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Original Research Article

Adolescents: a paediatrician's or an adult physician's domain? clinical profile of Indian adolescents admitted in pediatric ward and those admitted in other than pediatric ward

Snehal V. Patel, Halak J. Vasavada, Purvi R. Patel*, Nirav B. Rathod

Department of Pediatrics, N.H.L Medical College, Shardaben Municipal General Hospital, Ahmedabad, Gujarat, India

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***Correspondence:**
Dr. Purvi R. Patel,
E-mail: evergreen.purvi@yahoo.in

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ABSTRACT

Background: Study of the clinical profile and no. of admissions of adolescents admitted in pediatric ward and other than Pediatric ward.
Methods: A Prospective Study, conducted during August 2018 to March 2019, at a tertiary care teaching hospital, including age group 10-19 years.
Results: Out of 1645, highest adolescents' admissions 749 (46.37%) were to medical ward, 2nd highest in the Pediatric ward which was 317 (19.6%), followed by general surgical ward which was 312(19.3%). Highest among late adolescents, infectious diseases were still the leading cause of hospitalization of adolescents as it constituted 68.4% (902) of admissions to other than pediatric ward followed by surgical cause[135(10.2%)] followed by accidents [5%(66)].
Conclusions: Infectious diseases are more common in adolescents compared to developed countries. The shift in hospitalisation of adolescents from pediatrics to general medicine at about 14 years is illustrated in present study and reflects the need of better implementation of clinical policy on the age divide.

Keywords: Adolescents, Hospitalisation, Infectious diseases, Pediatric ward

INTRODUCTION

Adolescents -a miniature adults or grown up kids?

WHO defined adolescents as people within the age group of 10-19 years and UNICEF age for child is up to 18 years.[1,2] Worldwide, there are more than 1.2 billion adolescents, that is, roughly one in every six person is an adolescent.[3]

From the onset of puberty, to the time they enter adulthood in their early 20s; young people undergo major physical, cognitive, and psychosocial changes having important implications for health. Adolescence and young adulthood coincide with major changes in health problems and emergence of risk behaviours.

At the moment, grey area exists for adolescent care, especially in reference to provision of care of hospitalized adolescents. To where adolescents actually belong to-with reference to health care-whether they are the responsibility of pediatricians or adult care physicians- is a big issue when it comes to a clinical practice beyond the books.

Ideally treating adolescents comes under domain of Pediatrician but size of cots in pediatric ward so as to accommodate older children and separate wards for adolescent male and female in General Pediatric ward,

which is necessity for care of adolescents, is not available in most government hospitals. So also majority of postgraduates passed out from pediatrics are not trained in that.

Actually, those hospitals require a pediatric leadership to bring about the change and make it up-to and including 19 years of age for Pediatrics practice.

- Revisions of Policy on Age limit of Pediatrics-reaffirmed by AAP in 2012 and identified the upper age limit as 21 years.[4]
- Policy on Age of Children for Care (1999)-by IAP-the purview of pediatrics commences with the fetus and continues through newborn, infancy, preschool and school age including adolescence up to and including 18 years of age.[5]

Aims and objectives were to study the current tendency of preference of adolescents for getting hospitalized in the Pediatric versus Adult wards, study the morbidity and mortality profile of hospitalized adolescents admitted at Pediatric ward in a tertiary care teaching hospital, and to study the Clinical diagnosis of hospitalized adolescents admitted in wards other than Pediatric ward.

METHODS

This is a Prospective observational study. Study was conducted at tertiary care teaching hospital in Ahmedabad, for the study period of 8 months (August 2018 to March 2019).

Inclusion criteria

- Age group 10-19 year

Exclusion criteria

Those who took left against medical advice from Pediatric ward.

This Prospective study was conducted in the inpatient General Pediatric ward (which has no separate arrangements for male and female adolescents) and in wards other than Pediatric wards viz.: General Medicine, General Surgery, Obstetrics and Gynecology, Orthopedic, Plastic Surgery, ENT of Tertiary Care Teaching Hospital, for a period of 8 months. Written consent taken from the parents for taking the patients details.

RESULTS

Out of 1645 all, 33.98% were falling into early adolescence, 26.01% were of mid adolescence and 40% were falling into late adolescence. There were 855 (51.97%) were male and 790 (48.02%) were female which shows male outnumbers the female (Table 1).

Clinical profile of adolescents admitted in pediatric ward

In the present study majority of the patients admitted to pediatric ward had infectious disease (81.69%) (Table 2).

Table 1: Demographic profile of adolescents admitted in the hospital.

Age groups	Male	Female	Total
10-13 years	296(17.99%)	263(15.88%)	559(33.98%)
14-16 years	210(12.76%)	218(13.25%)	428(26.01%)
17-19 years	349(21.2%)	309(18.78%)	658(40%)

Table 2: Burden of infectious and non-infectious disease.

Etiology	Total
Infectious	241(81.69%)
Non-infectious	54(18.3%)

In this study, highest hospitalization is due to Systemic infections contributing 40.33%, where systemic infections contributed 38.98%. Second most common cause of hospitalization was contributed by gastrointestinal disorders (23.38%) (Table 3).

In this study, 23.38% found to be underweight, where 73.89% adolescent being in normal nutritional status. Total of 7 (2.37%) among 295 cases found to be overweight (Table 4).

Table 4: Nutritional status.

Classification	BMI	Male	Female
Underweight	<15	40(13.5%)	29(9.83%)
Normal	15-22	119(40.33%)	99(33.55%)
Overweight	22-25	4(1.35%)	3(1.01%)
Obesity	>25	0	1(0.33%)

Present study showed only 3.38% of hospitalized adolescents were vaccinated for special vaccines for adolescents (Table 5).

Hemoglobin value ranged from 6.2 to 13.1 gm/dL. Overall 59.84% of adolescents girls were anemic in present study, In this study overall prevalence of anemia was 51.52% (Table 6).

Clinical profile of hospitalized adolescents at other than pediatric ward

The present study showed infectious disease were still the leading cause of hospitalization of adolescents as it constituted 68.4% (902) of admissions to other than

pediatric ward. 2nd cause for hospitalization being the surgical which constituted 10.2% (135) admissions followed by accidents which constituted 5% (66) (Table 7).

Table 3: Disease spectrum.

Disease	Evolution		
	Discharge	Death	Transfer
CNS (16.27 %)			
Acute febrile encephalopathy	0	1	-
Seizure disorder	35	0	-
Meningitis and Meningoencephalitis (Viral, Bacterial)	5	0	-
Tubercular meningitis	-	-	-
Status epilepticus	2	0	0
Others (Demyelinating Disorder, Tuberculoma Neuropathy, Hysteria, Tension Headache)	5	-	-
CVS (1.35%)			
Congenital cyanotic heart disease (Tetralogy of Fallot)	2	0	-
Rheumatic heart disease	1	0	-
Congestive heart failure	1	0	-
Respiratory disorders (11.52%)			
Pleural Effusion	1	0	-
Bronchial Asthma	12	0	-
Pneumothorax In K/C/O MDR TB	0	1	-
Empyema	0	0	1
Pneumonia	14	0	-
Other (Viral URI)	5	0	-
Gastrointestinal (23.38%)			
Fulminant hepatic failure with hepatic encephalopathy with DIC	0	1	-
Acute hepatitis	26	0	-
Acute gastritis	11	0	-
Portal hypertension with microscopic cholestasis	1	0	-
Liver Abscess	4	0	-
Acute abdomen	1	0	-
Acute gastroenteritis	21	0	-
Other (Cholecystectomy, enteric hepatitis, dysentery, ileal intussusception)	3	0	1
Systemic Infectious (38.98%)			
Enteric fever and clinically enteric fever	57	0	-
Dengue fever (probable and confirmed)	9	0	-
Malaria	7	0	-
Tuberculosis (Pulmonary TB, Abdominal TB)	2	0	-
Others (nonspecific viral illness-viral fever)	40	-	-
Renal (2.71%)			
Nephrotic syndrome	3	0	-
Post-streptococcal glomerulonephritis	2	0	-
Others (Urinary tract infection, Renal calculi with pyelonephritis)	3	0	-
Hematological (0.67%)			
Leukemia (B cell-Acute Lymphoblastic Leukemia)	0	0	1
Hemolytic Anemia with Isolated Splenomegaly	1	0	-
Rheumatology (0.67%)			
Polyarticular JIA	2	0	0
Miscellaneous (4.40%)			
Acute otitis media, acute tonsillitis, boil, mumps, acute tonsilopharyngitis, teratoma, angioedema, electrocution, tubercular lymphadenapathy, familial delayed attainment of height (under observation for short stature)	13	0	0

Table 5: Status of adolescent vaccination.

Vaccine	Vaccinated adolescents
Tdap	2(0.67%)
HPV1	-
MMR	2(0.67%)
Varicella	-
Hepatitis B	-
Hepatitis A	-
Typhoid	3(1.01%)
Influenza	3(1.01%)
Japanese Encephalitis	-
Pneumococcal (PPSV23)	-
Meningococcal	-
Rabies vaccine 0,3,7,14,28 day	-

Table 6: Status of anemia of hospitalized adolescents.

	Degree of anemia			
	No Anemia (48.47%)	Anemia (51.52%)		
		Mild	**Moderate**	**Severe**
Male	91(30.84%)	56(18.98%)	17(5.76%)	0
Female	52(17.62%)	62(21.01%)	16(5.42%)	1(0.33%)

Table 7: Clinical profile of hospitalized adolescents at other than pediatric ward.

Clinical diagnosis	Outcome		Total
	Discharge (morbidity) (99.92%)	**Death (mortality) (0.07%)**	
Injury	11	0	11(0.83%)
Infection	902	1	903(68.04%)
Poisoning	1	0	1(0.07%)
Burns	0	0	-
Pregnancy	27	0	(2%)
Accidents	66	0	66(5%)
Surgical	135	0	135(10.2%)
Non-specific symptoms (functional)	177	0	177(13.40%)

DISCUSSION

In the present study majority of the patients admitted to pediatric ward had infectious disease, which is significantly higher than admissions due to non-infectious causes. (On applying Z test, the p-value is 7.19. The test result is significant at p >1.96.). Overall hospital morbidity in this study, like others from developing countries, was infectious in origin in contrast to with the developed countries where the noninfectious causes including substance abuse, depression, and obesity forming the bulk.

In this study, highest hospitalization is due to systemic infections contributing 40.33% which is little higher than found in A Chakraborty et al, where systemic infections contributed 38.98%.[6] Also, the findings are in contrast to Sachdeva et al, where the commonest cause of admission was injury, poisonings, burns and accidents followed by pregnancy (13.9%), but consistent with findings of Ojukwu et al.[7,8]

Among the infectious causes Enteric fever and clinically enteric fever were the commonest in contrast to Dengue and Dengue like illness in A Chakraborty et al.[6]

In this study, 2nd most common cause of hospitalization was contributed by gastrointestinal disorders (23.38%) which are comparable to Ojukwu et al, and A Chakraborty et al.[6,7]

23.38% found to be underweight according to WHO BMI standards which are much lesser than found in A Chakraborty (37.3%) et al.[6,9]

This result were comparable to study performed by Basu et al, on school going adolescents of Chandigarh where they found 14.35% female and 14.2% male were underweight.[10]

Present study showed 73.89% adolescent being in normal nutritional status in contrast to study done by Dambhare DG et al, on Peri-urban population were 48.3% of the adolescents were found to be normal and 51.7% were underweight.[11]

Total of 7 (2.37%) among 295 cases found to be overweight which is much comparable to study conducted by A Chakraborty because they found 2.8% overweight in their study.[6] Only single adolescent (0.33%) found to be obese found in study.

Adolescent obesity is still not that prevalent according to this study which indirectly shows that India is still dealing with malnutrition as the major cause of undernutrition.

Overall 59.84% of adolescents girls were anemic in present study, majority which is much lesser than found in study conducted by Meenal Vinay Kulkarni et al, among adolescent girls in an urban slum where the prevalence of anemia was found to be very high (90.1%) among adolescent girls, majority of the girls were having mild or moderate anemia (88.6%).[12] Reasons being nutritional anemia, menstruation, less iron rich foods.

However, the results for anemia in girls from the present study were considerably higher than those in 2 other studies-Dambhare et al, which showed 38.89% and Basu S et al, which showed 23.9%.[10,11]

CONCLUSION

The study shown that adolescents are indeed a unique group of hospitalized patients with different morbidity and mortality pattern.

Infectious diseases are more common in Indian adolescents compared to developed countries. Due to increased exposure, faulty eating habits, less nutritional foods, increased contact, adolescents are more prone to infectious disease.

Age group of above 14 years are still admitted in other than pediatric ward. The shift in care of adolescents from pediatrics to general medicine at about 14 years is illustrated in present study and reflects the need of better implementation of clinical policy on the age divide between the specialties and provision of separate male and female adolescent wards in the hospital to take care of this age group under the domain of 'Paediatrician.

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