI categories	No. of girls	Mean (±SD) age at menarche (in years)
1	67	12.09 (±1.026)
2	67	12.31 (±0.941)
3	18	12.22 (±0.943)
Total	**152**	**12.20 (0.979)**

Factors Affecting Age at Menarche:

1. **Mother's menarcheal age**: The mean age at menarche of mothers involved in the study was significantly higher [13.52 (± 1.315)] than the mean age at menarche of their daughters 12.14 (± 1.086). A secular trend towards an earlier age at menarche has been regarded as a positive indicator of a population's health status.[11,12]

   A positive correlation was observed between menarcheal age of mothers and their daughters.

2. *Socio-economic status:* The Age at menarche in different socio-economic groups were studied according to Modified Kuppuswamy Scale. This study shows that age at menarche in higher socioeconomic classes i.e. class I is12.21 (±0.957), class II is12.17 (±1.051) was found to be earlier compared to lower classes i.e. class III is12.29 (±0.726) & IV&V is 12.30 (0.949) respectively. This figure is an agreement with study conducted in central India by Dambhare DG *et al* according to which age of menarche in higher class is 12.89 + 1.22 years and in lower classes is found to be 13.48 + 1.35years[13] and also in agreement with study conducted by Ray S *et al*. in west Bengal.[14]

3. *Body mass index:* This study shows that mean age at menarche in obese is 12.22 (±0.943) in underweight is12.09 (±1.026) and in normal is12.31 (±0.941) therefore body mass index does not significantly influence the mean age at menarche.

No significant association between BMI and average age of menarche was found in a study conducted by Cuatero G B *et al*.[15]

No significant statistical relationship between weight and age of menarche was found in a study conducted by Khakbazan Z *et al*.[16]

Conclusion

In present study there were 246 girls, the menstruation had started in 152 girls and 94 girls did not have menstruation. The mean age at menarche is 12.14 (± 1.086). The lowest age of menarche is 10 years and highest is 15 years.

A positive association is found between girls menarcheal age with that of mother's menarcheal age.

The effect of socio-economic status is studied, the mean age at menarche is earlier in class III and IV group and delayed in class I and II socio-economic group.This is in agreement with ICMR[17], Bai & Vijaylaxmi[18], and Sidhu.[19]

Thus the trend of lowering of age at menarche is well marked as we moved from lower and middle to higher socioeconomic stratum.

Body mass index is found to be insignificantly associated with age at menarche.

In the present study there seems to be a definite association between Bio-Social factors and mean age at menarche.

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Review Article

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Medical Apron (White Coat)

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Abstract

Before the middle of the19th century, only the scientists who worked in laboratories used to wear LAB COATS which were beige (a pale-pinkish-yellow color). In the middle of the 19th century, science (Laboratory scientists) had damaged the prestige of medicine (physicians) by demonstrating that the so called CURES by medicine were worthless, thus convicting the then physicians as QUACKS. While scientists were admired by public and rulers, physicians were distrusted at that time. So the medical profession turned to science. Thus physicians decided to become scientists. After all, it was thought, the laboratories inventions could certainly provide breakthrough advances in curing disease. Physicians, seeking to represent themselves as scientists, thus adopted the scientific lab coat as their standard of dress. And the physicians began to wear the most recognizable symbol of the scientist, the laboratory coat in the year 1889AD. When lab coats (originally beige colored) were adopted by the medical profession, they preferred the color of their coat to be white. The modern white coat was introduced to medicine in Canada by Dr. George Armstrong (1855–1933) who was a surgeon at the Montreal General Hospital and President of the Canadian Medical Association.

Keywords: Apron; White coat; Physician; White coat hypertension; White coat ceremony.

Introduction

The practice of wearing white coat was first introduced in the 19th century in Canada by Dr. George Armstrong (1855–1933). Then the gleaming white coat - in many respects became a symbol of authority and a life-giving profession instead of just preside over its ebbing away. The whiteness of the coat provided a sense of trust, belief and hope for the patients and perhaps that is why it still continues to be the formal dress code in all medical schools.

A knee-length overcoat worn by professionals in the medical field or by those involved in laboratory work. The coat serves

as a simple uniform. The garment is made from white or light-colored cotton, linen or cotton polyester blend, allowing it to be washed at high temperature.

When used in the laboratory, they protect against accidental spills e.g. acids. In this case

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they usually have long sleeves and are made of an absorbent material, such as cotton, so that the user can be protected from the chemical. Some lab coats have buttons at the end of the sleeves, to secure them around the wrist so that they do not hang into beakers of chemicals. Short-sleeved lab coats also exist where protection from substances such as acid is not necessary, and are favored by certain scientists (microbiologists) avoiding the problem of hanging sleeves altogether, combined with the ease of washing the forearms.

White coat has become a synonym for a profession which makes a physician stand out in world.[1]

History

White coats are sometimes seen as the distinctive dress of physicians, who have worn them for over 100 years. In the nineteenth century, respect for the certainty of science was in stark contrast to the quackery and mysticism of nineteenth century medicine. To emphasize the transition to the more scientific approach to modern medicine, physicians sought to represent themselves as scientists, and began to wear the most recognizable symbol of the scientist, *the white laboratory coat.*

Before the middle of the 19th century, only the scientists who worked in laboratories used to wear lab coats which are beige in color (a pale pinkish yellow color).physicians began to wear the most recognized symbol of medical field in the year 1889 A.D. The modern white coat was introduced to medicine in Canada by Dr. George Armstrong (1855-1933) who was a surgeon at Montreal General Hospital and President of the Canadian Medical Association. Recently, white coat ceremonies have become popular amongst those starting medical school. The modern white coat was introduced to medicine in the late 1800s as a symbol of cleanliness.

Physicians started wearing white coats in 1889. Surgeons were the first to wear them because they were the first to adopt the aseptic techniques coming of age at the time. The coat protected the physician from the patient and vice versa.

Agnew Clinic

Meanwhile, their nonsurgical colleagues wore business suits, often with frock coats called "Prince Albert." By the early 1900s, physicians of many specialties wore white coats.

The white coat has served as the pre-eminent symbol of physicians for over 100 years. A child's earliest memory of a doctor is the person in the white coat.

Patients expect to be treated in doctors' offices, hospitals and clinics by an individual wearing white.

In the 20th century, the white coat continued as the symbol of medical authority and respect as advance upon advance firmly established the patient-doctor relationship as a beneficial encounter.

Until the mid-1820s, students who were examining cadavers would wear black lab coats to show respect for the dead. Black lab coats were used in early biomedical and microbiology laboratories because any contamination that settled on them was easily visible. At its inception, the white coat served a few practical roles, mostly symbolic. Surprisingly, initially the color of apron for a

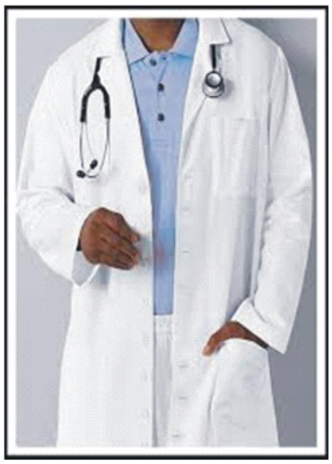
physician was black, which symbolizes despair and death.

The first use of white apron was symbolized in an oil painting named "*the agnew clinic*" by Thomas Eakins (1889), was the first documented proof of use of white apron in clinical practice.[2]

Whiteness

Color White was chosen with good reason as the new standard of the medical profession. This color, representing purity, is a visual reminder of the physician's commitment to do no harm. White represents goodness. Moses, Jesus, and the Saints, for example, are often described as being clad in white. White also conveys cleanliness and connotes a purging of infection. Further, the white coat symbolizes seriousness of purpose. It communicates the physician's medical intent and serves as a symbolic barrier that maintains the professional distance between physician and patient. Perhaps most importantly, the white coat is a garment of compassion. The white coat reminds physicians of their professional duties, as prescribed by Hippocrates, to lead their lives and practice their art in uprightness and honor.

This color, representing purity, is a visual reminder of the physician's commitment to do no harm. White represents goodness, cleanliness and connotes a purging of infection. White was chosen with good reason as the new standard of the medical profession.



Further, the white coat symbolizes seriousness of purpose. It communicates the physician's medical intent and serves as a symbolic barrier that maintains the professional distance between physician and patient. Perhaps most importantly, the white coat is a garment of compassion. The white coat reminds physicians of their professional duties, as prescribed by Hippocrates, to lead their lives and practice their art in uprightness and honor.[3]

An ideal white coat

- Physician apron should be up to mid-thigh.
- Surgeons apron should be up to knee
- It should be WHITE in color.
- It should be full sleeves.
- Sleeves should have buttons or braces.
- The cloth should be made of drill cotton to prevent static electricity.
- It should have three pockets, one in left above and other two below right and left.
- In front it should have acrylic buttons.

White coat ceremony

The white coat ceremony is a relatively new ritual in some medical , optometry, dental, physical therapy, pharmacy, physician assistant, and veterinary medical schools that marks the student's transition from the study of preclinical to clinical health sciences(i.e. from basics to clinical sciences). More than 100 medical schools celebrate white coat ceremony. White coat ceremony originated in University of Chicago's Pritzker School of Medicine in 1989, but the first full-fledged ceremony was at the Columbia University College of Physicians and Surgeons.

Since starting in the US, several medical schools in countries outside of the USA (such as Iran, Israel, Canada, UK, Dominican Republic, Brazil and Poland) have also started holding white coat ceremony. The ceremony

is no longer limited to medical students; starting in 1995, US pharmacy schools started holding white coat ceremony, with the difference that most pharmacy students receive their coats at the end of their first academic year.[2,4]

White coat hypertension

The term white coat hypertension is used if any patient having high blood pressure readings 140/90mmHg or above *only* in a medical setting where as blood pressure readings may be normal when taken at home. Such phenomenon is called "White coat hypertension."

Controversies about white coat

White coats have not been without controversy. On June 2009, the American Medical Association (AMA) voted on a resolution recommending that the iconic white garment should be banned by hospitals, citing the probable spread of disease through frequently unsterilized coats splattered with the invisible aftermath of repeated exposure to sick patients. Despite studies (Microbial flora on doctors' white coats) supporting the notion of unsanitary coats, the AMA ultimately punted the issue by referring it to a panel for further discussion. Many doctors have continued to ignore the potential dangers of these knee-length emblems of medical professionals, possibly out of an urge to project the same impression of scientific competence so strongly associated in popular culture with white-clad laboratory technicians performing research work rigorously.[1,3]

A study showed that 82% of pediatricians or psychiatrists do not prefer wearing white coat as their professional attire, thinking it may negatively affect the interactions with children and mentally disturbed patients. Anesthetists strongly opted for theater clothes, and a few consultants indicated that they wore suits to make themselves stand out from more junior doctors.[2,4]

Conclusion

Although the color of the coat still remains white, however, some unseen dirt has gradually been diminishing its sheen. Gray shades have been added to it by some of the unethical practices that have started occurring in the medical profession in modern times. The whiteness of this coat has been faded by the attitude of our younger doctors. This present generation who had struggled hard for admission to medical schools and the associated pride of wearing the symbolic white coat find it unfashionable once they leave the medical school or perhaps they do not want to shoulder the responsibility the coat conveys.

No matter if you are a proponent for or against physicians wearing the white coat; it is difficult to deny that it remains a universally recognized symbol of the profession by Leah Lawrence[5]

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Short Communication

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Juvenile Chronic Arthritis: Growing versus Developing (Dys) function in Joints of Children

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Abstract

The objective of this review paper was to summarize the existing evidence for juvenile chronic arthritis (JCA) from an overview-based search of PubMed.Evidence from existing studies provides information on differential diagnosis of JCA based upon immunogenetic, etiopathogenetic, antibody-based and autoimmune mechanisms for JCA. Management studies were on medical, surgical, orthopedic and rehabilitation of JCA. Studies also suggested a multidimensional biopsychosocial model suitable for evaluating medical and psychosocial empirical findingswhich acts as a frame of reference for a multi-professional team approach in the care of rheumatic children and their families.

Keywords: Juvenile chronic arthritis; Juvenile arthritis; Pediatric rheumatology.

The objective of this review paper was to summarize the existing evidence for juvenile chronic arthritis (JCA) from an overview-based search of PubMed.

Juvenile chronic arthritis (JCA) is actually a collection of conditions that together constitute the major forms of chronic arthritis in childhood.[1] JCA has multifactorial etiology and multidimensional manifestations with an unpredictable progressive course.[2]

Classification of JCA should incorporate criteria to delineate homogeneous populations in corporating advances in disease knowledge. Broad umbrella term such as juvenile or childhood arthritis should be used only for communicating with the lay public, andmedical nomenclature should reflect homogeneous subgroups of arthritis, without artificially proscribing a relationship between paediatric and adult disease.[3]

Immunogenetic differential diagnosis (Based upon DRw13-DRw18, DQw6-DQw18 and HLA-B27) of JCA include Juvenile rheumatoid arthritis, juvenile psoriatic arthritis, and juvenile spondyloarthropathies.[4] The immunological alterations in juvenile chronic arthritis play a major role in patient management and classification as well as their possible etiopathogenetic manifestations. [5]Autoantibody-based categorization of JCA into: presence of IgM rheumatoid factor and have erosive polyarthritis resembling adult

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rheumatoid arthritis, which occurs in minority; and the majority (90%), who are seronegative by conventional means.[6]

Woo[7] described the autoimmune pathogenetic mechanisms of JCA as follows: "Cytokines are important mediators of the immune response as well as the inflammatory response. Those concerned primarily with cell growth, differentiation and activation of cells within the immune system are called interleukins, of which there are now 18. Exposure to antigenic and environmental stimuli causes T cells to differentiate and polarise into Th1 or 2-like cells with different cytokine profiles, and requiring different cytokines for differentiation (IL-12 for Th1 and IL-4 for Th2). Homeostasis is usually restored as these cells are mutually inhibitory. Autoimmune diseases have been associated with a persistent imbalance with more Th1-like cells, which are thought to contribute to pathology. With regard to juvenile chronic arthritis (JCA), there is some preliminary evidence of this imbalance in the oligoarticular subgroup. Imbalance of pro-inflammatory cytokines, IL-1 and TNF with their natural inhibitors has also been shown to contribute to persistence of inflammation. In the case of JCA, there has been some evidence that these imbalances could account for some of the disease phenotypes."

Vandvik and Høyeraal[8] presented a multidimensional biopsychosocial model suitable for evaluating medical and psychosocial empirical findings in juvenile chronic arthritis (JCA), which acts as a frame of reference for a multi-professional team approach in the care of rheumatic children and their families.

Pain underestimation in juvenile chronic arthritis is common in Children since they often don't verbalize their pain adequately. On a pain scale they usually grade pain lower than adults. Pain perception depends on child's stage of development, with younger children showing more nonverbal pain expressions. Interference with the child's activities and its associated biobehavioural changes finally lead to developmental disturbances.[9]

Radiological investigations

Radiological investigations in JCA include conventional radiographs (for staging various arthritides on the basis of distribution and pattern of joint space changes), Ultrasonography (for detection of joint effusions and guiding fluid aspiration), Doppler USG (for the evaluation of synovial hypertrophy and activity), Arthrography (for changes in synovium), and MRI (for changes in articular cartilage, joint effusion, synovial hypertrophy, cortical and medullary bone, cartilage and bone perfusion, and fibrocartilaginous structures).[10]

Treatments using intravenous gamma globulin, Sulfasalazine, and Methotrexate were effective for addressing different manifestations of immunogenetic mechanisms in JCA.[11] Surgical management of a child with JCA involves a multidisciplinary team composed of a pediatric rheumatologist, an orthopedic surgeon, an anesthetist, and a physiotherapist.[12] Orthopedic management of JCA should consider the involvement of all connective tissue and the multiple organ affections in this disease, especially the kidney-function and the hematopoietic system. Surgeries are often indicated for soft tissue conrltractures, synovial adhesions and joint deformities.[13]

Early start of a comprehensive rehabilitation programme is necessary to restore loss of function and prevent permanent handicap. It comprises of physiotherapeutic regimen (pain relief, movement expansion, training of muscular coordination and movement re-integration), occupational therapy (joint protection and self-care training), assistive devices (splinting, adapted footwear and walking aids), psychosocial (small children for restoring normal development) and vocational (adolescentsfor restoring productivity and self-care support) and parental education and integration of the whole family into the

rehabilitation programme.[14]

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Evaluation of Brainstem Auditory Evoked Potentials in Preterm Infants: Application of Physics into Clinical Pediatrics and Neonatology

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Abstract

This short communication paper was intended to provide an insight towards application of Physics into the field of Clinical Pediatrics and Neonatology through studies on evaluation of Brainstem auditory evoked potentials (BAEPs) in preterm infants. BAEP testing had high sensitivity and specificity in detecting sensorineural hearing loss; high risk infants demonstrated prolonged wave I latency; the peak V latency and I to V interval latency decreased with increasing conceptional age; shortening of the I-V interval and increase in wave I latency, wave I latency was inversely related to infant's weight; BAEP findings were correlated with diffusion tensor imaging, and BAEPs did not provide much diagnostic values in infants without hearing impairments when correlated with MRI findings. The existing evidence supported the use of BAEPs in pediatric/ neonatologic examination of preterm infants.

Keywords: Braisntem auditory evoked potentials; Applied physics; Neonatologic examination; Pediatric examination.

This short communication paper was intended to provide an insight towards application of Physics into the field of Clinical Pediatrics and Neonatology through studies on evaluation of Brainstem auditory evoked potentials (BAEPs) in preterm infants.

BAEPs could be used to identify sensorineural hearing loss in preterm infants as it was found by Bradford *et al*[1] who studied BAEPs in 117 newborn infants of less than 33 weeks of gestation. There was absence of potentials in 10 infants (bilaterally in eight and unilaterally in two) and present in 107. Nine of the 10 infants with absent BAEPs had sensory neural hearing loss and none of the 107 infants with normal BAEP had sensory neural hearing loss. The study demonstrated high sensitivity and sensitivity of BAEP although the sample size was very small.

Streletz *et al*[2] studied BAEPs 93 newborns (49 preterm and 44 fullterm) of which 42 infants (28-42 wk CA) were considered at low risk for perinatal complications and served as

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control whereas two groups of high risk infants with clinically significant hyperbilirubinemia (31 infants) or hypoxemia (20 infants) were identified and studied. The BAEP abnormalities in the high risk infants consisted predominantly of wave I latency prolongations in hypoxemic infants indicating dysfunction in peripheral auditory processes.

Vles *et al*[3] recorded BAEPs of nine 'healthy' preterm infants at weekly intervals between 32 and 36 weeks conceptional age. The peak V latency and the I to V interval latency was found to decrease with increasing conceptional age.

Soares *et al*[4] recorded BAEPs in 39 preterm infants (3 groups: small-for-gestational-age, with a birthweight less than or equal to 1500 g (SGA); appropriate-for-gestational-age, with a birthweight less than or equal to 1500 g (AGA1); and appropriate-for-gestational-age, with a birthweight higher than 1500 g (AGA2). The authors found a shortening of the I-V interval due to an increase in wave I latency was found in the SGA group. Negative correlations were also found between wave I latency and weight at the time of the examination.

In the absence of hearing impairment, BAEPs did not much provide utility value as found by Olsén *et al*[5] who compared BAEP findings of 42 8-year-old preterm children and those of the full-term born control children, and correlated it with linguistic problems and to the MRI findings.Contrary to expectations, there was no differences found in the absolute latencies nor in the interpeak intervals and in the I/V amplitude ratio. Also there was no correlation with the linguistic problems or to the findings of periventricular leukomalacia (PVL) in MRI.

Reiman *et al*[6] correlated the BAEP findings with diffusion tensor imaging (DTI) of the inferior colliculus in 56 very low birth weight or preterm infants since the latter had been shown to be associated with perinatal white-matter injury and reduced fractional anisotropy (FA) in patients with sensorineural hearing loss. Shorter BAEP wave I, III, and V latencies and I-III and I-V intervals and higher wave V amplitude was found to be correlated with higher FA of the inferior colliculus which suggested that DTI can be used to assess the integrity of the auditory pathway in preterm infants.

Roopakala *et al*[7] compared the BAEP waveforms (absolute and interpeak latencies) in 25 preterm and 25 full-term infants, and found increased latency of BAEP waveform V in preterm babies which suggested a retarded myelination of the central auditory pathway.

BAEP testing had high sensitivity and specificity in detecting sensorineural hearing loss; high risk infants demonstrated prolonged wave I latency; the peak V latency and I to V interval latency decreased with increasing conceptional age; shortening of the I-V interval and increase in wave I latency, wave I latency was inversely related to infant's weight; BAEP findings were correlated with diffusion tensor imaging, and BAEPs did not provide much diagnostic values in infants without hearing impairments when correlated with MRI findings. The existing evidence supported the use of BAEPs in pediatric/ neonatologic examination of preterm infants.

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