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April - June 2014
Volume 2 Number 2

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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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Pediatric Education and Research
Volume 2 Number 2, April - June 2014

Prevention of Parent to Child Transmission of HIV - New National Guidelines

Gupta SN*, Gupta Naveen**

Government of India is committed to work towards achievement of the global target of "elimination of new HIV infections among children" by 2015. Based on the new guidelines from WHO (June 2013), Department of AIDS Control has decided to provide life-long ART (triple drug regimen) for all pregnant and breast feeding women living with HIV, in which all pregnant women living with HIV receive a triple drug ART regimen regardless of CD4 count or WHO clinical stage, both for their own health and to prevent vertical HIV transmission from mother-to-child. This would also help in maximizing coverage for those needing treatment for keeping them alive and for their own health, avoiding stopping and starting drugs with repeat pregnancies, provide early protection against mother-to-child transmission in future pregnancies and avoiding drug resistance. These recommendations have the potential to reduce the risk of mother-to-child-transmission to less than 5 per cent in breastfeeding populations.

Mother-to-child-transmission of HIV is a major route of HIV infection in children. However, out of an estimated 27 million pregnancies in a year, only about 52.7% attend health services for skilled care during child birth in India. Of those who availed health services, 8.83 million ANCs received HIV counselling and testing (March 2013) out of which 12,551 pregnant women were detected to be HIV positive. To enhance this coverage, a joint directive from the National AIDS Control Programme (NACP) and the National Rural Health Mission (NRHM) regarding convergence of the two programme components was issued in July 2010, explicitly stating that universal HIV screening should be included as an integral component of routine ANC check-up. The objective was to ensure that pregnant women who are diagnosed with HIV would be linked to HIV services for their own health as well as to ensure prevention of HIV transmission to newborn babies under the Prevention of Parent to Child Transmission (PPTCT) programme.

In the absence of any intervention, a substantial proportion of children born to women living with HIV, acquire HIV infection from their mothers either during pregnancy, labour/delivery or during breastfeeding. *Without any intervention*, the risk of transmission of HIV from infected pregnant women to her children is estimated to be around 20-45%. Use of ART and single dose NVP/Syrup NVP to mother-baby pairs has shown to be quite effective in reducing this transmission as low as 10 per cent. Use of single dose Nevirapine (sd-NVP) at the onset of labour significantly reduces pre-partum HIV transmission[(A)]. However, it is less effective than other available ARV prophylaxis and it does not cover the risk of HIV transmission during the antenatal or breastfeeding periods. Further, it also adds to the risk of acquiring drug resistance to nevirapine (NVP) as well as cross resistance to Efavirenz.[1]

Let us know the basic statistics that there are an estimated 2.1 million (2011) People Living with HIV (PLHIV) in India, with National adult HIV prevalence of 0.27% (2011). Of these, women constitute 39% of all PLHIV while children less than 15 years of age constitute 7% of all infections. As on March 2013, 0.1 million HIV positive children had been registered under the antiretroviral

therapy (ART) programme and 38,579 are receiving free ART. There has been a significant scale-up of HIV counselling & testing, Prevention of Parent-to-Child Transmission (PPTCT) and ART services across the country over last five years. Between 2004 and 2013, the number of pregnant women tested annually under the Prevention of Parent-To-Child –Transmission (PPTCT) programme increased from 0.8 million to 8.83 million and reach of the services has expanded to the rural areas to a large extent. Concurrently, there has also been a significant decentralisation and scale-up of the ART services, with 7.34 Lakhs PLHIV receiving free ART across the country through 409 ART centres and 860 Link-ART centres (LAC). WHO in 2010 had recommended two more efficacious regimen, option A & option B, to further reduce the chances of HIV transmission from mother-to-child. Further in 2013, consolidated ART guideline, WHO has recommended moving away from the previous terms "Options A, B and B+". Instead, the WHO new guidelines (June 2013) recommend two options:

1. Providing lifelong ART to all the pregnant and breastfeeding women[(B)] living with HIV regardless of CD4 count or clinical stage [(C)] OR
2. Providing ART (ARV drugs) for pregnant and breastfeeding women with HIV during the mother-to-child transmission risk period and then continuing life-long ART for those women eligible for treatment for their own health.

There are certain salient points which have been summarized below:

a. Good antenatal care ensures that pregnancy and delivery:

- Is a safe experience for the mother.
- Builds the foundation for the delivery of a healthy baby (minimal risk of HIV transmission to the baby)

b. ART Eligibility in Pregnant Women:

- Initiate lifelong ART in all pregnant women with confirmed HIV infection regardless of WHO clinical stage or CD4 cell count. TDF + 3TC + EFV is recommended as first-line ART in pregnant and breastfeeding women, (including pregnant women in the first trimester of pregnancy and women of childbearing age)
- ART shall be initiated only at ART centre

c. Starting Co-trimoxazole in Pregnancy

- Co-trimoxazole should be started if CD4 count is d" 250 cells/mm3 and continued through pregnancy, delivery and breastfeeding as per national guidelines (Dose: Double strength tablet – 1 tab daily).
- Ensure that pregnant women take their folate supplements regularly

d. All HIV infected pregnant women should be seen on a priority in the ART Centre.

e. The recommended first-line regimen for HIV infected Pregnant Women is Tenofovir (TDF) (300 mg) + Lamuvidine (3TC) (300 mg) + Efavirenz (EFV) (600)

f. Women who are screened and found HIV Infected during labour or just after delivery should be given a Top Priority for Clinical Management and CD4 Assessment in the ART Centre.

g. 5 Do's for infants at 6 weeks

It is important to do the following for infants at 6 weeks:

- Do re-inforcement for Exclusive Breastfeeding for the first 6 months (Continuation of breastfeeds with introduction of complementary feeds thereafter)
- Do EID testing
- Do Immunization
- Do CPT initiation and continue until baby is 18 months old or longer if baby is confirmed positive
- Do stop NVP Prophylaxis for baby at

6 weeks (maternal ART is not of adequate duration)

h. If a pregnant woman is detected to have both HIV-1 and HIV-2 infections, she should receive standard first ART Regimen (TDF+3TC+EFV) recommended for women with HIV-1 infection

i. Provision of treatment for Hepatitis B & C for HIV co-infected pregnant women (with Hepatitis B or C) will be the responsibility of the general health systems.

j. Caesarean sections in HIV positive pregnant women should be performed for Obstetric indications only.

k. Condom should be consistently used by all HIV infected males despite following any other Family Planning Method (Dual Protection)

l. 5 Do's for infants at 6 weeks

For infants at 6 weeks, it is important to do the following:

m. Do re-inforcement for Exclusive Breastfeeds for the first 6 months for (Continuation of breastfeeds with introduction of complementary feeds thereafter)

- Do EID testing
- Do Immunization
- Do CPT initiation and continue until baby is 18 months/continue if baby is tested positive
- Do stop NVP Prophylaxis for b a b y after 6 weeks (may need extension to 12 weeks if mother has been initiated late on ART)
- Do re-inforcement for Exclusive Breastfeeds for the first 6 monthsfor (Continuation of breastfeeds with introduction of complementary feeds thereafter)

n. Recommendations for infant feeding in HIV exposed and infected infants < 6 months of age

The 2011 National Guidelines on Feeding for HIV-exposed and infected infants < 6 months old recommends:

Exclusive breastfeeding for at least 6 months

- Only in situations where breastfeeding cannot be done (maternal death, severe maternal illness) or individual mother's choice (at her own risk), then exclusive replacement feeding may be considered.

o. AFASS criteria for Exclusive Replacement Feeding

Mothers known to be HIV-infected, if insist on opting for exclusive replacement feeding which is contrary to the WHO/NACO's guidelines of giving exclusive breastfeeds for first 6 months, are doing so at their own risk. They should be counselled not to give any breast feeds during the first six months. Mixed feeding should not be done during the first 6 months. *(Feeding a baby with both breast feeds and replacement feeds in the first 6 months is known as mixed feeding which leads to mucosal abrasions in the gut of the baby facilitating HIV virus entry through these abrasions)*

When opting for Exclusive Replacement Feeding, they should fulfil the AFASS criteria given below:

1. *Safe* water and sanitation are assured at the household level and in the community, and can prepare clean feeds.
2. The mother or other caregiver can reliably *afford* to provide sufficient replacement feeding (milk), to support normal growth and development of the infant, and can *sustain* it un-interruptedly for first 6 months at least.
3. The mother or caregiver can prepare it frequently enough in a clean manner so that it is safe and carries a low risk of diarrhoea and malnutrition.
4. The mother or caregiver can, in the first six months exclusively give replacement feeding, and is *feasible.*
5. The family is supportive of this practice, and *accepts* it without forcing her to breastfeed during the first 6 months.

p. All babies detected positive <2years of age are given Paediatric ART irrespective of CD4 %

q. *Intra-Uterine Contraceptive Device (IUCD)* is a good contraceptive method for HIV infected pregnant women. IUCD Copper T 380A is recommended by MoHFW as a long term reversible method of contraception up to 10 years. PP IUD (Cu-'T' A-380) to be inserted within 48 hrs of delivery.[2]

Finally, we conclude that National Guidelines for Prevention of Parent-to-Child Transmission of HIV have been implemented across the country from 1st January 2014.

(C)WHO Clinical Staging for Adults and Adolescents

Clinical Stage 1

Asymptomatic Persistent generalized lymphadenopathy

Clinical Stage 2

Moderate unexplaineda weight loss (under 10% presumed or measured body weight) (b) Recurrent respiratory tract infection (sinusitis, tonsillitis, otitis media, pharyngitis) Herpes zoster, Angular cheilitis, Recurrent oral ulceration, Papular pruitic eruptions Seborrhoeic dermatitis, Fungal nail infections.

Clinical Stage 3

Unexplained (a) severe weight loss (over 10% of presumed or measured body weight) (b)

Unexplained(a) chronic diarrhoea for longer than one month

Unexplained(a) persistent fever (intermittent or constant for longer than one month) Persistent oral candidiasis

Oral hairy leukoplakia

Pulmonary tuberculosis

Severe bacterial infections (e.g. pneumonia, empyema, pyomyositis, bone or joint infection, meningitis, bacteraemia)

Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis

(A) Infant NVP Prophylaxis Dosing:

Birth Weight	NVP daily dose (in mg)	NVP daily dose (in ml)**	Duration
Birth to 6 weeks: *			
Infants with birth weight < 2000 gm	2 mg/kg once daily. In consultation with a pediatrician trained in HIV care.	0.2 ml/kg once daily	Up to 6 weeks irrespective of whether exclusively breastfed or exclusive replacement fed.
Birth weight 2000 – 2500 gm	10 mg once daily	1 ml once a day	
Birth weight more than 2500 gm	15 mg once daily	1.5 ml once a day	

**considering the content of 10 mg Nevirapine in 1ml. suspension based on WHO Guidelines.
*infants with birth weight < 2000 gm should receive dose of 2 mg/kg once daily. Consult expert HIV paediatrician in these cases.
Source: WHO Guidelines

(B)Dosing Schedules for ART for Pregnant Women

Clinical Scenario	ARV Prophylaxis and dosing	Antepartum	Intrapartum	Postpartum
Pregnant Women requiring ART	TDF 300mg once daily 3TC 300 mg once daily EFV 600mg once daily	Start ART as soon as possible (first trimester)	Continue ART	Continue ART life-long

Unexplaineda anaemia (below 8 g/dl), neutropenia (below 0.5 x 100/1) and/or chronic thrombocytopenia (below 50 x 100 / 1)

Clinical Stage 4C

HIV wasting syndrome

Pneumocystis jeroveci pneumonia (PCP)

Recurrent severe bacterial pneumonia

Chronic herpes simplex infection (orolabial, genital or anorectal of more than one month's duration or visceral at any site)

Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs)

Extrapulmonary tuberculosis

Kaposi sarcoma

Cytomegalovirus infection (retinitis or infection of other organs) Central nervous system toxoplasmosis

HIV encephalopathy

Extrapulmonary cryptococcosis including meningitis Disseminated non-tuberculous mycobacteria infection Progressive

multifocal leukoencephalopthy

Chronic cryptosporidiosis

Chronic isosporiasis

Disseminated mycosis (extrapulmonary histoplasmosis, coccidiomycosis) Recurrent septicaemia (including non-typhoidal Salmonella)

Lymphoma (cerebral or B cell non-Hodgkin) Invasive cervical carcinoma

Atypical disseminated leishmaniasis

Symptomatic HIV-associated nephropathy or HIV-associated cardiomyopathy

a Unexplained refers to where the condition is not explained by other conditions.

b Assessment of body weight among pregnant women needs to consider the expected weight gain of pregnancy.

c Some additional specific conditions can also be included in regional classifications, such as the reactivation of American trypanosomiasis (meningoencephalitis and/or myocarditis) in the WHO Region of the Americas and penicilliosis in Asia.

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Analysis of Prescriptions for Common Paediatric Problems in OPD Practice

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Abstract

Medication errors are one of the most common causes of patient harm and prescribing accounts for a large proportion of medication errors. An observational, retrospective cross sectional study was carried out in the period between May 2013 and July 2013 and collected prescriptions were analyzed statistically using SPSS 13.0 software.

The aim of the study was to identify various patterns of prescription writing by doctors and to detect common errors of prescription.

This study highlights the concerns regarding excessive use of antibiotics , irrational use and combinations of antibiotics with other drugs ,influence of marketing by pharmaceutical companies . Certain measures are suggested to minimize the prescription errors and improvement in the same, thereby enhancing patient safety .

Keywords: Error; Irrational use; Prescription.

Introduction

Recent years have seen a significant shift of focus in healthcare from advances in technology to patient safety; to such an extent, that in 2002, the WHO passed a World Health Assembly Resolution on Patients Safety.[1]

Medication errors are one of the most common causes of patient harm and prescribing accounts for a large proportion of medication errors.

"A prescription is an instruction from a prescriber to a dispenser." There is no global standard for prescriptions and every country has its own regulations. The most important requirements are:

a) The prescription should be legible.

b) It should indicate precisely what should be given.[2]

In May 2007, the World Health Assembly passed resolution 60.20 which called on Member States to improve access to essential medicines for children. The IAP's Essential Medicines List for children (EMLc) of India which reflects the morbidity patterns and other child health needs for the majority of children seeking health care in the country.[3]

It is rare in these days to see a patient with a cold who is not taking a "decongestant" or

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Table 1: Demographic Details of Prescribing Doctors

Name of Doctor (n=129)		Gender of Doctor (n=129)			Qualification of Doctor (n=129)				Area of Practice (129)			Associated with teaching institute (n=129)	
		Present											
Present	Absent	Females	Males	Absent	Degree (MD/MS)	Diploma(DCH)	MBBS	Not Mentioned	Rural	Urban	Not mentioned	Yes	No
119	10	15	104	10	63	41	8	17	35	86	8	18	111

Table 2: Patient Information

	Details		Number (%)
1	Name of patient (n=129)	Present	121(93.79)
		Absent	8(6.20)
2	Age of patient (n=129)	Present	77 (59.68)
		Absent	52(40.31)
3	Weight of patient (n=129)	Present	80 (62.02)
		Absent	49(37.98)

Table 3: Prescription Criteria

S. No.	Prescription data [n=116]	Present	Absent
1.	Diagnosis	39 [33.62%]	77 [66.38%]
2.	Instructions in vernacular	41 [35.34%]	75 [64.65%]
3.	Pictorial explanation	9 [7.75%]	107 [92.24%]
4.	Next review date	21 [18.10%]	95 [81.89%]

even an antibiotic. Needless to say, there are no data from well controlled studies to suggest that the use of antibiotics for "prophylaxis" is of any value, and there is no evidence that the use of the multitude of decongestants has anything more than a placebo effect.Antibiotic prescription is a matter of great concern especially in the context of evidence based practice, antibiotic resistance, occurrence of side-effects, delayed diagnosis and preventable hospitalization.[4]

In the absence of an "ideal prescription" for our country, this study was conducted to identify various patterns of prescription writing by doctors and to detect common errors.

Method

*Objectives:*Collected prescriptions were retrospectively analyzed for following:

1. The frequency of errors of omission and commission.
2. Most commonly prescribed drugs for common pediatric problems.
3. The proportion of antibiotic prescription for common pediatric problems.
4. Proportion of prescriptions with legible handwriting.
5. Determining what proportion of drugs prescribed isin accordance with Essential Medicines List (3) for children in India.

Study Design

Observational cross sectional study

Statistical analysis was done by SPSS 13.0 software.

Table 4: Non-antibiotic Drugs Prescribed (n=277)

	Class of drug	No. of drugs	%
1	Analgesics, Antipyretics, Anti inflammatory drugs	52	18.77
2	Anti ulcer drugs (Antacids, H2 antihistamines, PPI)	12	4.33
3	Antispasmodic	13	4.69
4	Anti diarrheal	11	3.97
5	Antiemetic	13	4.69
6	Purgatives	3	1.08
7	Decongestants, Expectorants	23	8.30
8	Anti allergic (Antihistaminic, corticosteroids)	26	9.38
9	Bronchodilators	10	3.61
10	Sedatives	1	0.36
11	Antidepressants	2	0.72
12	Anticonvulsants &Antiepileptics	12	4.33
13	Diuretics	2	0.72
14	Endocrinal	1	0.36
15	Beta blockers	2	0.72
16	Supplements	59	21.30
17	Ayurvedic	7	2.52
18	Miscellaneous	7	2.52
19	Antifungal	5	1.80
20	Antimalarial	5	1.80
21	Antihelminth	11	3.97

Inclusion Criteria

Prescriptions of following doctors were included:

- Pediatricians (Diploma as well as MD) running private OPD outside the institute.
- Pediatricians from Department Of Pediatrics within the institute.
- General Practitioners.

Exclusion criteria

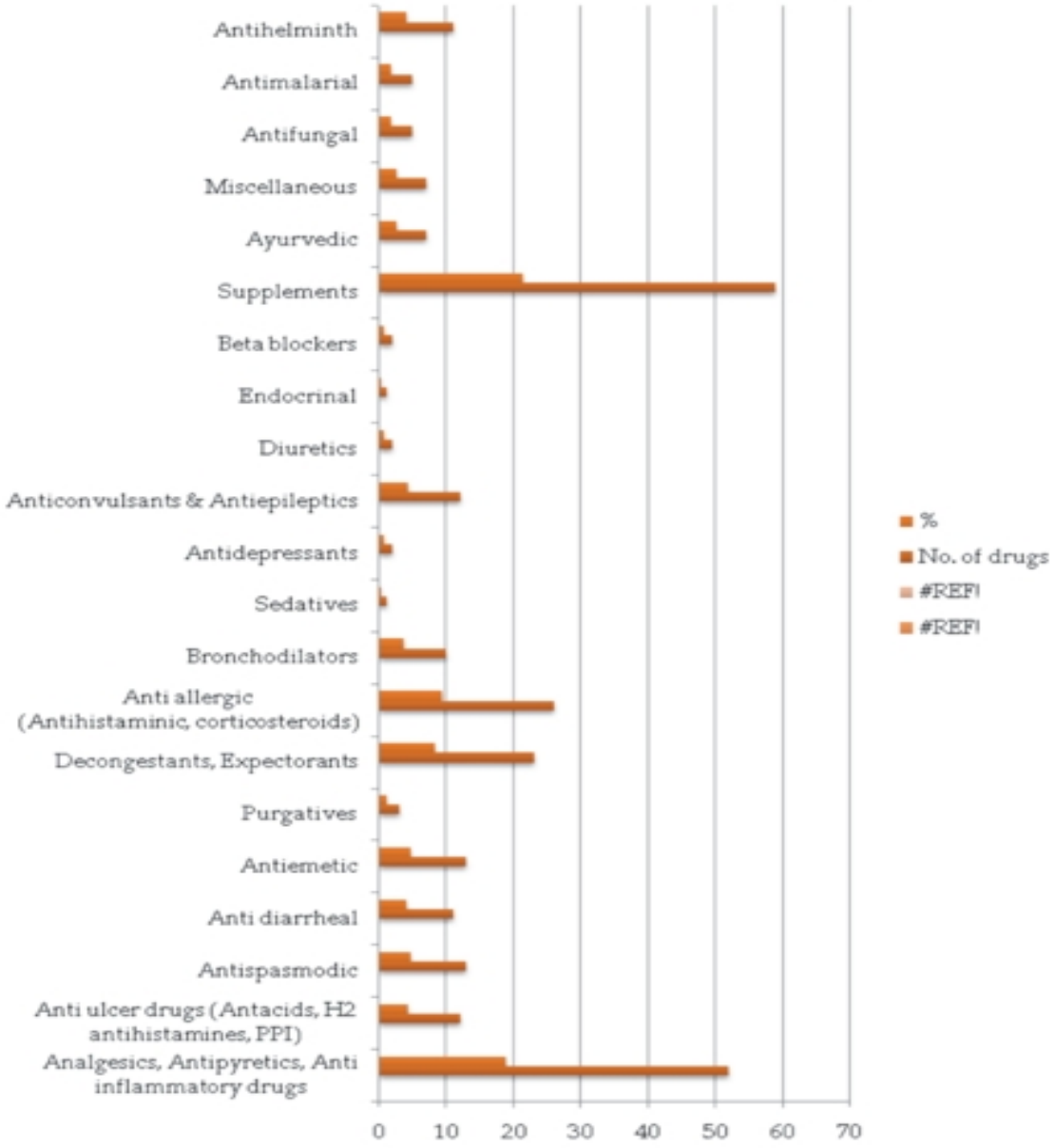
- Those practicing non allopathic medicine.
- More than one prescription from the same doctor.

Methodology

All prescriptions of pediatricians and general physicians carried by patients attending the pediatric outpatients department [OPD] of a tertiary care hospital during the study period between May 2013 and July 2013 were collected with consent of the patient. Prescribing doctors were kept unaware that their prescriptions were being evaluated.

A prevalidatedlegibilityscale was used for testing legibility of prescriptions. All the prescriptions were analyzed by the researcher and a pediatrician.Errors in prescribing were classified into two main types, errors of omission and errors of commission. Errors of omission are defined as prescriptions with essential information missing (name of patient, weight and age, diagnosis, name of doctor, route of administration, dosage and frequency of drug to be used, strength and dosage form, quantity of drug to be bought) and errors of commission are defined as wrongly written information (drug to drug interactions, potentially hazardous drugs written without instructions for monitoring, wrong dosage or

Figure 1: Non Antibiotic Drugs Prescribed



wrong frequency of dosage, wrong duration of therapy).[5]

Results

Of the 129 prescriptions collected, 86 [66.66%] belonged to doctors practicing in urban areaswhile 8 prescriptions did not have any address, though majority of them 119 [92.24%] had the name of the doctor printed and 104 [80.62%] were postgraduates [See Table1].

Errors of Omission

All the prescriptions [100%] collected had errors of omission of some type. Name of patient was present on 121 [93.79%] prescriptions, while other important requirements for a pediatric prescription i.e. age was missing from 52 [40.31%] prescriptions and weight was missing from 49[37.98%] prescriptions.[See table 2]

Majority of prescription 126 [97.67%] were handwritten and 43 [33.32%] could not be deciphered by the researcher, 13 [30.23%] of

Table 5: Antibiotic Drugs Prescribed (n=70)

	Class	No. of Drugs	%
1.	Aminoglycosides	2	2.85
2.	1st gen Cephalosporin	1	1.42
3.	2nd gen Cephalosporin	2	2.85
4.	3rd gen Cephalosporin	25	35.71
5.	Macrolides	11	15.71
6.	Oxazolidinone	1	1.42
7.	Penicillin	8	11.42
8.	Polypeptides	2	2.85
9.	Quinolones	14	20
10.	Sulphonamides	2	2.85

them were completely illegible and a pediatrician was required to understand 30 [69.76%] of them. Further analysis of prescriptions was done on 116 prescriptions, excluding the completely illegible 13 prescriptions.

Majority of prescriptions, 77 [66.37%] did not have a diagnosis written on it. A high number 41[35.34%] had instructions written in vernacular language, but a pictorial explanation of drug administration and next review date was not mentioned in most 107 &

Figure 2: Antibiotics Prescribed

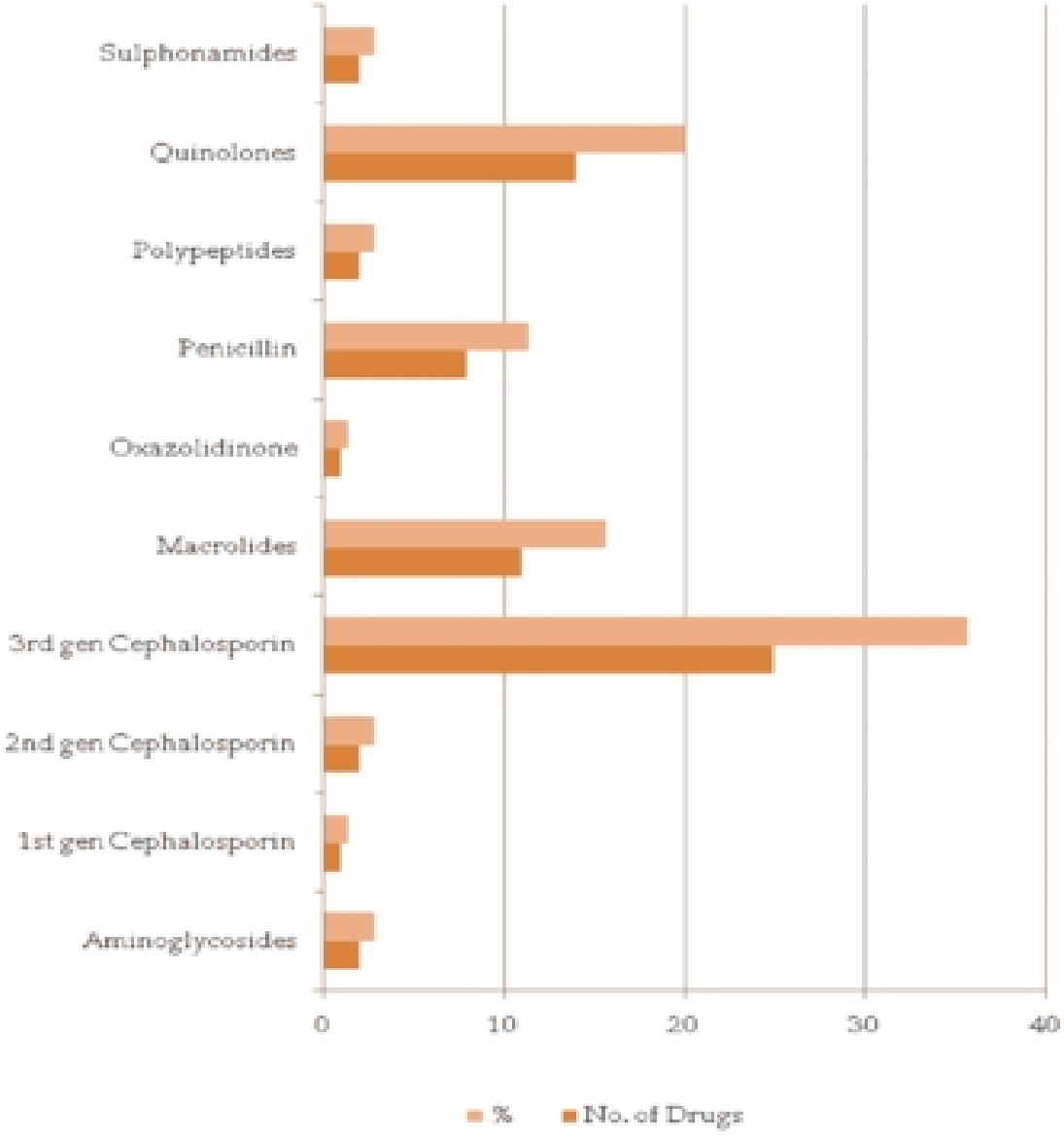


Table 6: Diagnosis for Antibiotics Prescribed

	Class of Antibiotic	Diagnosis
1.	**Aminoglycoside**	• Septicaemia • Gastroenteritis with moderate dehydration
2.	**3rd Gen Cephalosporin**	• CHD+URI • Acute allergic bronchitis • Acute febrile illness in a k/c/o viral encephalitis • PUO • Mental retardation with seizure disorder with hyperpyrexia • URI (2)
3.	**Macrolides**	• URI + Recurrent abdominal pain • URI (3) • URI + OSAS
4.	**Penicillin**	• Acute febrile illness • Septicaemia
5.	**Quinolones**	• Chronic Diarrhoea • Sickle cell crisis
6.	**Sulphonamides**	Enteric fever + Borderline thrombocytopenia + anaemia

Table 7: Combination Drugs Prescribed

Class	No. of drugs	%
Non Antibiotic Drugs		
Analgesic + antipyretics	1	3.33
Antipyretic + Antihistamine	2	6.66
Antipyretic + opiod	1	3.33
Antipyretic + antispasmodic	1	3.33
Antacid + antispasmodic	1	3.33
Antipyretic + anti-inflammatory	6	20
Antiinflammatory + PPI	1	3.33
Antipyretic + antiemetic	1	3.33
Antipyretic + decongestant	9	30
Antipyretic + expectorant	1	3.33
Decongestant + expectorant	1	3.33
Antibiotic Drugs		
Quinolones + Antihelminthics	5	16.66
Quinolones +Antiamoebics	2	6.66

95 [92.24% & 81.89 %] prescriptions respectively [See Table 3].

A total of 377 drugs were prescribed in 116 prescriptions and the overall distribution of drugs is given below.

- Non antibiotic Drugs 277
- Antibiotic Drugs 70
- Combination Drugs
  - o Non antibiotic 6
  - o Antibiotics 24

The prescription frequency of non antibiotic drugs was 277 [73.47%]. The most frequently prescribed class of drugs for pediatric population were supplements [21.30%]

Figure 3: Combination Drugs Prescribed

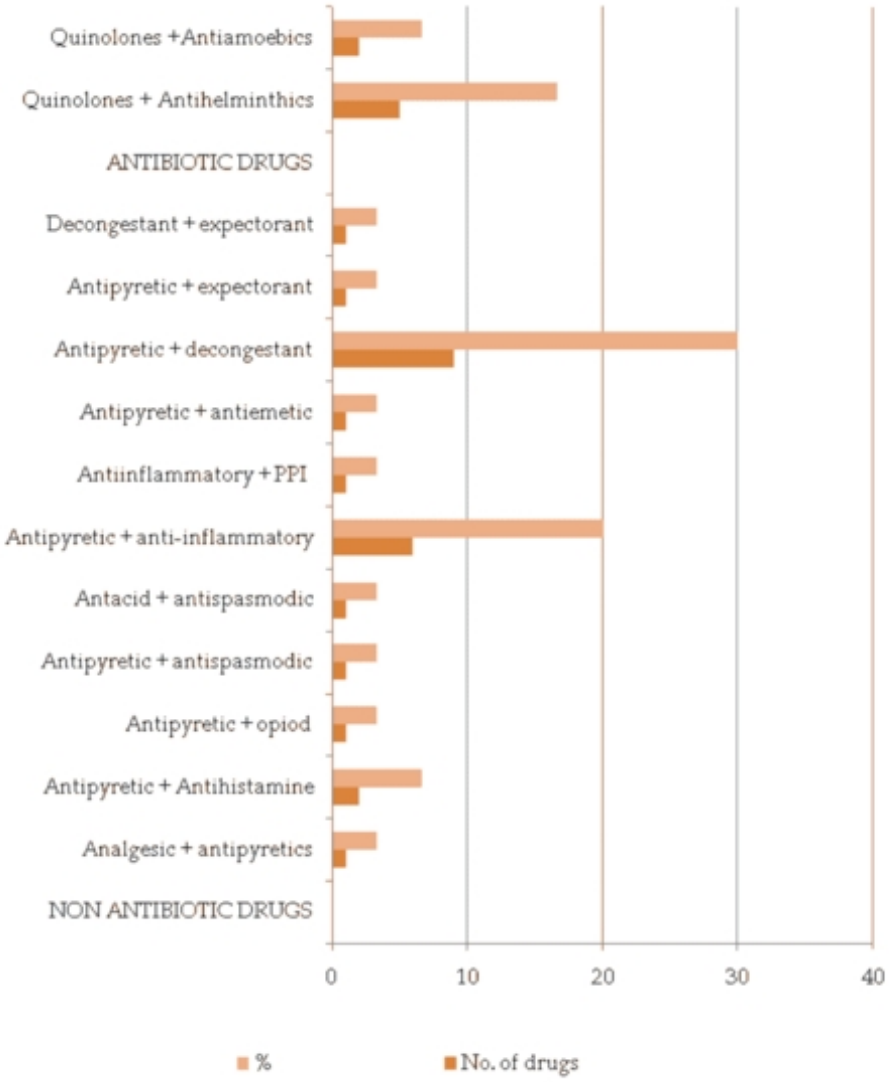


Table 8: Errors of Omission in Instructions

	Dose	Frequency	Duration
Non antibiotic drugs (n=277)	30 (10.83%)	9 (3.24%)	52 (18.77%)
Antibiotic drugs (n=70)	5 (7.14%)	3 (4.28%)	15 (21.42%)
Combination drugs (n=30)	3 (10%)	3 (10%)	6 (20%)

followed by analgesics, antipyretics, anti-inflammatory[*18.77%].* [See Table 4]

Respiratory system disorders constituted the commonest complaint for which outpatient care was sough 36 [31%]. Out of ....patients with respiratory problems, antibiotics were prescribed in.....number, and the most common antibiotic used were third generation cephalosporins 25 [35.71%] [See Table 6].

Errors of omission were also found with drug prescription, their dose, frequency and duration. The most common error was with respect to duration of drugs 18.7% in the nonantibiotic group and 21.4% in the antibiotic

Figure 4: Errors of Omission in Instructions

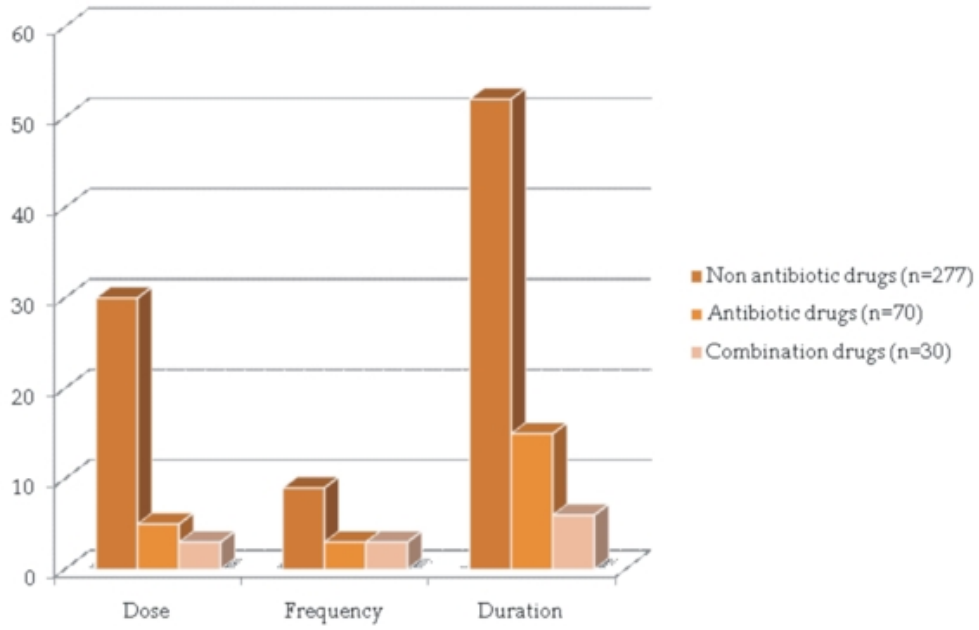


Table 9: Drugs from EML

Class of Drugs	Number	%
Non antibiotics (n=277)	137	49.45
Antibiotic (n=70)	20	28.57
Combination (n=30)	7	23.33
Total (n=377)	164	43.50

group [Table 8]. No errors of commission were detected amongst the 116 prescription analyzed. There was only one prescription of corticosteroid with no duration mentioned.

The drugs prescribed were compared with the Essential Drugs list compiled by Indian Academy of Pediatrics and there were 137 non antibiotic drugs which were included in the

Figure 5: Drugs from EML

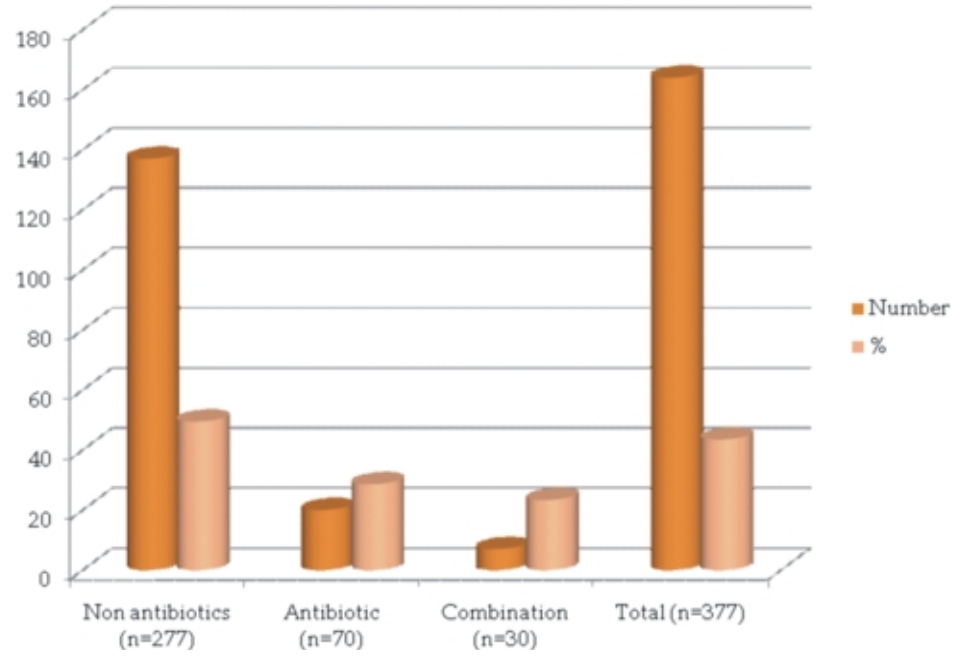
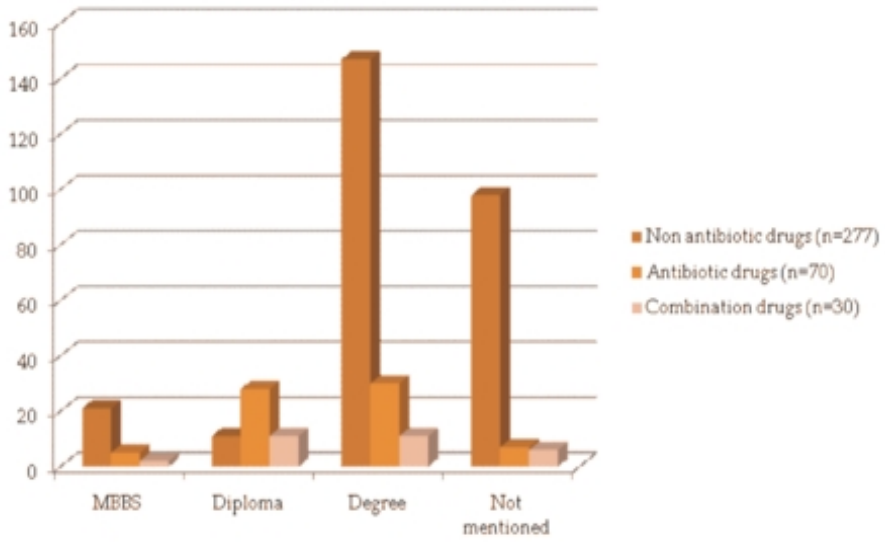


Table 10: Average Percentage of Drugs Prescribed

Qualification	Non antibiotic drugs (n=277)	Antibiotic drugs (n=70)	Combination drugs (n=30)
MBBS	21 (7.58)	5 (7.14)	2 (6.66)
Diploma	11 (3.97)	28 (40)	11 (36.66)
Degree	147 (53.06)	30 (42.85)	11 (36.66)
Not mentioned	98 (35.37)	7 (10)	6 (20)

Figure 6: Drugs Prescribed Vs Qualification



list whereas only 20 [28.57%] antibiotics prescribed were found on the list. Very small number 7 [23.33%] of combination drugs were from Essential Medicine List for Children in India. [See Table 9].

Percent Error Score

Percent error score was obtained for each prescription as an indicator of error based on various essential criteria / features. If particular feature (say *Name of patient*) in a prescription is present, a score 0 was assigned, while if the feature is absent, a score 1 was assigned. This scoring method was used for the basic features like name, age and weight of patient; diagnosis, instructions in vernacular, pictorial explanation, next review date. This gives a *total basic error score* of 7. Further, depending on whether the prescription has antibiotics, non-antibiotics or combinations, three essential criteria viz., dose, frequency and duration were examined. The presence of criterion was coded as 0 and absence as 1. Thus, any prescription would have one or more of the above types of medications, which provides a *total medication score* of 3, 6 or 9. Accordingly, the total error score (*basic* and *medication*) for a prescription

Table 11: Descriptive Statistics for Percent Error Score Derived from Prescriptions

Group	Percent error score			
	Mean	SD	Median	Range
MBBS (n=8)	43.98	15.74	43.07	[18.75 - 70.00]
Diploma (n=36)	32.31	12.93	30.77	[7.69 - 69.23]
Degree (n=57)	37.12	14.44	38.46	[0.00 - 75.00]

could be 10, 13 or 16. To normalize, a *percent error score* was derived for each prescription as:

Percent error score = (Score for a prescription / Total possible score for that prescription)*100

Thus, more the score more are the errors committed in the prescription. This percent error score was obtained for each prescription from the three study groups. Table below provides the descriptive statistics for the groups.

It is evident that the mean percent error score for MBBS group was highest (43.98 ± 15.74), followed by degree (37.12 ± 14.44) and then diploma holders (32.31 ± 12.93). In order to determine, if the mean scores across groups differ significantly in statistical sense, *one-way analysis of variance* (ANOVA) was performed on the scores data upon ascertaining the normality of score distribution within the groups. The resulting *P*-value was 0.0703 (*P*> 0.05) indicated that the mean percent error scores across groups do not differ significantly. In other words, there is lack of evidence to support significance of difference of mean scores across these groups; and hence the hypothesis of no difference is accepted.

Discussion

The data presented in this paper serves to highlight the complete lack of any standard pattern in prescription writing as all the prescriptions had some errors of omission. Lack of crucial information like the name or age of the patient on the prescription raises the onus of patient identity on the patient himself. Such a prescription when presented at the pharmacy increases the likelihood of a mix up and administration of wrong medicines. Absence of weight record on the prescription also raises the potential for dosing errors. Our study could not detect dosing errors because more than half of prescriptions did not have weight record. We think that use of prescription formats where spaces for prescription date, patient name & age and diagnosis are emphasized would not only decrease the frequency errors but also simplify the doctor's task. Problems of legibility causing serious and sometimes life threatening errors is a common occurrence.[6] Use of computerized prescriptions is ideal; however an investment in information technology is still a distant dream in the current scenario of healthcare settings with limited resources. Irrational use of antibiotics is already taking its toll on critical care.[7] Excessive use of antibiotic drugs is a worldwide concern because of development of bacterial resistance.[8] Many antibiotic drugs are prescribed for respiratory tract infections even though these infections are known to be predominantly viral.[9] Irrational combination of antibiotics, for example, quinolone & antihelminths is also a matter of concern. Such combinations do not find any place in evidence based practice of medicine and may reflect the influence of persuasive marketing by pharmaceutical companies. The Essential Medicine List compiled by the Indian Academy of pediatrics, National body, reflects the morbidity pattern in India and provides list of medications which should ideally comprise the majority of drugs prescribed in an outpatient care. Majority of drug prescription in our study were not found in the Essential Medicine List of India and this again reflects the unethical influence of marketing agents on practicing doctors. The qualifications of the doctor also reflected on the prescription of antibiotics, the more qualified the doctor; more is the antibiotic prescription, although comparison of the percent of all errors with the extent of qualification did not reveal any statistical significance.

The limitation of the study is that the medical indications that motivated the physician to prescribe the drugs were not known as this information cannot be deduced from a retrospective study. Incomplete data and small sample size also precluded complete analysis for errors of commission.

Conclusion

There are innumerable studies on inadequate prescription writing and innumerable suggestions for improvement in the same, but the scenario reains unchanged. There is a strong need for formal training in prescription writing for doctors, a standard format which should be made compulsory even for a busy practitioner to use and if necessary some kind of legislation against poor quality of prescription.

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Original Article

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Prevalence of Specific Learning Disabilities among Primary School Children in Gulbarga City, Karnataka, India

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Abstract

Objectives: To measure the prevalence of specific learning disabilities (SpLDs) such as Dyslexia, Dysgraphia, Dyscalculia among primary school children aged 8-10 years from 3rd and 4th standard in Gulbarga city. **Materials and Methods**: We have conducted a multi-school cross sectional study using stratified, randomized cluster sampling technique among primary school children aged 8-10 years from third and fourth standard in Gulbarga city. A six level progressive screening tests to measure scholastic backwardness, vision, hearing, physical handicap, IQ, reading, writing, mathematical disability were used to identify SpLDs.**Results:** 13.2% of primary school children are affected by one or more SpLDs where as 4.9% children had all three types of SpLDs. The prevalence of dyslexia is 11.0%, dysgraphia is 9.9% and dyscalculia is 9.0%. **Conclusions:** The SpLDs affect significant proportion of primary school children in Gulbarga. This study measured the prevalence of specific learning disabilities using simplified screening approach and tools, which minimizes the number and time of specialist requirement and spares the expensive investigation. This approach and tools are suitable for field situations and resource scarce settings. we conclude that there is need for more prevalence studies, remedial education and policy interventions to manage SpLDS at main stream educational system to improve the school performance in Indian children.

Keywords: Specific learning disability; Dyslexia; Dysgraphia; Dyscalculia; Prevalence; Scholastic backwardness.

Introduction

Poor school performance or scholastic backwardness is estimated to affect one in every five school children in India.[1] Specific Learning Disabilities (SpLDs) are recognized as an important cause for the scholastic backwardness even though many other reasons, such as, below average intelligence, vision and hearing impairment, chronic medical and mental disorders, emotional problems and poor socio-cultural environments are suggested.[2] Specific learning disability (SpLD) is a group of neuro developmental disorders manifesting as persistent difficulties in learning to efficiently read (dyslexia), write (dysgraphia) or perform mathematical calculations (dyscalculia) despite normal intelligence, conventional schooling, intact hearing and vision, adequate motivation and socio-cultural opportunity.[3]

It is reported that children with SpLDs felt different from the rest, tormented by the peers and suffered neglect from the teachers.[4] Undetected and unmanaged SpLDs results in chronic scholastic backwardness ensue school drop-outs[1,5], emotional and behavioral problems such as depression[6], substance

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abuse and social delinquency.[7,8,9] It also causes anxiety and stress in parents and affects quality of life in the family.[10,11] The interference of an individual's emotional status, self esteem, behavior and capacity for economical independence eventually effects the overall wellbeing of the society significantly.

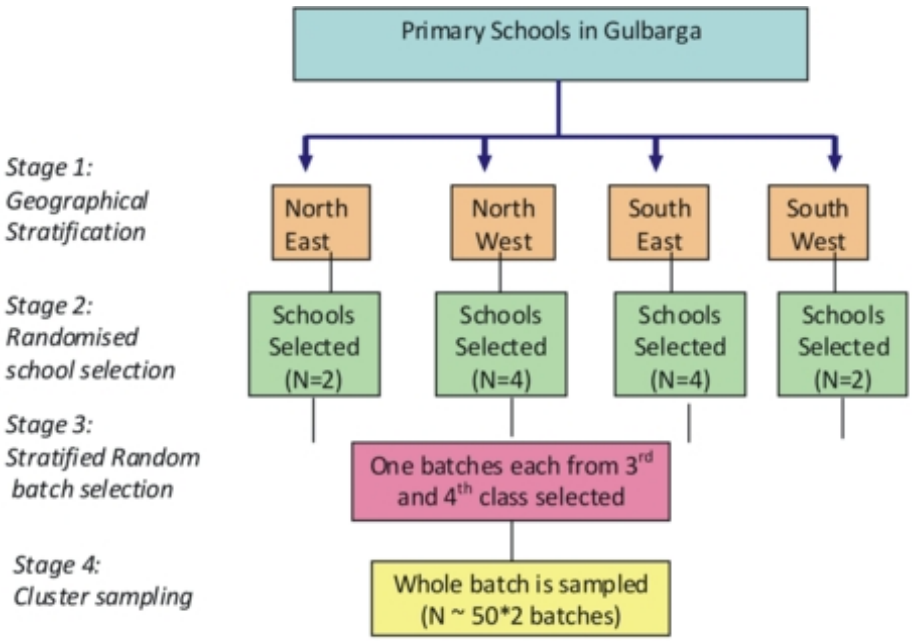
The studies to measure prevalence of SpLDs in India are scanty and its importance is under recognized.[12] The true prevalence of the problem remains disputable among the scholars due to variable diagnostic criteria and measurement tools.[5,13,14] To replenish the knowedge gap the authors have conducted study to measure the prevalence of SpLD associated with scholastic backwardness among primary school children aged 8-10 yrs.This narrow age group was selected because SpLd cannot be diagnosed conclusively before the age of 8 yrs due to higher plasticity of central nervous system in early ages and the management should be started before the age of 10 yrs to get maximum benefit.[8,13] The present study geographically represents the children studying in third and fourth standard in Gulbarga, a South Indian city.

Materials and Methods

Sampling

A cross sectional study was designed using multistaged stratified randomized cluster sampling methodology. Ethical clearance for the study was obtained from the Mahadevappa Rampure Medical college institutional ethical committee on human subjects. The list of primary schools and permission was obtained from deputy director of public instruction of Gulbarga city. All the schools in the city which follow state syllabus in 2011-2013 were geographically stratified into four sectors namely North east, Northwest, Southeast and Southwest. Based on the number of schools in each geographical sector, proportional samples of schools were drawn randomly. One batch each from third and fourth standard was selected randomly from the schools followed by a cluster sampling of all the children in that batch. Each batch was to have expected to have an average of 50 students. This overall sampling procedure ensures the geographical representation of Gulbarga city. Based on assumed spLD prevalence of 15% from the literature, sample

Figure 1: Multi Staged Stratified, Randomised Cluster Sampling Technique



size is calculated at 5% significance level and 20%alowable error with a design factor of 2, for cluster sampling. The estimated sample size was 1134.

Identification of SpLDs

The basic socio demographic information about the sampled children from third to fourth standard was collected initially. In addition parental education, occupation and socio economic status information were obtained. Further the sampled children were subjected to six level serial screening procedure to identify SpLDs (Figure 1).

At screening level one scholastic backwardness was identified if the sampled children fell under either of the two criterias. First criterion was the global impression of the class teacher on the childs scholastic backwardness which was verified with the objective questionnaire using Rutters proforma A.[15] Teachers opinion was important because as they are in the best position to comment about academic performance. Rutters proforma uses simple questionary method to measure academic performance objectively and excludes teachers bias if any. Second criterion was review of academic record(c,c+) to ascertain poor grades in two consecutive examinations. Screening levels 2,3,4 are used to exclude children with health conditions such as impaired vision(diagnosis based on snellens charts), hearing(diagnosis based on clinical hearing tests)and severe physical conditions that may interfere with scholastic performance. Screening level 5 was used to exclude subnormal intelligence based on Seguin form board test.[16] Only children with normal and above intelligence quotient were included in the study as SpLDs cannot be labeled in children with subnormal intelligence. Seguin board test is simple to administer, less time consuming and more suitable for IQ screening for targeted age group. An IQ of 90 measured for chronological age using J. B.raj norms was considered cut off for normal. At the end all remaining children were subjected to reading, writing and mathematical performance screening in the

Table 1: Socio Demographic Features of Sample Children

Variables	Subtypes	Number (N=1210) (%)
Geographical distributing	North east	194(16,03%)
	Northwest	400(33.06)
	South east	400(33.06)
	South west	216(17.85)
Gender	Male	693(57.3)
	Female	517(42.7)
Sector	Public	396(32.7)
	Private	814(67.3)
Medium	Kannada	410(33.9)
	English	800(66.1)
Class	Third	597(49.3)
	fourth	613(50.7)
Mother tongue	Kannada	1069(89.3)
	Telugu	46(3.8)
	others	84(6.9)
	missing[a]	11(0.9)
Socioeconomic status	Class 1	155(12.8)
	Class2	319(26.4)
	Class 3	455(37.6)
	Class 4	211(17.4)
	Class5	49(4.0)
	missing[a]	21(1.7)

[a]Data could not be collected for missing cases

Table 2: Education and Occupation of Parents of Sampled Children

Variable	Level/type	Father (N = 1210) (%)	Mother (N = 1210) (%)
Education	Illiterate	92(7.6)	213(17.6)
	Primary	82(6.8)	265(21.9)
	Higher primary	193(16.0)	316(26.1)
	High school	360(29.8)	215(17.8)
	Preuniversity	208(17.2)	112(9.3)
	>Preuniversity	248(20.5)	67(5.5)
	Missing[a]	27(2.2)	22(1.8)
Occupation	professional	54(4.5)	16(1.3
	Permanent job	208(17.2)	30(2.5)
	Business	347(28.7)	12(1.0)
	Skilled	138(11.4)	10(0.8)
	Unskilled	435(36.0)	210(17.4)
	Unemployed / Housewife	6(0.5)	910(75.2)
	Missing[a]	22(1.8)	22(1.8)

[a]Data could not be collected for missing cases

respective medium of school instruction (kannada and English) using SpLD battery test developed and validated by the national institute of mental health and Neuro sciences[17] for the field situation. These screening tests have defined criteria for identification of dyslexia, dysgraphia and dyscalculia.

Three follow-up visits were made to cover those children who missed the screening procedure. All screening tests except level 5 were conducted by a pediatric post graduate also trained in administering SpLD battery test. Screening level 5 were conducted by an experienced clinical psychologist. A trained social worker assisted at screening level 1 and 6.

Results

A total cross sectional sample of 1210 children was collected from 4 public and 8 private schools of Gulbarga city using multi staged stratified randomized cluster sampling method. A total of 8 (0.6%) children were absent during the test. The data analysis was conducted using SPSS version 15.0.[18]

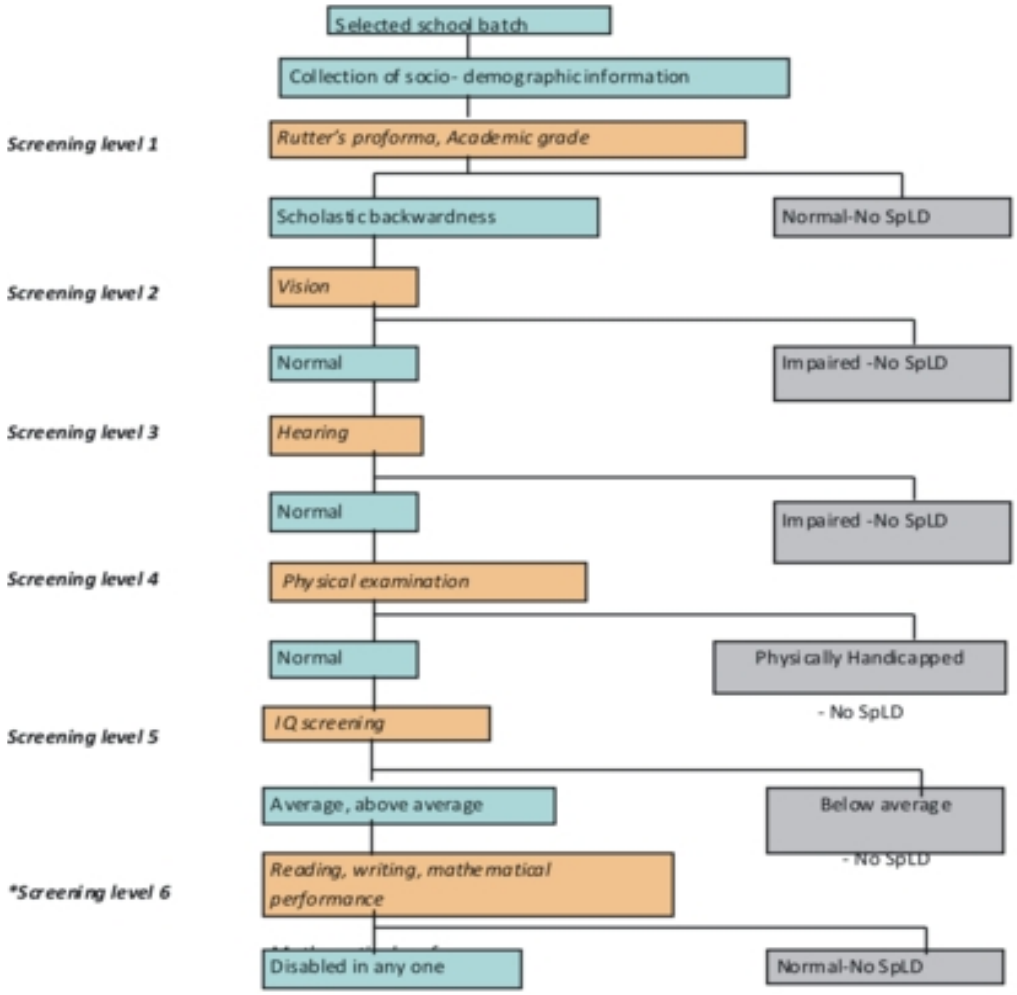
Sample Characteristics

The sample proportionally represented all four geographical sectors with highest from Northwest, South east zones (Table 1). Majority of the children studied in English medium (66.1%) and in private schools (67.3%). Boys (57.3%) outnumbered girls with almost equal number of children from 3rd and 4th standards. Mean age of children was 8.77y. Kannada was mother tongue for most of the children (88.3%) while Telugu was (3.8%) where as the rest spoke Urdu, Tamil, Marathi and Hindi. As per the modified BG Prasad classification adjusted for 2013[19] most sample children fell under class 2, 3, 4. 69% of the fathers were educated high school or above where as 7.8% were illiterates. Mothers were less educated than fathers with 33.1% of them had studied high school and above while 17.9% were illiterates (Table 2). 36.6% of the fathers were unskilled workers whereas 76.6% of mothers were housewives.

Prevalence of spLD

About 19.5% (234) of children were found to be scholastically backward (Figure 2). Among them, 61% (n=143) were identified based on Rutters proforma and 31.1% (n=73) were identified by both Rutters proforma and academic grades. Only 7.69% (n=18) of the scholastic backward children were identified by poor academic grades. Out of total 1,210 children 1.1% had vision problem, 0.4% had hearing impairment, 0.57% had physical

Figure 2: Flowchart for Screening Test to Identify SpLDs



disability and 1.57% had subnormal IQ that would have affected their learning ability. These children were excluded at different levels of screening procedure. Some children (n=8) missed screening test even after 3 additional visits were excluded as they remained absent on visiting days or left school in between. Finally a total of 159 children were diagnosed with one or more SpLD after exclusion of children with inconclusive results for the specific tests. The overall prevalence of Specific learning disability was 13.2% (n=159) (Figure 3). Among them dyslexia (11%; n=132) was most frequent followed by dysgraphia (9.9%; n=119) & dyscalculia (9%; n=108). In total 4.9% (n=59) children had all 3 types of SpLDs. SpLDs are higher among boys compared to girls. Lower the parent's education higher the prevalence of spLDs. No association found between parents occupation, socioeconomic status and SpLD.

Discussion

The present study measured SpLDs prevalence of 13.2% which is at the upper end of generally believed range of 2-18% in India & 5-17% in Worldwide[14,20-23].The individual prevalence of 11%, 9.9% & 9% respectively for dyslexia dysgraphia & dyscalculia converged to the peak of reported range in India which extends from 2-18% in dyslexia, 8-14% for dysgraphia & 3-4% for dyscalculia. [14,20-23] Large sample size in the present

Figure 3: Flow Chart for Screening Tests

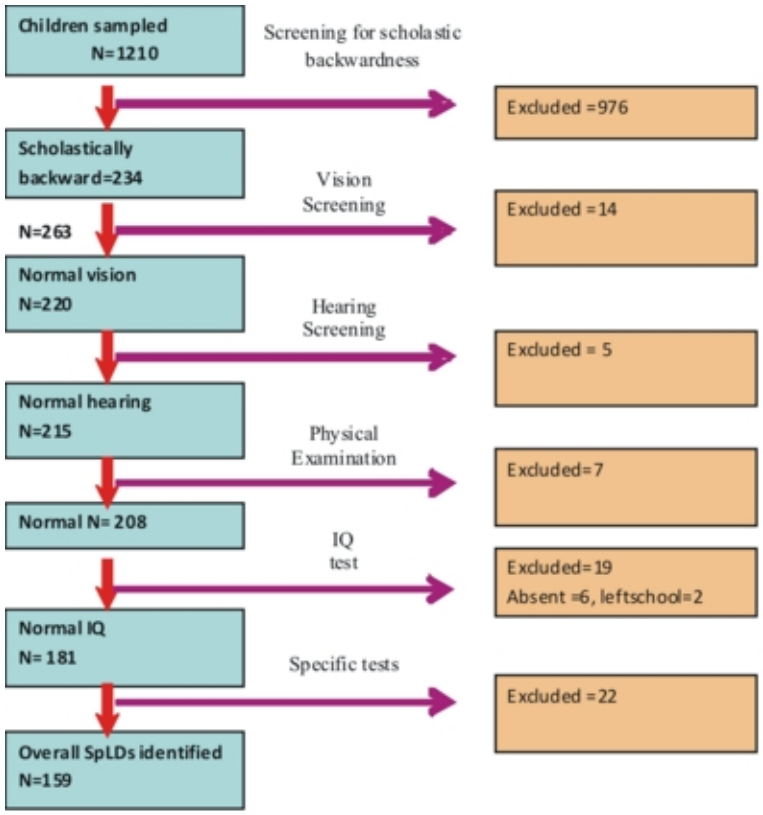
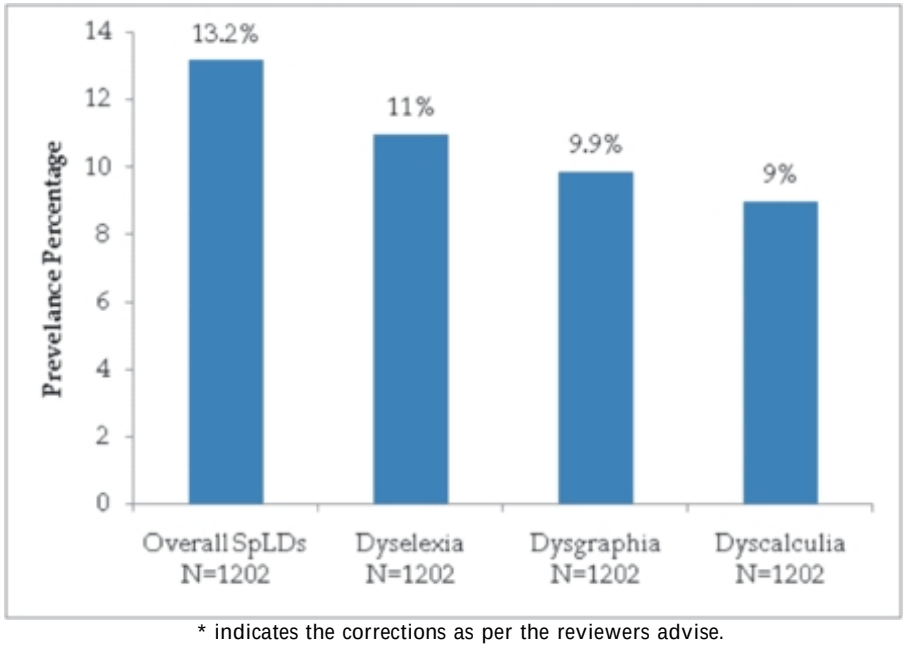


***Figure 3: Prevalence of Specific Learning Disabilities among Sampled School Children**



* indicates the corrections as per the reviewers advise.

study design confers more confidence in the outcome. The multi staged stratified randomized method in the study eliminates bias due to convenient sampling in previously published Indian studies making it geographically more representative denoting

sectors and language to a certain extent. It favors reduction of comparable prevalence of SpLDs in similar cities across India facilitating the policy decisions & advocacy efforts for conducting interventions. The present study shows utility of practical approaches at the school level to detect SpLDs using simplified screening procedure and tools while minimizing time expensive investigation and specialist requirements.

The diagnosis of spLD is considered complex requiring a multi -disciplinary team of experts such as pediatric neurologists, child psychiatrists to rule out various exclusion criteria.[24] The authors experience was that involving school teachers and trained social workers curtail the time needed by medical personnel and clinical psychologists and saved the precious time required from other experts which is scarce in resource limited settings. In a simplified stepwise screening, large number of children were screened at level 1 as they were not scholastically backward giving less screening load to medical expert and still lesser load to clinical psychologists. The importance of this simple approach cannot be undermined in identification and management of large number of SpLD children in India. The authors acknowledge that the present study identifies only those SpLds which are severe enough to cause scholastic backwardness while lesser ones were excluded. Nevertheless it is important to focus on children with severe SpLDs who may be benefited maximum from the intervention. Study does not screen scholastic backwardness due to emotional deprivation and poor motivation which may have misclassified small proportion of children in to SpLDs. The present tools could be different from other studies and may differ in sensitivity for different languages which limit the comparability. However it is a problem not confined to this study alone and difficult to address. A total of 8 (0.6%) children missed the screening test as they either did not attend the school on screening day or they left the school in between. It would have under or over estimated the prevalence depending upon the missed children who had SpLDs or not, however as the number of missed children are very low it is unlikely to have big impact on the results.

Conclusion

In summary 13.2% of primary school children who are scholastically backward are affected by SpLDs in Gulbarga, Karnataka. All the three types of SpLDs namely, dyslexia, dysgraphia and dyscalculia are high and almost equally affecting the school children. The present study has important ramifications to simplify the identification approaches, to advocate the need for planning and developing public health interventions, and expanding educational policies. In a multi linguistic country like India more prevalent studies across the nation can fill the additional knowledge gap. Interventions at school including remedial education and teachers training along with building family and social support systems are very much needed efforts for this under addressed problem of SpLDs.

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Abbreviations

SpLDs: Specific Learning Disabilities, IQ: Intelligence quotient

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Review Article

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Study of Prevalence of Hypertension in School Children Aged 6 to 15 Years in Gulbarga City

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Abstract

Objectives: (1)To know the prevalence of hypertension in school children in Gulbarga city.(2)To know the relation of blood pressure with variable like sex, weight, height, socioeconomic status and family history. **Methods:** Two readings of blood pressure were recorded and mean was calculated. The children were labelled as hypertensive, if the blood pressure was above 95th percentile for that age, height and sex. **Results:** The overall prevalence of hypertension was found to be 3.9%. Blood pressure found to increase with age, weight and Height. **Conclusion:** Children with risk factors should be followed up for modification of risk factors.

Keywords: Hypertension; School children; Larger weight; Socioeconomic status; Family history.

Introduction

Hypertension is a major health problem in developed & developing countries affecting approximately 1 billion individual's world wide.[1] Children with upper percentile of blood pressure levels are more likely to become hypertensive in adult. If the trend towards adult hypertension can be recognized in childhood, it may be possible to alter life style and prevent systemic hypertension as well as related complication.[2] The present study was taken up to know the prevalence of hypertension in school children in the age range of 6 to 15 years in Gulbarga city, Karnataka and to determine the influence of contributory factors like age, sex, body weight, height, socio-economic status and parental history of hypertension. So that this can be a reference for blood pressure norms for children of Gulbarga city.

Methods

The present study is a cross sectional study undertaken in three schools of Gulbarga city, Karnataka. A total of 2000 children aged 6-15 years were enrolled in the study and a questionnaire was used to collect information on subjects consisting of age, sex, type of family, socioeconomic status, history of renal disease, cardiac disease, family history of hypertension, anthropometry, blood pressure was recorded in sitting position in right arm by auscultatory method using a standard mercury sphygmomanometer with appropriate sized cuff covering about 2/3 of the upper arm and encircling it completely. Two measurements were taken at interval of

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two minutes each and average of the two readings was calculated .The children were labelled as hypertensive, if the blood pressure was above 95th percentile for that age, height and sex and were evaluated by two subsequent measurements taken during two different visits at weekly intervals before labeling them as hypertensive. Children having persistently elevated BP on three occasions were subjected to the following investigations to rule out secondary causes of hypertension. Complete blood count, Urine-albumin, sugar, microscopy and specific gravity, Lipid profile, Renal profile-Blood urea, serum creatinine and renal ultrasound, Cardiac profile-Chest X Ray, ECG, Echocardiogram. Statistical methods included calculation of age and sex specific means and standard deviation (sd) for systolic and diastolic blood pressure, correlation coefficient and 't' test for significant difference in blood pressure between groups.

Results

Two thousand, apparently normal school children, between 6-15 years of age were studied. Out of these 1156 were boys and 844 were girls. The BP for each age group was taken and the children were labeled hypertensive, if the blood pressure was above 95thpercentile for that age, height and sex. The mean systolic pressure and mean diastolic pressure were found to increase with increasing age with a spurt in SBP at 13 yr in both the sexes as shown in Table 1.

On the other hand there was no significant difference between the SBP as well as DBP of the two sexes at various age groups except for the significant difference between SBP of the both sexes at 12 and 15 years and between DBP at 12 years of age. Systolic and diastolic blood pressures were found to have significant correlation with weight and height and hence with weight/height ratio in both sexes ($p<0.01$). Blood pressure was higher in high socio-economic status ($p<0.01$). Children with family history of hypertension have significantly higher blood pressures than children without family history ($p<0.001$).

Discussion

In all the studies in India[3,4,5,6] and abroad[7,8] it has been shown that blood pressure, both systolic and diastolic, gradually increases with age, although such an increase is not a steady one. The findings of the present study are in agreement with the above statement.

The systolic spurt observed in the present study between 13-14 years in both sexes has been supported by other workers However Task Force Committee USA reported only one spurt between 5 and 6 years in both the sexes.

Table 1: Correlation between Blood Pressure Status and Sex in Different Age Groups

Age	Systolic Pressure		Diastolic Pressure	
	Boys Mean±SD (mm Hg)	Girls Mean±SD (mm Hg)	Boys Mean±SD (mm Hg)	Girls Mean±SD (mm Hg)
6	96.07±5.95	95.97±5.1	63.28±4.42	62±3.77
7	98.05±6.08	97.48±6.01	63.83±4.64	63.63±5.36
8	101.13±5.4	100.23±5.35	65.1±5.5	65.49±5.37
9	101.81±6.07	102.02±6.34	65.6±6.09	65.5±4.93
10	104.27±6.09	104.23±6.12	65.8±4.95	66.48±6.28
11	105.13±6.69	105.18±7.49	68.18±6.65	67.89±4.78
12	105.82±6.53	108.02±6.58	68.24±4.59	68.7±3.39
13	107.8±7.39	108.08±7.64	68.3±4.85	69.05±4.63
14	111.39±6.78	110.94±6.53	71.23±4.49	72.13±3.68
15	114.58±4.96	112.15±5.95	73.36±4.21	72.76±4.19

Table 2: Prevalence of Hypertension in Various Studies

Present study	3.6%
Rakesh Agarwal, SL Mandowara, B. Bhandari and Garg OP (1982)[5]	2.6%
Agarwal V.K., Rajiv Sharan, Shrivastava AK and Pandey CM (1983) [4]	1.8%
Chahar CK, Shekhawat V, Migalani N and Gupta BD (1983)[6]	1.39%
Sachdev (1984) [9]	0.54%
Laroia, M Sharma, V. Diwedi, KM Belapurkar and PS Mathur (1989)[12]	2.93%
Anand N.K. and Lalit Tandon (1996)[3]	0.46%
Chada .S.L,tandon R,Gopinath N(1999)	11.6%
Avinash Sharma,Neelam Grover,Rajiv bharadwaj(2006)[11]	5.9%

The spurt may possibly be due to certain hormonal and physical changes occurring in the body at adolescence. The blood pressure levels in the present study were considerably lower, both systolic and diastolic pressures, in either sex than the findings in other Indian studies. Even in the Western studies similar differences have been observed, the difference between NIH Task Force readings and Bogalusa heart study being 10-15 mm Hg, with considerably higher level reported in the NIH report.[7,8]

The differences between the present study and other Indian studies can be explained by the fact that the mean body weight and height were higher in other studies in the comparable age groups, which are the main determinants of blood pressure in growing children.In the present study it has been seen that the mean systolic and mean diastolic blood pressures increase steadily and proportionately with weight. Similar observations have been made by other workers.[4,5,6] There is a strong correlation between blood pressure and weight as well as blood pressure and height in both sexes. There is no significant difference in blood pressures of the two sexes when the values are corrected for maturation status. In the present study it was seen that there were significant differences in the mean blood pressure levels (both systolic and diastolic) of children from class I and class II socio-economic groups in contrast to Agarwal *et al*[5] study and Sachdev[9] *et al* study which showed no association between socio-economic status and levels of blood pressure. Children with family history of hypertension have significantly higher blood pressures than children without family history. Similar observation was made by Roya Kelishadi, Mahin Hashemipour, Nasrollah Bashardoost.[10]

The prevalence of hypertension in study population was 3.9% (n=78). The prevalence reported in various other studies ranged from 0.54 to 11.96%[3,4,5,6,11,12,13,14] (Table -2).

The vast majority of these children will have mild elevation of blood pressure and labeled as essential hypertensives15.The observation of the present study are in agreement with the above statement as all the 78 children who were labelled as hypertensives had only mildly elevated blood pressure and none had severe elevation of blood pressure (> 99th percentile).

Conclusions

The overall prevalence of hypertension was found to be 3.9%. Blood pressure, both systolic and diastolic gradually increases with age, the increase being more pronounced in systolic blood pressure than in diastolic blood pressure. There is a strong correlation between blood pressure and weight, height and weight/ height ratio in both sexes. Larger weight children, high socioeconomic status and family history of hypertension in children are associated with elevated blood pressures and children may be at risk for developing hypertension at a later date. They should be followed up and considered for modification

of risk factors.

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Case Report

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Noonan's Syndrome

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Abstract

Noonan's syndrome is a complex familial syndrome with a large phenotypic overlap with the Turner syndrome. Individuals with this syndrome have small stature, broad or webbed neck, lymphedema, facial dysmorphism, mental retardation, skeletal abnormalities, and thrombocytopenia. In males there is undescended testes and sexual infantilism. Diagnosis is currently based on clinical presentation and a normal karyotype. Here we report a case of Noonan's syndrome.

Keywords: *Noonan syndrome; Pseudo Turner syndrome; Pulmonary stenosis.*

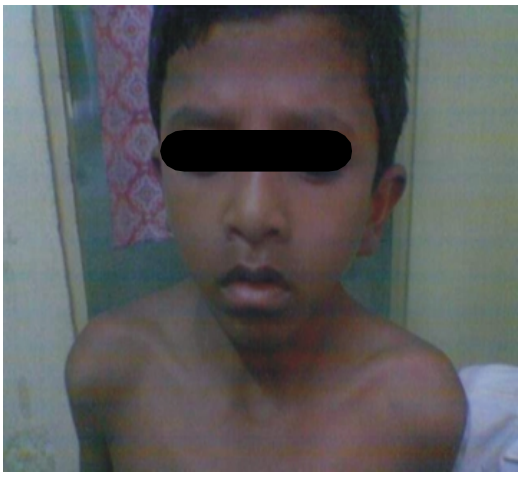
Introduction

Noonan Syndrome (NS) is complex familial Turner like syndrome without chromosomal defect. Commonest abnormalities seen in NS are skeletal and cardiac. There may be developmental delay.[1] The cardinal features are unusual facies (ie, hypertelorism, down-slanting eyes, and webbed neck), congenital heart disease (50%), short stature, and chest deformity. Approximately 25% of individuals with Noonan syndrome have mental retardation. Here we report a case of NS who has normal development for age and congenital heart disease.

Case Report

A 7-year-old male child presented with complaints of breathlessness and short stature. There was no history of fever, sore throat, joint pains or hematuria. There was no history of recurrent chest infection in the past. In the mother, there was no history of perinatal exposure to any known teratogens, like drugs or radiation. The age of mother during conception was 22 years and that of father was 25 years. There was no history of fetal loss. There was no family history of malformations. On external examination most obvious features were short stature (<5 percentile), dysmorphic face and webbing of the neck (Figure 1). The chest was broad, shield like and there was cubitus valgus. Mild

Figure 1



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hypertelorism and epicanthal folds was presnt. Depressed nasal bridge, low posterior hairline, posteriorly angulated and low ear set was present. External genitalia were normal. Development was normal for age. Pallor was present but icterus, cyanosis, lymphadenopathy, clubbing, splinter hemorrhage, osler nodes and pedal edema were absent. All the peripheral pulses were palpable. Respiration rate was 30/minute with intercostal retractions. Blood pressure was 90/60 mmHg. Cardiovascular examination revealed grade III ejection systolic murmur best heard over the pulmonary area. Detailed examination of other systems was normal. Karyotyping showed XY-46 with G-banding. Skeletal survey and abdominal ultrasonography (USG) were normal. Echocardiography revealed severe valvular pulmonary stenosis (gr.60mmHg) with small size ostium secundum atrial septal defect. Hematological work-up was normal. Patient was advised human growth hormone therapy but could not be given due to economic constraints.

Dicussion

Jacqueline A. Noonan in 1968, described 19 cases of a syndrome having a large phenotypic overlap with Turner syndrome along with other anomalies. The eponym "Noonan's syndrome" (NS) was first used in the same issue of the Journal where Noonan's article appeared.[2] Since then different synonyms used for NS include Pseudo Turner syndrome, Turner syndrome with normal XX and Male Turner syndrome.[2] Incidence of NS is 1:1000 to 1:1250 per live births.[3] Inheritance is autosomal dominant with variable expression but half of the cases are sporadic new mutations. This syndrome occurs in both genders.[2,3] There is no chromosomal defect though recently the gene has been mapped on chromosome 12q in the 12q24.2-q24.31 region.[1,2]

The most common abnormalities in Noonan syndrome are short stature, webbing of the neck, pectus carinatum or pectus excavatum, cubitus valgus, hypertelorism, downward slanted palpebral fissures, ptosis, micrognathia and ear abnormalities.[4,5] Hernias, clinodactyly and vertebral anomalies occur less frequently. Moderate mental retardation and high frequency sensorineural deafness can be present.[1,4] Right sided congenital heart disease is commonly present. Most often it is pulmonary valvular stenosis, hypertrophic cardiomyopathy or atrial septal defect.[5-6] Several haemolytic diseases such as low clotting factors XI and XII, acute lymphoblastic leukemia and chronic myelomonocytic leukemia have been described in patients with Noonan Syndrome.[1,7] Therefore, a full haemolytic workup must be performed in patients with Noonan Syndrome undergoing surgical procedure. Males have cryptorchidism and infertility. Females have normal genitalia and usually normal fertility.[3,8] There is mild developmental delay in cognitive and motor fields. Many children have normal development and the reported IQ ranges from 53% to 127%. Neurological manifestations reported are seizures, hearing deficit, peripheral neuropathy and Schwannomas. Skin may have nevi, freckles or café au lait spots. Diagnosis of NS is currently based on clinical presentation and normal karyotype. In antenatal ultrasound initial anomaly most likely to be observed is a posterior nuchal cystic hygroma which may regress later in the gestation into a nuchal fold redundancy and/or pterygium colli. Some fetuses are suspected and identified because of congenital heart disease, pleural effusions, and hydrops and by triple marker screening. During prenatal counseling, management costs, poor results of treatment, potential complications and psychological trauma to the family and the child, should be brought to parent's attention. Standard prenatal care is not altered when continuation the pregnancy is opted for. Most patients with NS should be managed conservatively.[1,2] Growth hormone therapy may be offered for treatment of short stature. Noonan syndrome is second

only to Downs syndrome as one of the most common syndromes hence clinically it is important to recognize this condition. Prognosis depends on associated anomalies. Normal life expectancy is seen in those without major complications of heart disease.

The differential diagnosis include Williams syndrome, foetal alcohol syndrome, multiple lentigines syndrome, Watson syndrome, Cardio-facialcutaneous syndrome, XO/XY mosaicism, Turner syndrome, Costello syndrome and neurofibromatosis- Noonan Syndrome.[1,4] Early identification of the condition is important for anticipation of problems, their early diagnosis that is required for a timely intervention and for genetic counseling.[2,4] Certain types of congenital heart lesions can be corrected by surgery. Activity may be limited by cardiac status and the presence of haematologic abnormalities (7). All individuals with Noonan syndrome require detailed and regular follow up for ongoing developmental, audiologic, ophthalmologic, cardiac, neurologic and other associated problems.

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Variant of Thrombocytopenia with Absent Radius Syndrome: Case Report

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Abstract

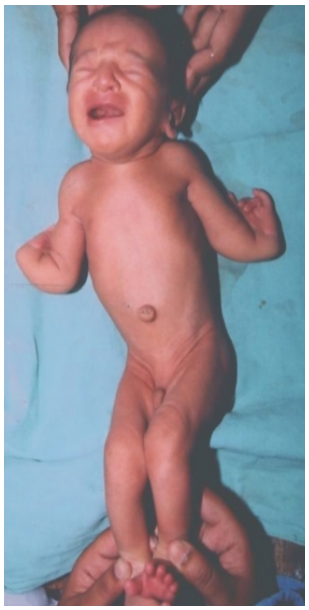
Thrombocytopenia with absent radius (TAR) is a congenital syndrome characterized by severe thrombocytopenia with bilateral absent radii and may be associated with other skeletal abnormalities. We report a case who had bilateral micromelia of upper limb, radially curved forearms and bilateral absent of thumb at birth. A severe thrombocytopenia confirmed the clinical diagnosis of thrombocytopenia with absent radius syndrome in the neonate.

Keywords: *Thrombocytopenia; Radius; Newborn.*

Introduction

Thrombocytopenia with absent radius syndrome is an autosomal disorder characterized by the neonatal onset thrombocytopenia, bilateral absence or hypoplasia of the radii with normal or poorly formed hands and other variable skeletal malformation.[1,2] It is transmitted in an autosomal recessive fashion and consanguinity is not a feature.[3] This syndrome was first noted by Greenwald and Sherman in 1929.[4] Other skeletal abnormalities like abnormal or absent humerus, dislocated hips, tibial torsion, ankylosis of knee and hypoplasia or aplasia of femur are usually present.[4,5] Here we report a case of severe thrombocytopenia with bilateral absent radius.

Figure 1: Newborn with Micromelia of Upper Limbs, Radial Curving of Forearm with Poorly Formed Hands



Case Report

The term male baby weighed 1630gm was born through normal vaginal delivery, first lived baby of second pregnancy of healthy mother and father whose ages were 22years and 26years respectively and are non-consanguineous. Mother did not have an important illness when she was pregnant and did not use any medication except multivitamins. First pregnancy of the mother

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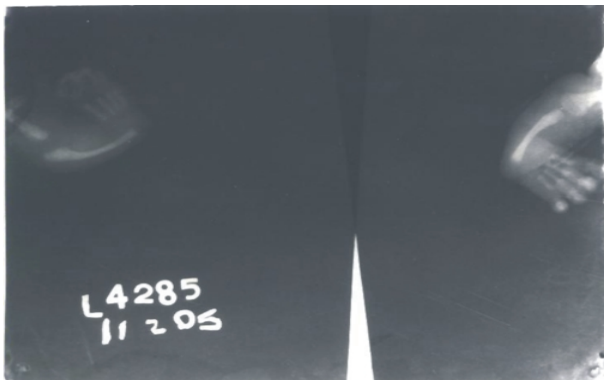
Figure 2: X-ray Hand Show Bilateral Radial Aplasia with Radial Curving of Ulna and Absent 5th Metacarpal Bone



resulted in spontaneous abortus in 4th month because of blighted ovum. On examination, neonate had bilateral micromelia of upper limb, radially curved forearms and bilateral absent of thumb were present (Figure 1). Petechiae and ecchymotic patches were absent. Other systemic examination was normal. On hematological investigation, hemoglobin was16.8gm/dl, TLC: 12,000/cumm, DLC: 65% neutrophil, 32% lymphocyte and 3% eosinophil. Platelet count was 68,000/cumm. X-ray hand revealed bilateral radial aplasia, radial curving of ulna and absent bilateral 5th metacarpal bone (Figure 2). Echocardiography and Doppler examination was normal. Baby was discharged after 10 days.

Discussion

TAR is a congenital syndrome characterized by severe thrombocytopenia with bilateral absent radii and may be associated with other skeletal abnormalities. The most pronounced skeletal abnormality of this rare syndrome is bilateral radial aplasia. The humerus is affected in 50% of patients and may be shortened or reduced to small interconnecting bone positioned between the scapula and hand. Limbs are more involved than the trunk. Hypoplasia, aplasia or malformation of ulna seen in 78%, hand 75% and humerus 40% of cases. However, thumbs and digits are almost always present which distinguishes TAR from fanconi's anemia.[3,6] Bleeding manifestations and severe thrombocytopenia (platelet count<10-30,000/cumm) have been reported in more than 50% of cases at birth or before the age of 1 week and 90% of patient by 4 months of age.[3]

The baby had typical features of the TAR syndrome: bilateral aplasia of the radii, radially deviated hands and thrombocytopenia. But the unusual finding was bilateral absence of thumb. This malformation can be delimited from other syndromes with aplasia of the radii such as fanconi's pancytopenia syndrome, Holt-Oram syndrome, fetal thalidomide syndrome, trisomy 18 syndromes and Robert's SC-phocomelia syndrome. In fanconi's pancytopenia, facial dysmorphism and radius anomalies can be observed in 30% patients. Diepoxybutane (DEB) test is positive in most of patients.[7]. Whereas thrombocytopenia is rare in neonatal period and in later periods aplastic anemia is observed.[1,2] Robert's SC-phocomelia syndrome, an autosomal recessive syndrome of tetraphocomelia, cleft lip, cleft palate and mental retardation may be difficult to differentiate clinically from the TAR syndrome.[8] In our case, aplastic anemia, cleft palate and cleft lip was absent and DEB test couldn't be done. TAR syndrome can be diagnosed prenatally by ultrasonography and chordosynthesis.[9,10] Weinblat *et al* applied in utero thrombocyte transfusion on TAR syndrome case diagnosed prenatally.[10] Unfortunately, prenatal diagnosis could not be made in our case. The baby without severe hemorrhages, show a fairly good tolerance to thrombocytopenia after the first year of life, and a good response to steroid therapy when necessary. Prognosis depends upon the severity and duration of thrombocytopenia with overall mortality of 40%.

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Dr. George Cohelo Paediatric Museum
(First Paediatric Museum in Medical College)

Sunil Natha Mhaske

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E-mail: sunilmhaske1970@gmail.com

In Padmashree Dr. Vithalrao Vikhe Patil Medical College Ahmednagar (Maharashtra) established a museum concerned with Paediatric subject of M.B.B.S. subject. This museum was established in 2010 in Paediatric department of medical college and dedicated to pioneer paediatrician of India- Dr. George Cohelo.

The idea and main effort of establishing such unique museum related to paediatric fraternity was Dr. Sunil Natha Mhaske - professor and head of department.

This paediatric museum contains:

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3. Rhazes, first printed book of paediatrics, work related to paediatrics and other ancient literatures are put up in museum.
4. World's father figure paediatricans –Dr. Jacob John, Dr. Waldo E Nelson, word's first paediatric hospitals in USA, England are displayed here in museum with relevant information.
5. India's first Paediatric hospital-B.J. Wadia, Mumbai, first Indian paediatrician-Dr. George Cohelo, India's first Paediatric Professor- Dr. S.T. Achar, first Indian Paediatric journal pioneer-Dr. K.C. Chaudhari are prominently displayed in this museum
6. Pioneers' and researchers related with paediatrics and vaccination are displayed with relevant information.
7. All paediatric organizations like American academy of pediatrics, Indian academy of paediatrics, National Neonatology Forum are put up with detail.
8. Paediatric subject related x-rays, ECG, EEG, CT SCAN, MRI films are displayed with information, drugs, vaccines, nutrition are also displayed in educative manner.
9. All books and journals related with paediatric are kept in museum including some of the old editions also
10. There is a unique collection of all 19 editions of Nelsons text book of paediatric along with nine editions of O. P. Ghai's book of paediatrics.
11. Specimens including abnormal newborns, all nine months intrauterine babies, child's internal organs, dissected neonates, toxicology are displayed with information.

This museum is visited by most of the medical college Paediatric subject professors, teachers and students and made statement-

- Museum is a milestone with innovative ideas, helpful for every one-Dr. Swapnali Patil, Joint Director-MSACS, Maharashtra

- Excellent admirable collection, first of its kind in subject of paediatrics-Dr. S.S. Sarwade, Professor and Head, Paediatrics, RCSM Government Medical College, Kolhapur.
- Fantastic and appreciable museum-Dr. B.R. Nilgar, Director KLE university, Belgaum, Karnataka
- Pain taking and hard work, exemplary-Dr. S. Mahadevan, Professor Paediatrics dean school of medical sciences, Pudechary
- Good work, nice display. Can give details of paediatrics both ancient and modern-Dr. Arati A. Kinikar, Professor and Head, Paediatrics, B. J. Medical College, Pune.
- Excellent work, very appreciating and with full dedication work done- Dr. Vandana Kumawat, Professor and Head, Paediatrics, Rajiv Gandhi Medical College, Kalva, Thane
- Great effort of documentation and

preservation of our history-Dr. Preeti Shan bag, Professor and Head, Paediatrics ESI-PGIMSR and MGM hospital, Mumbai.

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HELP THESE INDIAN CHILDREN TO BUILD THEIR OWN FUTURE!

Over 250 children in Belsar village in India, in the backwards rural District of Gonda in Uttar Pradesh (see map) will be without a school building by the end of this school year… unless we help them to pay for building materials for a new school building. Parents who are masons, carpenters and others are committed to give their free time to help and construct the building. World Without Obstacles – a registered NGO – with support of friends and family enabled this initiative.

For many years WWO already works together with a small primary school called Gurukul Children Academy. The school is financially independent from the NGO in its day-to-day operations. WWO helps to increase quality of education and health of children and their families. We already designed a future vision together with an architect and the school Principal. During school hours the new building will be used to educate 300 children and after hours WWO will give health info-sessions and vocational skill trainings to adults from the village. The multi-functional building will also be used as a regional office and accommodation for volunteers of the NGO. This will allow WWO to reach out to even more people in Belsar and Gonda District.

In total we need about INR 52 lakh to realise the complete multi-functional school building with 10 class rooms. One class room on average costs around INR 4 lakh. Phase 1 was partly financed via a global online crowd funding campaign. To allow the children continuity of education in the next school year we need to complete construction

of phase 1 before monsoon. This includes the foundation, five class rooms, an office and a staircase. Phase 2 concerns the sanitation facilities for which we hope to receive a contribution from government funds.

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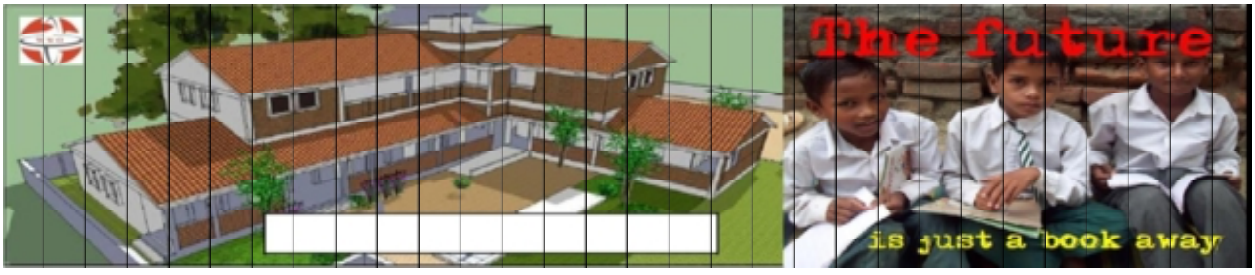

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