MORBIDITY PATTERN OF THE SOUTH INDIAN ADOLESCENT*

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Introduction

Adolescence is a process, a series of varied, rapid and extensive changes as well as a period of life. A series of biochemical, anatomical and mental changes occur during this period, which is of special importance to the future life of the person. Those changes are not always uneventful and smooth. It is always influenced by a variety of morbid conditions which in some cases are peculiar to this age group, like acne, metropathia, gynaecomastia, slipped femoral epiphysis and certain emotional difficulties. Surprisingly, very little work has been done to understand the morbidity conditions of this age period, on the plea that it is a relatively safe and healthy period of life. Over and above, today, the total world adolescent population is 300 millions, which is too big a population group to be ignored. So, it is quite natural that the W.H.O. working group on health

problems of adolescence, has expressed their concern about undertaking such a type of study throughout the world to understand the magnitude of the problem and its eventual solution (Working Group W.H.O. 1965). The object of our present study was to attempt to answer the following questions :

(i) What is the morbidity pattern of the South Indian adolescent population ? In which way does it differs from the trend in other countries and from the different parts of the same country.

(ii) Within the adolescent group itself how does the morbidity pattern shift from one trend to another when the data are analysed at intervals of one year.

Material and Methods

For the purpose of the present study, the 10 to 20-year-age group has been defined as the adolescent group, as suggested by the W. H. O. working

group (1965). The material was collected from admission and O.P.D. attendance records of the Pondicherry State Hospital attached to the Jawaharlal Institute of Postgraduate Medical Education and Research and the Urban Health Centre and Rural Health Centre of the Department of Preventive and Social Medicine. A total of 5602 cases has been analysed.

The diagnoses have been classified according to List 'B' of the W.H.O. international classification of diseases (1955). From each age group, the first ten causes have been included and compared with the figures of Ceylon, U.A.R., U.S.A., U.K. (England and Wales) and findings from other parts of this country.

Results and Discussion

It is evident from Table 1 that in all the age groups, B46 (which includes diseases mostly of the eye, ear, nose and throat, upper respiratory tract, and skin, maintained its position throughout and is responsible for

Table 1. *Showing the first ten causes of morbidity* among different age groups of adolescents (10—20 years) in Pondicherry.*

Chrono-logical order	Age in years									
	10	11	12	13	14	15	16	17	18	19
1	B46 (74.5)	B46 (66)	B46 (72)	B46 (78.4)	B46 (76)	B46 (68.6)	B46 (70.2)	B46 (70.2)	B46 (72.6)	B46 (67)
2	B44 (5.9)	B44 (9.2)	BN50 (7.3)	BN50 (5.2)	B44 (4.6)	BN50 (6.6)	BN50 (8.6)	B44 (4.6)	BN50 (4.2)	B6 (4.8)
3	B4 (4.3)	B4 (5)	B44 (5.5)	B25 (3.1)	B25 (3.4)	B44 (6.4)	B44 (3.5)	BN50 (4.4)	B44 (4)	B.0 (4.7)
4	BN50 (3.9)	BN50 (4.7)	B4 (3.9)	B4 (2.8)	B40 (3.3)	B30 (4)	B6 (3)	B6 (3.8)	B6 (3.7)	B25 (4.4)
5	B6 (2.7)	B48 (3.3)	B25 (3.1)	B30 (2.5)	BN51 (3)	B25 (3.2)	B4 (3)	B25 (3.4)	B25 (3.3)	B44 (4.4)
6	B38 (2)	B25 (218)	B17 (2)	B44 (2.3)	B6 (2.7)	B4 (2.8)	B25 (2.8)	B30 (2.6)	B30 (3.2)	BN50 (3.6)
7	B31 (1.4)	B6 (2)	B6 (1.8)	B6 (1.7)	B37 (1.4)	B6 (2.4)	B30 (2.7)	B4 (2.4)	B4 (2.2)	B31 (2.3)
8	B25 (0.8)	B38 (1.8)	B31 (1)	B28 (1.1)	B4 (1.4)	092 (2.2)	B37 (1.7)	B31 (1.2)	B31 (1.6)	B4 (2.3)
9	B17 (0.8)	B23 (1.2)	Inf. hepatitis (0.92) (0.8)	Inf. hepatitis (0.92) (0.58)	343 (1.1)	B37 (1.6)	092 (1.7)	B38 (1.2)	B37 (1.4)	092 (2.3)
10	B48 (.8) B49 (.8)	B31 (0.9)	B38 (0.5)	B31 (1.57)	092 (1.09)	B23 (0.8)	B23 (0.59)	092 (1.2)	092 (1.4)	B37 (1.9)
Total cases	506	641	507	523	548	501	520	499	695	662

*Figures in brackets indicate the relative percentage distribution amongst all causes in those age groups.

approximately 70 per cent of the morbidity (range = 66-78.4). These groups of diseases are of minor importance so far as mortality is concerned.

Another point which needs to be mentioned here is that BN50 (injuries other than suicide, homicide, accidents, burns, etc.) occupied the second place from the 12th year onwards and lower places from the 19th year onwards (6th and 9th places respectively.) This trend is very closely followed by B44, the bulk of which is mainly composed of nutritional maladjustment (772) and which is the main health problem of South India, not only of the younger age group but also of the general population. It is expected and understandable that B44 occupies a high place in the list ; but the BN50 group causing such high morbidity amongst the adolescent requires further investigation and preventive measures. We often have a complacent attitude towards injuries because of the erroneous belief that they, unlike in western countries, are not a very common cause of morbidity in our country.

It is interesting to note that B6 (diarrhoeas and dysentery, all forms) occupies a relatively low place in most of the groups.

Table 2 shows that the morbidity from communicable diseases amongst the general Indian population and the adolescents of Pondicherry can be compared favourably except for the fact that the last four groups of diseases, namely malaria, encephalitis, smallpox and whooping cough are remarkably absent in the adolescent age group. It should be mentioned that smallpox cases are not entertained in the Pondicherry infectious diseases ward.

Table 2. *Comparative communicable disease morbidity rates of the general Indian population and the adolescent group in Pondicherry.*

*All India morbidity (Oct. 63 – Sep. 64)		Adolescent morbidity	
Causes	Relative proportion (%)	Causes	Relative proportion (%)
B6 (Dysentery all forms	35.1	B6	36.70
B4 (Typhoid fever)	23.8	B4	36.15
B17 (Infective & parasitic diseases)	18.6	(583)	17.61
(583) (Diseases of the liver)	8.2	(343)	6.05
B8 (Diphtheria)	7.5	B17	3.49
(343) (Encephalitis, etc.)	2.8	B8	—
B16 (Malaria)	2.6	B9	—
B13 (Smallpox)	1.4	B16	—
B9 (Whooping cough)	—	B13	—
Total	100.00		100.00

*Source : N.I.C.D. Bulletin, Vol. 1, No. 4.

It is evident from Table 3 that the B46 group leads in all the studies. In Jamnagar, it is responsible for only 25 per cent of the total cases, whereas in the other two studies it is almost three times. Reasons for this difference are not clear.

Another point worth mentioning here is the conspicuous absence of BN-50 (injuries other than suicide, homicide, burns, etc.) from the Jamnagar and Calcutta studies. The data from Jamnagar (Gandhi, 1963), were collected primarily from the medical pediatric ward, and from the Calcutta study (Chaudhuri and Chaudhuri, 1962) from a house to house survey. However, from the Pondicherry study, the obvious reason for BN50 occupying such a high place may be the fact that the adolescent age group is more vulnerable to accidents and injuries than the

Table 3. *The comparative proportional morbidity rates of different age groups in different parts of the country.*

Chronologi- cal order	Pondicherry		Calcutta (Chaudhuri & Chaudhuri)	Jamnagar (Gandhi)
	10 – 14 yr.	15 – 20 yr.	0 – 14 yr.	0 – 14 yr.
1	B46 (73.1)	B46 (70.2)	B46 (77)	B46 (25.1)
2	B44 (5.6)	BN50 (5.3)	B17 (10.7)	B6 (13.1)
3	BN50 (4.7)	B44 (4.5)	B6 (9.4)	B31 (10.7)
4	B4 (3.5)	B6 (3.6)	B32 (1.9)	B17 (8.7)
5	B25 (2.7)	B3L (3.5)	—	B48 (5.9)
6	B6 (2.2)	B25 (3.5)	—	B48 (5.9)
7	N38 (1.2)	B4 (2.5)	—	B8 (3.9)
8	B30 (1.1)	092 (1.8)	—	B2 (3.8)
9	B48 + 49 (1)	B37 (1.5)	—	B1 (3.5)
10	B23 (0.8)	B31 (1.2)	—	B32 (3)
Total cases :	2725	2877	1789	2518

Figures in the bracket indicate the relative percentage distribution amongst all causes in that age group.

younger age group. So, it seems that so far as morbidity is concerned, injuries occupy a major place in the adolescent's life, and thus it deserves greater attention from the health authorities than it has at present.

It is evident from Table 4, that BE 47 (motor vehicle accidents) and B48 (all other accidents) occupy either first or second place in all the groups. Or in other words, it is immaterial whether the country is a developed or underdeveloped one ; accidents seem to be the leading cause of mortality amongst the adolescent age groups. It is a remarkable shift of mortality pattern from communicable diseases to non-communicable ones as age advances.

Another group, B18 (malignant

consistently occupies the first or the 3rd place in the U. K. and the U. S. A. groups, which is not so in the U.A.R. and Ceylon groups ; signifying the presence of some factors which are operating in the former two countries. It is tempting to put forward the hypothesis that communicable diseases have taken the upper hand in the latter two underdeveloped countries and hence the reason for B18 not occuping the leading place in those countries so far as the mortality of adolescents is concerned. But a careful look at Table 4 will cast doubt on this assumption. In List B of the W.H.O. Classification, almost all the communicable diseases come between B1 to B17. Table 4 shows that except for B17, they are conspicuous by their absence

Table 4.—*The comparative mortality pattern (first 10 causes) of adolescents in different developed and under developed countries of the world.*

Chrono-logical order	United Kingdom (Eng. & Wales)		Collected from W.H.O. Epidemiology Report 1961				Pondicherry (India)		Ceylon (Fernando)	
			U.S.A.		U.A.R.					
					AGE					
	10-14	15-20	10-14	15-20	10-14	15-20	10-14	15-20	10-14	15-20
1	B18 (18.3)	BE47 (38.7)	BE48 (26.6)	BE47 (36.6)	BE48 (27.7)	BE48 (29.1)	B17 (21.7)	BE49 (17.9)	BE48 (19.8)	BE48 (15.1)
2	BE48 (16.5)	BE48 (13)	BE47 (16.9)	BE48 (18.7)	B25 (17.8)	B25 (15.8)	B25 (15)	B17 (11.9)	B46 (14.8)	B46 (11.7)
3	B46 (15.4)	B18 (10.5)	B18 (14.9)	B18 (8.8)	B46 (11.7)	B46 (12.6)	B46 (13.3)	BE47 (11.9)	B17 (12.6)	B45 (11.4)
4	BE47 (14.2)	B47 (10.0)	B46 (11.1)	B46 (7.9)	B45 (8.9)	B45 (11.6)	B36 (8.3)	B40 (9.5)	B45 (10.8)	BE49 (8.8)
5	B41 (9.8)	B41 (3.6)	B41 (7.1)	BE50 (4.1)	B17 (3.9)	B1 (3.6)	B21 (5)	B46 (9.5)	B31 (7.4)	B27 (7.5)
6	B31 (5.1)	B49 (3.6)	B39 (3.9)	BE49 (3.9)	B36 (3.8)	B31 (3.2)	B37 (5)	B21 (8.3)	B21 (5.4)	B21 (6.7)
7	B17 (2.2)	B30 (3)	B38 (2.1)	B41 (3.6)	B31 (3.4)	B38 (3.1)	BE49 (5)	B37 (6)	B27 (4.9)	B31 (6.5)
8	B38 (2.2)	B22 (2)	B22 (1.9)	B31 (2.2)	B32 (3.2)	B17 (2.4)	B18 (3.3)	B25 (3.6)	B36 (4.7)	B17 (4.9)
9	B22 (2)	B38 (1.9)	B17 (1.6)	B38 (1.9)	B38 (3.1)	B4 (2)	B31 (3.3)	B38 (3.6)	B38 (2.5)	B36 (4.7)
10	B30 (1.7)	B50 (1.3)	B50 (1.5)	B22 (1.6)	B4 (2.9)	B18 (1.8)	B38 (3.3)	B36 (2.4)	B25 (2)	B40 (4.5)

Figures in brackets indicate relative percentage distribution amongst all causes.

some other explanation for this higher rate of mortality from group B18 diseases (malignant neoplasms, including neoplasms of lymphatic and haematopoietic issues) amongst the adolescents of so-called developed countries, in comparison with those of under-developed countries.

It is interesting to note that in the Pondicherry figures, BE49 heads the list in the 15-20 year age group. The bulk of this BE Group is composed

of "thevetia nerifolia" poisoning. It is obtained from a local plant whose native name is kovalakkai. It is used for the purpose of committing suicide. The age group between 15 and 20 years in the Pondicherry series seems to be prone to commiting suicide. The reason for this is not very clear. However, some studies are already in progress in the Institute on this aspect. It is also to be noted that rheumatic heart diseases (B 25) and infective and

parasitic diseases (B 17) are some of the very important causes of mortality in Pondicherry. The obvious reason may be the very poor standard of living of the common people here as well as the low standard of environmental sanitation.

Summary

The morbidity of 5,602 adolescent cases has been analysed and compared. B-46 (diseases of the eye, ear, nose, throat and skin, and upper respiratory infections) is responsible for almost 70 per cent of the morbidity. BN-50 (injuries) seems to be the next important couse of morbidity amongst adolescents. B-6 (dysentery, all forms) seems to occupy a less important place in the morbidity figures of adolescents in comparison with that of infants and children. BE-47 (accidents) seems to be the leading cause of death amongst the adolescent population of all countries. B-18 (malignant neoplasms, including neoplasms of tissues) seems to be the second most important cause of death amongst the adolescent population of the U. K. and U. S. A., the explanation for which is unknown.

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