

CAUSE OF DEATH STATISTICS IN INDIA

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ABSTRACT

Data on morbidity and cause of death, which is otherwise extremely useful for health planning, continues to be deficient in India. To collect data on cause of death, the Registrar General of India has been implementing schemes on Medical Certification of Cause of Death in urban areas and survey on Cause of Death in rural areas. In this paper, these schemes have been reviewed and suggestions have been made for their improvement. At present data on cause of death collected as part of scheme on Medical Certification of Cause of Death is being monitored as percentage of population or registered deaths etc., which is a crude method and could be misleading. A methodology (Certification Efficiency) collating medically certified deaths with medically attended deaths have been suggested for the periodic monitoring of this scheme.

The Civil Registration and Vital Statistics System could provide documentation of each vital event for legal administrative purposes. For health programmes, statistics on births and deaths was considered most important. Data on births could provide basis for public health programme, for post-natal care of mother and child and for vaccination and immunisation programmes etc. The death records may be used for epidemiological purposes as indicators of the existence of infectious and epidemic diseases requiring immediate control measures, as well as for the identification of health problems. Statistics on causes of death have been particularly useful in identifying the diseases of public health importance, and to study the trends of mortality from these diseases. The geographic distribution of diseases and the characteristics of persons dying from these diseases were particularly useful in planning, conducting and evaluating control or prevention programmes.

Data on morbidity and cause of death were considered essential for planning and implementation of control or prevention programmes. These data could be obtained through service statistics and health and morbidity surveys. The service statistics on health were well known for their inadequacy and incompleteness. And for health and morbidity surveys, which were the specialised surveys, the sample sizes of the surveys have been such that the magnitude of sampling errors generally does not permit any inferences about changes in rates over two periods unless the differences were extremely large. Another serious drawback of health and morbidity surveys was that they were generally at micro level and much needed at

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State/national level. But the cause of death statistics could be made available at national and sub-national levels if the provisions of the Registration of Births and Deaths Act, 1969 were implemented and executed with all the seriousness by the State Governments. In this paper, an attempt has been made to review the status of the existing schemes for collection of cause of death statistics in India.

MEDICAL CERTIFICATION OF CAUSE OF DEATH SCHEME

The Registration of Births and Deaths Act, 1969 (RBD Act, 1969) prescribes recording of cause of death in the case of each death registered irrespective of whether the deceased was attended to by a medical practitioner or not*. Because of the importance of 'Cause of Death Statistics' a provision has been made in the Act for certification by a medical practitioner who has attended the deceased during the tatters' last illness and. for-issue of a certificate, free of cost, to the family for transmission to the Registrar's Office. In case of events relating to hospitals, both the report of death and certificate of cause of death were required to be sent by the hospital authorities direct to-the Registrar General (R.G. .1988). Further, the Act empowers the State/Union Territory Government, to introduce the system of medical certification of cause of death in specified areas taking into consideration the facilities, available and. other relevant-factors. Accordingly, the .State/Union Territory Government is implementing it, in a phased, manner, as a scheme of Medical Certification of Cause of Death (MCCD) to provide reliable data on cause of death. In the first phase, this scheme is to cover teaching hospitals and other willing hospitals. In the second phase, the district and sub-divisional hospitals, Primary Health Centres hospitals, specialised hospitals and other public hospitals were to be covered.. In the third phase, the scheme may be extended to private hospitals and private physicians, practising modern medicines1:

The MCCD scheme has been in operation for the last 30 years or more. Inspite of its long existence the scheme covered only its first or second phase of implementation in. most of the States. Only Maharashtra has been reported to have reached third phase of its implementation. On the other hand, in some of the other States, even the first phase covering teaching hospitals has not been implemented. This scheme would have generated most valuable data, of high quality with minimal time lag and cost, on mortality pattern by geographical regions etc. Inspite of its apparent benef itsand usefulness the scheme of MCCD has not been implemented with the seriousness it deserves. Specially, when the health departments in each State being manned by the medical bureaucracy who could fully appreciate its usefulness for monitoring and evaluation of health programmes. What could be the plausible reasons for this neglect? Certainly not due to financial constraints but most possibly general apathy to statistics.

Techniques for Monitoring of MCCD Scheme: At present data on cause of death received from various. States and Union Territories is being compiled and brought out by the Registrar General as an annual publication titled 'Mortality.

***In the case of a deceased not attended to by a medical practitioner the cause of death as reported by an Informant is entered in the records.**

Statistics of Cause of Death'. The scheme being monitored by taking medically certified deaths as percentage of registered deaths, which has been a crude method of monitoring. An alternative method for monitoring the scheme has been detailed below:

The medical practitioners could certify cause of death only for those deaths attended to by them. That is, higher the proportion of deaths receiving medical attention before death greater would be the proportion of medically certified deaths. Therefore, a basic requirement for the success of MCCD scheme would be the proportion of medically unattended deaths should be the lowest. The data on 'type of: medical attention received before death' has been compiled and being brought out by the Registrar General. For 1985, these data have been presented in Table 1. This

TABLE 1
CERTIFICATION EFFICIENCY OF 'MEDICAL CERTIFICATION OF CAUSE OF DEATH SCHEME' IN
VARIOUS STATES IN-1985

States (1)	Percentage of medically certified deaths to total estimated deaths	Percentage of deaths having received medical attention before death		CE.		
	Urban (2)	Combined (3)	Urban (4)	Combined (5)	Urban (6)	Combine (7)
Andhra Pradesh	24.8	3.7	71.1	34.6	34.9	10.7
Assam	18.7	0.9	79.0	53.0	23.7	1.7
Haryana	44.1	7.6	57.1	49.8	77.2	15.3
Karnataka	30.3	5.8	53.8	39.5	56.3	14.7
Kerala	21.9	4.0	90.3	73.8	24.3	5.4
Madhya Pradesh	72	1.0	61.0	30.1	11.8	3.3
Maharashtra	83.3	23.8	94.0	57.5	88.6	41.4
Orissa	70.4	3.8	43.0	22.2	163.7	17.1
Punjab	51.4	10.4	59.4	59.5	86.5	17.5
Rajasthan	23.1	3.1	59.6	33.8	388	9.2
Tamil Nadu	23.1	5.8	71.0	32.6	32.5	17.8
Uttar Pradesh	1.5	0.2	72.7	55.5	2.1	0.4
INDIA	30.4	4.6	71.1	42.6	42.7	10.8

N.B. Medically certified deaths are being reported according to its place of occurrence while medically attended deaths are according to place of residence. Because of conceptual difference CE for urban areas will be generally over represented.

table shows that in India about 43 per cent of deceased have received medical attention before death. That is, at best one could have cause of death statistics for about 43 per cent, which means still one has to go a long way to realise the goal of obtaining cause of death statistics for every death occurring in the country. The present status of this scheme would become apparent when data on medically certified deaths were collated with that of medically attended deaths. For this an index called '*Certification Efficiency (CE)*' has been computed for 22 major States, in India for which data were available, which could be used for monitoring the progress of the scheme. The '*Certification Efficiency*' has been defined as under:

$$CE = \frac{\hat{D_c} \times 100}{\hat{D_a}}$$

Where $\hat{D_c}$ = Number of medically certified deaths

$\hat{D_a}$ = Expected number of medically attended deaths

$\hat{D}$ = Expected number of total deaths.

Thus, $\hat{D_c} \leq \hat{D_a}$. That is, number of medically certified deaths cannot be greater than medically attended deaths, and therefore, CE cannot be greater than 100.

Now $\hat{D_c}$ is known, and knowing the respective population, $\hat{D}$ can be obtained by using crude death rate brought out by the Registrar General. $\hat{D_a}$ is not known but can be obtained, from the survey data brought out by the Registrar General on 'type of attention' received before death. Again

$$CE = \frac{\hat{D_c} \times 100}{\hat{D_a}}$$

$$= \frac{\hat{D_c}}{\hat{D}} \div \frac{\hat{D_a}}{\hat{D}} \times 100$$

$$\text{Since } \frac{\hat{D_a}}{\hat{D}} \approx \frac{(D_a)_{\text{Sample}}}{D}$$

$$\text{Therefore CE} = \frac{\hat{D_c}}{\hat{D}} \div \left(\frac{D_a}{D} \right) \times 100, \text{ which means}$$

$$CE = \frac{\text{Percentage of medically certified deaths to total expected deaths} \times 100}{\text{Percentage of sample deaths having received medical attention before death.}}$$

Certification Efficiency (CE) for the urban areas has been less than 100 for all the States except Orissa where it was more than 100 due to conceptual problems as has been shown in Table 1. This shows that even in urban areas all the medically attended deaths were not being certified by the attending physicians. In Uttar

Pradesh, the MCCD scheme appears to be non-existent. Even in Kerala; where use of medical facilities has been the highest, but medical certification of death has been quite low. Only in urban areas of Haryana, Maharashtra, Orissa and Punjab, the scheme appears to be working quite satisfactorily as more than 75 per cent of medically 'attended deaths have been certified by the attending physicians. It was somewhat intriguing to find that even after over 30 years of its existence, the MCCD scheme has not become fully operative even in urban areas of the country; And unless it becomes fully operative in urban areas of the country, its success in rural areas would remain doubtful. Therefore; the scheme may be extended to all medical institutions and private physicians in urban areas, of the country. This scheme appears to be virtually non-existent in rural areas of all the States except Maharashtra {See table '1, Col. 7). Till such time the MCCD scheme would be extended to rural areas, the Registrar General has taken up alternative scheme of Survey of Cause of, Death in rural areas to meet the data, needs of public administrators.

SURVEY OF CAUSE OF DEATH (RURAL)

The Registrar General in cooperation with State agencies conducted posthumous enquiries on experimental basis during the period 1965-68 employing para-medical personnel of Primary Health Centre (PHC) in respect of deaths occurring in the headquarter villages of the sample PHC using a non-medical list of causes of death⁵. Based on the findings of these field enquiries, the Registrar General introduced the scheme of 'Model Registration* which is now known as 'Survey of Cause of Death (Rural)'. The main objective of this scheme was to provide reliable statistics on cause of death in rural areas on regular basis, to the public health administrators and other agencies.

The king-pin in this scheme was the para-medical workers who were professionally trained and also well conversant with the community health. They shouldered the responsibility of identifying the events for authentication of cause of death through posthumous enquiries. For this survey, they followed a non-medical list> based upon symptoms of ill health leading to death. Therefore, their authentication may not be as precise or formal as that of a physician or any standard medical list of cause of death would provide for.

Various Stages of the Survey: The design of the survey, reference period and other steps have been as under: (i) Districtwise sample size has been determined on the basis of two PHCs per million rural population; (ii) Sample PHCs were selected following simple random selection procedure and headquarter village of the sample PHCs were covered for the survey; (iii) Mapping and delineation of the boundaries of the headquarter village; (iv) Baseline survey was conducted to. collect socio-demographic data relating to the people of the sample village; (v) Listing of deaths occurring in the sample village on regular basis; (vi) Investigation of cause of the listed deaths; (vii) Half yearly survey to net missing deaths; and (viii) Deaths occurring during the calendar year in the sample villages were being followed for detailed investigation.

Implementing Agency: The State Governments were the primary implementing agencies for the survey. In most of the States Health Departments of the State Governments were the State Implementing Agencies (Annexure I). Even where departments other than health have been designated by the State Governments as the State Implementing Agency, such departments always act in close cooperation with their health departments as the actual field work would have to be done at the PHC by its field staff, who were the employees of the health department. Thus, the health department was the nodal agency in all the States and Union Territories for conducting the field work.

Investigation Procedure: The listing out of deaths occurring in the headquarter village of the selected PHCs by the field agent (para-medical staff) being done through a network of informants (including the local Registrar of Births and Deaths) notifying him now and then about the deaths occurring in his beat. The field agent also lists births occurring in the area which when followed up over time, would yield data on infant and child deaths. During the half yearly survey of households in the sample area, the recorder would be recording the births and deaths in the area during the preceding half-year. The vital events thus recorded by the recorder should then be matched with the records maintained by the field agent for netting the deaths missed by the latter. These missing deaths could then be investigated for their cause by the field agent.

To ascertain the causes of deaths the field agent would visit all the households, where the death had occurred to make enquiries about the symptoms preceding the death. For this he uses a non-medical list suggested by Yves Biraud in 1956 and an abbreviated list of 50 causes evolved by D.K. Vishwanathan and T.B. Patel. On the basis of experience gained over years, the non-medical list was first revised in 1972 and again in 1982. The revised list is more detailed and contains a chart for questioning, a structured questionnaire and a check list. And to keep control on the quality of the work of the field agent on a continuing basis, the Medical Officer-in-Charge of the sample PHC was required to check 10 per cent of the entries or minimum of two entries of the field agent every month through field enquiry and to record, wherever necessary, the correct cause of death.

Quality of Survey Data: To study quality of survey data the crude death rate estimated from the survey data may be studied along with the estimates of death rate from other sources such as Civil Registration and Sample Registration Systems. Death rates for 1986 for ten States for which comparable data were available and has been shown in Table 2. The table shows that except in Jammu and Kashmir and Madhya Pradesh, death rates brought out by the survey of cause of death (Rural) were closer to SRS estimates than CRS estimates. Further, in all these States SRS estimates were higher than SCD estimates, and that extent of variation differs from State to State. These differences were partly due to under-enumeration of deaths by the field agents and partly due to conceptual differences, because SRS follows *de jure** approach while SCD and CRS follow *de facto*** approach. Thus, SCD data

**De jure*: By law, namely, where the event should actually be recorded at normal place of residence.

***De facto*: By fact, namely, where the event has actually occurred.

TABLE 2
CRUDE DEATH RATES FOR RURAL AREAS AS BROUGHT OUT BY SURVEY OF CAUSE OF DEATH, CIVIL
REGISTRATION SYSTEM AND SAMPLE REGISTRATION SYSTEM - 1986

Name of the State	SCD	CRS	SRS
Gujarat	6.7	4.1	11.3
Haryana	5.2	4.4	9.2
Himachal Pradesh	6.1	4.2	8.8
Jammu & Kashmir	2.3	4.9	9.0
Madhya Pradesh	6.6	8.3	14.8
Maharashtra	6.0	6.0	9.7
Orissa	6.0	5.3	13.5
Punjab	7.3	5.8	8.7
Rajasthan	7.1	2.9	12.5
Tamil Nadu	7.1	5.6	10.7

appears to be somewhat under-enumerated. Also SCD could not be considered representative as it relates to headquarter villages only/These limitations of the SCD scheme were due to the present sampling design. Thus, urgent need was felt to., review the sampling 'design of this scheme to make it more useful for the users,

The reporting of vital events generally suffer from sex bias and recall lapse.. Even data brought out by various demographic surveys conducted by different agencies in India have been found to be affected by recall lapse and sex bias of the respondents, and that only level of biases may vary. A crude method to investigate sex bias has been the sex ratio (M / F) of the .deceased. For infant deaths during 1986 sex ratio estimated by SCD scheme was 122.8 as against 107.6 estimated by SRS Again SRS estimate of sex ratio of child (0-4 years) deaths for 1986 was 96 as against 109 estimated by SCD. This indicates the extent of under reporting of deaths of female children by the Survey of Cause of Death. Further, the sex bias in reporting was not restricted to female children but to females of all ages as has been given in Table 3.

The Survey of Cause of Death and Sample Registration System data have shown remarkable stability over the" time, which was quite unexpected.

Appraisal of the Survey: The experience of the survey in rural areas has shown that the non-medical list has been realistic and practicable. There have been no reports about its un-usability or clumsiness or any vagueness about the symptoms and their association with specific causes of death. On the other hand,

TABLE 3
FEMALE, INFANT AND CHILD DEATHS REPORTED IN SURVEY OF CAUSE OF DEATH (RURAL) AND SAMPLE
REGISTRATION SYSTEM - 1980-1986 (AS PER CENT TO TOTAL REPORTED DEATHS)

Item	Source	1980	1981	1982	1983	1984	1985	1986
1. Number of Female deaths as percentage of all deaths	SCD	45.0	45.6	44.2	45.1	44.7	44.7	44.8
	SRS	49.0	49.6	48.5	47.9	48.8	48.5	48.7
1. Number of Infants deaths as percentage of all deaths	SCD	18.7	18.3	17.4	16.8	16.4	16.3	16.3
	SRS	31.7	31.0	30.0	29.7	28.1	27.1	28.2
3. Number Of Child (1 -4 years) deaths as percentage of all deaths	SCD	9.2	8.7	8.0	7.8	8.7	8.3	8.3
	SRS	14.5	14.5	14.1	11.8	14.1	14.7	14.0

causewise distribution of deaths brought out by the survey and presented in Table 4, when studied over the years/indicated relative stability of such a distribution at the **MAJOR** cause group level. This was surprising and somewhat intriguing. One may argue that larger the group lesser would be the error in grouping the causes and perhaps because of this there has been stability in the distribution of cause groups over the years. Further, inter-group stability of the distribution suggested that the actual ascertainment of causes with the help of non-medical list do not seem to have been affected by any cause preference or cause bias.

OVERVIEW AND SUGGESTIONS

Since independence, mortality has appreciably declined in India. But decline in urban areas has been much faster than in rural areas with the result that it continues to be higher in rural areas. So much so, in 1985 Infant Mortality Rate was 107 for rural areas as against 59 for urban areas, and Child Mortality Rate (0-4 years) was 43.3 for rural areas as against 20.7 for urban areas. This means that children in rural areas were exposed to mortality risk twice as much as in urban areas. The Survey of Cause of Death and Medical Certification of Cause of Death schemes would provide data on cause-specific mortality separately for rural and urban areas, and would bring out rural-urban differentials in mortality pattern.

The lower purchasing power people in rural areas cannot afford to pay for sen/ices and medicines from the market for their treatment. As a result, deaths not attended by qualified medical practitioners continues to be high in rural areas. The Registrar General has estimated that over **62** per cent deaths were not attended to

TABLE 4
PERCENTAGE DISTRIBUTION OF DEATHS BY MAJOR CAUSE GROUPS, 1981 -87

Rank Major Cause Group		1981	1982	1983	1984	1985	1986	1987
1.	2.	3.	4.	5	6.	7.	8.	9.
1. Senility		22.4	22.6	23.2	22.3	21.5	22.4	23.0
2. Coughs (Disorder of respiratory system)		20.7	19.7	20.2	20.3	20.8	19.7	20.0
3. Causes peculiar to infancy		12.1	11.7	11.0	11.0	10.3	10.5	10.2
4. Fevers		8.4	9.3	10.3	10.2	9.3	10.4	9.4
5. Diseases of circulatory system		8.8	8.9	9.1	9.6	9.9	9.0	9.5
6. Other clear symptoms		8.1	8.0	7.4	7.8	8.9	8.6	9.3
7. Digestive Disorders		8.0	7.3	7.4	7.4	7.6	7.7	7.2
8. Accidents and Injuries		5.1	5.9	5.5	8.0	6.3	7.0	6.5
9. Disorder of Central nervous system		3.5	3.7	4.5	3.8	4.2	3.7	3.9
10. Child-birth and pregnancy (Maternal deaths)		1.0	1.0	1.2	1.0	1.2	1.0	1.0
11. Residual causes		1.9	1.9	0.3	0.5	-	-	-
Total deaths		17394	16143	17210	17680	17238	16262	20241

by any qualified medical practitioner **IN** rural areas as against about 29 percent in urban areas in 1985*. Mortality in rural areas would decline with improvement in health services and increase in their purchasing power, which depends upon the economic development of the country. Further, the benefits of over 35 years of planned economic development have hardly percolated down to the lowest level of population in the rural areas. There is, therefore, hardly any hope in the immediate future for radical improvement in the purchasing power of the people in rural areas. This means that quite a large proportion of people in rural areas will continue to die without being attended to by a qualified medical practitioner, which is contrary to the expectations and practices in a welfare state. There is, thus urgent need to revamp

health delivery system in rural areas to make its presence felt by the people and to make it more effective, essential life saving drugs may be dispensed, free of costs to the patients at the rural centres. In the long run it may prove to be more cost-effective as it will benefit the nation in several ways. Especially the decline in infant and child mortality will greatly help the family welfare programme by bringing down improvident maternity in rural areas.

The Survey of Cause of Death, inspite of its limitations, has shown that it could generate data of immense use to the health administrators for health planning and monitoring of the rural health programmes. These data could also be used for effective drug management, which would lead to a considerable savings to the national exchequer. However, comparison with other sources has shown that SCD data suffers from under-reporting. This could also be minimised, when the paramedical staff considers this particular work as a part of their job and the Block Medical Officer exercises effective supervisory checks. At present this study is being treated as a scheme of the Registrar General, India³. So much so, some of the State Health Directors were not even aware of the scheme. Therefore, unless the State health bureaucracy appreciates the usefulness of these data, coverage and quality of SCD data cannot improve to the desired level.

The survey is being conducted to generate data for the health profile of rural population. Therefore, all deaths occurring to normal residents of sample villages should be covered. Hence, for data collection *de jure* approach, instead of *de facto* approach may be adopted. This would improve coverage of data and would also make it comparable with other sources of data.

At present training for the use of non-medical list is being imparted only to field agents of the sample PHC. Due to transfers of para-medical staff from sample PHCs to other PHCs the work of SCD gets dislocated till the new field agent was trained for this particular work. This could be avoided by suitably revising the contents of the basic training course of 'ANM /LHV/HA*' to cover in their curriculum non-medical list used for the Survey Cause of Death.

The sample size of the survey needs to be suitably increased to Improve the coverage because at present only around 0, 6 per cent of rural population has been covered. The sample design should be simple and the sampling unit also be well defined. The sample size could be increased by increasing number of sample PHCs, and in each sample PHC, instead of headquarter village, a number of villages could be selected at random or one or more sub-centre could be selected at random. This way variability and coverage could be increased, which would improve the quality of estimates even at the sub-national level.

Medical Certification of all deaths occurring in the country has been the ultimate objective of the RBD Act, 1969. The SCD was a substitute programme for collecting data on causes of death profile of rural population till such time the MCCD scheme would be extended to rural areas. For the success of this scheme it becomes imperative to impart brief training to all the practicing doctors to enable them to fill-up form 8 (Annexure II) correctly. The State health authorities could

arrange such training workshops in a phased manner to cover all the practicing doctors. And to the undergraduate doctors this training could be imparted at the college level. This training would help in a big way to make the MCCD scheme a great success.

Tabulation and analysis of cause of death data has been important aspect for generating of these data.-For this the State Health Intelligence Bureau should be suitably strengthened for bringing out analytical reports on cause of death data on monthly/annual basis' with minimum time-lag for use of the programme officers.

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Lkkjk'k

भारत में रोग एवं मृत्यु-कारण संबंधी आंकड़ों की कमी अभी बरकरार है। ये आंकड़े स्वास्थ्य नियोजन में अत्यन्त सहायक होते हैं। मृत्यु-कारण संबंधी आंकड़ों करने के लिए आवश्यक सुझाव दिए गये हैं। वर्तमान में मृत्यु-कारण संबंधी चिकित्सकीय प्रमाणीकरण योजना के एक अंग के रूप में मृत्यु कारण के विषय में जो आंकड़े एकत्र किए गए हैं उनका प्रबोधन जनसंख्या के प्रतिशत या पंजीकृत मृत्यु इत्यादि के रूप में किया जा रहा है। यह विधि परिष्कृत है और इससे भ्रांतियां भी उत्पन्न हो सकती हैं। इस योजना के अंतर्गत निरन्तर अंतराल पर प्रबोधन करने के लिए चिकित्सक द्वारा प्रमाणित मृत्युओं के साथ मिलाकर गणना करने की विधि प्रमाणीकरण कुशलता (सर्टिफिकेशन एफीशिएन्सी) का सुझाव दिया गया है।

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ANNEXURE I

STATE IMPLEMENTING AGENCIES FOR SURVEY OF CAUSES OF DEATH (RURAL)

S. No.	State	Implementing Agency
1.	2.	3.
1.	Andhra Pradesh	Health and Family Welfare
2.	Assam	Health
3.	Bihar	Statistics and Evaluation
4.	Gujarat	Health
5.	Haryana	Health
6.	Himachal Pradesh	Health
7.	Jammu & Kashmir	Economics and Statistics
8.	Karnataka	Economics and Statistics
9.	Kerala	Economics and Statistics
10.	Madhya Pradesh	Economics and Statistics ,
11.	Maharashtra	Health
12.	Manipur	Medical Directorate
13.	Meghataya	Health Services
14.	Nagaland	Economics and Statistics
15.	Orissa	Health
16.	Punjab	Health
17.	Rajasthan	Family Welfare
18.	Tamil Nadu	Public Health and Preventive Medicine
19.	Tripura	Health Services
20.	Uttar Pradesh	Health Services
21.	West Bengal	State Bureau of Health Intelligence
22.	Delhi	Delhi Municipal Corporation
23.	Goa, Daman & Diu	Health Services
24.	Dadra and Nagar Haveli	Chief Medical Officer

ANNEXURE II
For Hospital Events

FORM NO. 8

MEDICAL CERTIFICATE OF CAUSE OF DEATH

To be sent to Registrar of Births and Deaths alongwith Form 4 (Death Report)

I hereby certify that the person whose particulars are given below died in the hospitals in Ward No. _____
on _____ at _____ a.m./p.m.

Name of deceased (Type or print) _____

Address of normal residence _____

For use by
statistical office

Sex	Age in years	Date of birth	Marital status SMW or D	Religion	Occupation	Age at Death				Detailed list code
						If under 1 year		If under 24 hours		
						months	days	hours	minutes	

CAUSE OF DEATH

I. Immediate Cause:

Disease, injury or complication which caused death, not the mode of dying such as heart failure, asthenia, etc.

a. due to (or as a consequence of)

Antecedent cause:

Morbid conditions, if any, giving rise to the above cause, stating underlying condition last.

b. due to (or as consequence of)

c.

II. Other significant conditions contributing to the death, but not related to the diseases or condition causing it.

Accident/Suicide/Homicide/ (Specify): How did injury occur?

Interval between
onset and death
approx.

IF DECEASED WAS A FEMALE
Was the death associated with pregnancy?
Was there delivery?

Yes/No
Yes/No

Name or Rubber Stamp of Institution or Medical Practitioner	Serial Number of Institution	Date of report

Allopathic/Ayurvedic/Homoeopathic/Unani

Signature and address
of Physician/Medical Officer

(To be detached and handed over to the relative of the deceased)

Certified that Shri/Smt./Kum. _____ S/W/D of Shri _____
Resident of _____ was admitted to the hospital on _____
and expired on _____

Doctor
(Medical Supdt.) _____
Name of Hospital _____

N.B. A similar format exists for private medical practitioners.

HEALTH SEEKING BEHAVIOUR OF URBAN SLUM DWELLERS OF DELHI

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ABSTRACT

The present study was conducted in an urban slum of South Delhi called Rajiv Gandhi Camp situated adjacent to Jawaharlal Nehru Stadium. It has a population of about 4,000, residing in about 700 jhuggis. Under its Urban Health Care Programme, the Centre for Community Medicine, AIIMS runs a mobile health clinic for five days a week which provides different type of health care services to the slum dwellers.

Total of 198 adult members responded. Out of these 40 did not reply to the questions regarding the utilisation of the different types or health care services provided by the mobile health clinic. The study also highlights the role of mobile health care services in provision of medical relief to a slum population in South Delhi.

There are about 727 urban slums in Delhi¹. Slums constitute 6-10 per cent of urban land area and one-third to one-fourth of urban population of four major cities (Delhi, Bombay, Calcutta and Madras) reside in slums². It is mentioned that about 53 per cent of Delhi population live in unauthorised colonies and notified slums (squatter colonies and Jhuggi-Jhopri clusters)^{3, 4, and 5}.

MATERIALS AND METHOD

The present study was conducted in an urban slum of South Delhi called Rajiv Gandhi Camp, situated adjacent to Jawaharlal Nehru Stadium, at a distance of 4 km. from AIIMS. It has a population of about 4,000, residing in about 700 jhuggis. It consists mainly of daily wages workers in the nearby building constructions and is within the easy reach of several major hospitals of Delhi. The Centre for Community Medicine, AIIMS runs a mobile health clinic through its Urban Health Programme, for 5 days a week from 10.00 a.m. to 12.00 noon. The present study was carried out after one and half year of continuously providing health services to the study sample of slum dwellers. After pretesting, the responses of the adult head of jhuggi available at the time of visit, were entered on a semi-structured open ended interview schedule. A total of 198 adult members responded. Out of these 40 did not reply to the questions regarding the utilisation of different types of health services. The health team comprised of doctors, nurses, medico-social workers accompanied by medical and nursing students to provide comprehensive health care.

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OBSERVATION AND RESULTS

The age and sex distribution of respondents is depicted in Table 1. Half of the male respondents were daily wage earners while three-fourth female respondents were housewives, hence available at home, 93 per cent of the families had their monthly income upto Rs. 1000, of which 37 families were having a monthly income of less than Rs.200. Only 11 (6, 96 per cent) of the study families were earning more than Rs.1000 per month. 58.2 per cent of the respondents were illiterate. Of the literate, a majority (75.75 per cent) had education upto primary school level. 65.82 per cent of the respondents were utilising the mobile health services for the last atleast 6 months while a sixth. (16.3 per cent) never utilised the services of mobile clinic.

The mobile health clinic was being availed as the first contact by 104 respondents (52.5 per cent). 47 respondents utilised medical facilities within 24 hours of occurrence of illness. Different reasons for attending services of mobile clinic were failure of home treatment (26.2 per cent); no relief with private practitioner's treatment (7.8 per cent), for free vaccination (43.5 per cent), antenatal check up (15.6 per cent) and 'good' reputation of staff (6.1 per cent). A majority of respondents visited mobile clinic on their own, while 29.8 per cent were motivated either by their friends, neighbours or relatives. No response could be elicited from 13 per cent respondents.

The average time spent in mobile clinic was upto 30 minutes as told by 150 respondents (76 per cent), while 32 (16 per cent) mentioned that they spent about 45 minutes. 62.6 per cent felt 'satisfied' with the kind of services provided by mobile health clinic.

TABLE 1
AGE AND SEX DISTRIBUTION OF RESPONDENTS

Age	Sex				Total	
	M		F		N	Percentage
	N	Percentage	N	Percentage		
15-20	16	8.08	12	6.06	28	14.14
20-25	9	4.54	21	10.60	30	15.15
25-30	4	2.02	24	12.12	28	14.14
30-35	2	1.01	28	14.14	30	15.15
35-40	1	0.05	12	6.06	13	6.56
40-45	3	1.51	19	9.59	22	11.11
45-50	4	2.02	18	9.09	22	11.11
50	12	6.06	13	6.56	25	12.62
Total	51	25.75	147	74.24	198	100%

About 57 per cent preferred allopathic system of medicine, whereas, homeopathic system was preferred by 7.5 per cent and Ayurveda by another 6.5 per cent. The average expenditure on getting treatment from a private practitioner including transport ranged from Rs.20 to Rs.160 per month (Mean Rs.67.40 p.m.).

On comparing educational status with the system of medicine preferred, it was observed that the mobile clinic facilities were availed maximum by the illiterates though on applying statistical tests about utilization of various health services, no significant difference was observed between illiterate and literate as shown in Table 2 (X^2 at 5 per cent level with d.f. 2 is 0.1615). Similarly, when economic criteria was taken to compare the utilization of different health services it was observed that mobile health services were utilized more by these having monthly income upto Rs.800 while about half of the study dwellers with monthly income of above Rs.800, availed the advice of private practitioners as has been shown in Table 3. The difference was not found to be statistically significant (X^2 at 5 per cent level with D.F. 4=1.176).

DISCUSSION

Urban slum dwellers represent the socially weaker section of the society. 58 per cent of respondents were illiterate. This was found in contrast to the figures mentioned by other studies, who have mentioned lower literacy levels^{6,7}. About three quarters of female respondents were non-working, in contrast to an other study⁸. Over a half preferred allopathic system of medicines, which was in conformity to the study conducted at Bangalore and contradictory to the study conducted at Kalkaji^{2, 8,9,10}.

Although mobile services were available, the respondents first sought for those types of health services to which they were culturally attuned. General view of the dwellers was that going to a government dispensary/hospital was more time consuming which they could ill afford since most of them work seven days in a week, therefore, a visit was a source of economic loss to them^{2,11}. Regarding expenditure, inspite of their low socio-economic status, 21 per cent preferred visiting to private practitioner, which is in conformity with the Kalkaji study².

CONCLUSION

The present study highlights the role of mobile health services in provision of medical relief to a slum population in South Delhi.

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प्रस्तुत अध्ययन दक्षिण दिल्ली में पंडित जवाहर लाल नेहरू स्टेडियम के समीपस्थ राजीव गांधी कैम्प नामक झुग्गी-झोपड़ी बस्ती में किया गया है। इस बस्ती में लगभग 700 झुग्गियां हैं, जिनमें करीबन 4,000 लोग रहते हैं। अखिल भारतीय आयुर्विज्ञान संस्थान के सामुदायिक स्वास्थ्य विभाग द्वारा चलाए जा रहे शहरी स्वास्थ्य सेवा-परिचर्या

TABLE 2
SYSTEM OF HEALTH SERVICE PREFERRED BY THE RESPONDENTS OF
VARYING EDUCATIONAL STATUS

Educational status	Type of Preferred Health Service			Total
	Mobile	Government Dispensary	Private Practitioner	
Illiterate	63	7	22	92
Primary	35	3	12	50
Middle and above	6	2	8	16
Total	104	12	42	158

χ^2 at 5 per cent level with d.f. 2:0.1615

TABLE 3
RELATIONSHIP BETWEEN THE SYSTEM OF HEALTH SERVICES
UTILISED AS PER THE MONTHLY INCOME OF RESPONDENTS

Monthly Income (Rs.)	System of Health. Services Utilised						Total	
	Mobile		Government Dispensary		Private Practitioner		N	%
	N	%	N	%	N	%		
<400	47	74.60	5	7.90	11	17.50	63	100
401-800	44	69.84	4	6.35	15	23.81	63	100
>800	13	40.63	3	9.38	16	49.99	32	100

(χ^2 at 5 per cent level with d.f. 4:1.176)

कार्यक्रम कव अंतर्गत इन झुगियों के निवासियों के लिए प्रति सप्ताह पांच-दिवसीय चल स्वास्थ्य चिकित्सा केन्द्र चलाया जा रहा है।

कुल मिलाकर 198 प्रौढ़ सदस्यों का साक्षात्कार करके सूचना इक्कट्ठी की गई। इनमें से 40 ने उन प्रश्नों का कोई उत्तर नहीं दिया जिनमें यह पूछा गया था कि चल स्वास्थ्य चिकित्सा केन्द्र द्वारा दी जा रही विभिन्न प्रकार की स्वास्थ्य सेवाओं का उनके द्वारा किस प्रकार उपयोग किया जा रहा है। प्रस्तुत अध्ययन में दक्षिण दिल्ली के झुग्गी-झोपड़ी निवासियों के बीच चल रहे स्वास्थ्य विभाग द्वारा चिकित्सा सहायता प्रदान करने में चलचिकित्सा स्वास्थ्य सेवा की भूमिका पर प्रकाश डाला गया है।

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A STUDY OF THE BEHAVIOUR PROBLEM CORRELATES OF MALNUTRITION IN THE AGE GROUP OF 6-10 YEARS

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ABSTRACT

An attempt to assess the state of nutrition of the selected school children has been made in the present study. Exploration of relationship between malnutrition and behavioural problems is another aspect of same study. The sample consists of 100 school children in the age group of 6-10 years from two primary schools of Delhi. The tools used for the study were: (1) Neki's behaviour problem inventory; (2) Weighing scale and measuring tape for anthropometric measurement. A questionnaire was also used to get information regarding children from their mothers. Median test and Chi-square test were employed to study relationship between malnutrition and behavioural problems. Fifty four per cent of the children turned out to be malnourished depending upon their anthropometric measurements. Malnourishment did not seem to have significant relationship with behavioural problems. Similarly, the degree and duration of malnourishment did not seem to have any effect on the behaviour of the children. The results have been discussed in the light of other relevant studies in the similar field.

High mortality rate amongst children suffering from severe malnutrition has been a matter of concern; effect of malnutrition on the surviving population was observed to be the most widespread amongst children in the developing countries. In India, about 2 per cent of the pre-school children suffer from severe malnutrition, while 60-70 per cent suffers from mild to moderate degree".

It is well known that nutrition is one of the factors closely associated with growth; yet for economic, cultural and other reasons children are very often deprived of the nutritious food they need, with the result their physical and mental growth slows down. They become apathetic, react less to social and psychological stimuli and are more susceptible to infectious diseases. Thus, malnutrition becomes a part of a vicious cycle causing lesser resistance to infectious diseases, thereby increasing the metabolic demand for more nutritious foods and lack of this causing higher degree of malnutrition.

Other researchers have also highlighted the fact that lack of certain nutrients in the diet can cause mental apathy and even mental retardation though the focus and emphasis have been mainly on physical growth². It has also been experimentally

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demonstrated in another study that malnutrition during the critical phases of early development and childhood can lead to stunted physical growth, sub-optimal intellectual development and poor neuro-integralve competencies in children³. Also it has been observed that the child whose health is poor has little motivation to exercise and practice new motor skills which is a result of nutritional and social deprivation,

Minor deficits in cerebral functioning including poor attention and coordination and impaired scores on developmental assessment have also been shown among children with iron deficiency'. Adverse effects of malnutrition on cognitive development have also been shown by other researchers⁵.

Malnutrition whether due to insufficient food intake or caused by increased metabolic demand due to illness deprives the body of strength and vitality to seek new experience and to practice new learning. Such children would have problems of maladjustment at home, at school and amongst peers. A child suffering from malnutrition will be unable to meet the expectations of the parents, teacher and the peer group. Anxiety provoked by the threatening incompetencies may lead to behavioural problems in children as noted by another scholar*. "Behavioural problems are reactions caused by emotional disturbances and environmental factors".

PURPOSE OF THE STUDY

The present study is an attempt to understand relationship between behavioural problems and malnutrition amongst school children in the age group of six to ten years. The conceptual model of this relationship has been shown in figure t.

Specific Objective: (1) to assess the prevalence rate of malnutrition and determine the degree of it among school children in the age group of six to ten years; and (2) to find the relationship between malnutrition and behavioural problems in the children.

METHODOLOGY

Tools Used: The tools used for the study were (1) Neki's behaviour problem inventory (1975); (3) Questionnaire to get information regarding children's past history and details of other demographical variables; and (3) Weight machine and measuring tape to measure weight and height of the children.

Neki's Behaviour Problem Inventory (1975). This inventory^has 48 items covering different types of behavioural disorders such as:

- Neurotic disorders
- Conduct disorders
- Personality problems
- Developmental problems

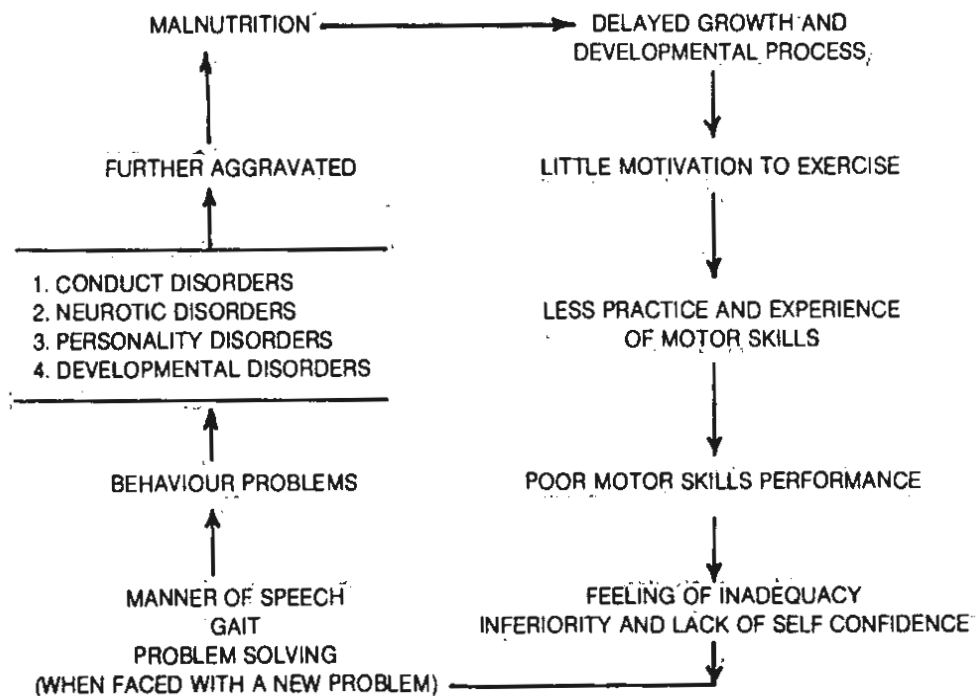


FIGURE 1: CONCEPTUAL MODEL SHOWING INTERRELATION AMONG MALNUTRITION AND BEHAVIOUR PROBLEMS IN CHILDREN.

These 48 items are scored on a three point scale *i.e.* '0', '1' and '2' for the behaviour 'Never', 'Occasionally' and 'Frequently' present in the subjects respectively².

Sample: 100 school children in the age range of 6 to 10 years were selected randomly from two corporation schools of Delhi. There were 66 boys and 34 girls in the sample.

Corporation schools were selected for the purpose of this study because the children attending corporation schools were representing fully the child population of Delhi as compared to the children attending public schools. The other reason was that there were more chances of getting both nourished and malnourished children from these schools.

PROCEDURE FOR DATA COLLECTION

After obtaining due permission from the zonal education officer, the principals of these schools were contacted. After explaining the purpose of the study, the list of children falling in age group 6-10 years was prepared with the help of class teachers. Out of this list 100 students were selected randomly for the purpose of the study.

Mothers of these children were called to the schools and after explaining the purpose of the study, information regarding the children was collected from them, as per the requirement of the questionnaire.

Anthropometric measurements of these children were also taken which included both height and weight. This was to judge the nutritional status of the children.

ASSESSMENT OF NUTRITIONAL STATUS

To assess the nutritional status of the selected children, ICMR standards (1972) were used and all the children were grouped into nourished and malnourished categories³. Malnourished children were further classified according to grades and duration of malnutrition. Children having weight of 91 per cent and above were grouped under the nourished and those below were grouped as malnourished as has been shown in Table 1.

Table 1 shows that 46 per cent of the children were nourished while 54 per cent were malnourished. There were more malnourished children than nourished in the sample.

DEGREE AND DURATION OF MALNUTRITION

Degree: To determine the degree of malnutrition in children modified Gomez grading criteria (1972) was used. In modified Gomez grading criteria, children weighing 91 per cent and more of ICMR norms are considered to have normal nutrition, children weighing 75-90 per cent of ICMR norms as subclinical, children

TABLE 1
FREQUENCY DISTRIBUTION OF THE NUTRITIONAL STATUS OF
SAMPLED CHILDREN ACCORDING TO AGE

AGE	FREQUENCY	
	NOURISHED	MALNOURISHED
6+	4	18
7+	12	12
8+	12	14
8+	14	2
10+	4	8
Total	46	54

Total 100

weighting 61 -74 per cent of ICMR norms as in Grade I and children weighting 51 -60 per cent of ICMR norms are in Grade II category of malnutrition. Classification of children into various grades of malnutrition has been done into subclinical, Grade I and Grade II as has been indicated in Table 2.

Table 2 indicates that 42 per cent of children were in subclinical variety of malnutrition while 12 per cent children suffered under Grade I category. None of the sample children were found in Grade II category of malnutrition.

Duration: Lathem's (1967) classification has been used to classify the children into categories of children with malnutrition of recent and chronic origin. Lathem's

TABLE 2
DISTIBUTION OF MALNUTRITION IN GRADES ACCORDING TO AGE

AGE	MALNOURISHED GROUP		
	SUBCLINICAL	GRADE 1	GRADE II
6 +	14	4	-
7+	8	4	-
8 +	12	2	-
9 +	-	2	-
10 +	8	-	-
Total	42	12	

Total 54

classification is based on both the height as well as weight measurement. According to Latham's classification, in malnutrition of recent origin

- Height is 95 per cent and more of ICMR values; and
- Weight is more than 91 per cent of ICMR values.

Whereas in malnutrition of chronic origin

- Height is less than-95 percent of ICMR standards; and
- Weight is less than 91 per cent of ICMR values.

Frequency and percentage distribution of children with malnutrition of recent and chronic origin has been depicted in Table 3.

Table 3 shows that out of 54 malnourished children, 38 children that is 70 per cent had malnutrition of recent origin and 16 (29.6 per cent) children had malnutrition of chronic origin. 26 per cent of children in the age group of 6 and above suffered from malnutrition of recent origin.

RELATIONSHIP BETWEEN VARIABLES

The two groups of nourished and malnourished were compared on various variables like age, parental education and per capita income'. "No significant difference was found between the two groups of children, on these variables. Results have been shown in Table 3 (a), 3(b), and 3(c):

NUTRITIONAL STATUS AND BEHAVIOUR PROBLEMS

To find the relationship between malnutrition and behaviour problems in children after computing median test Chi-square was applied. The children scoring at and above median were grouped to be scoring high on behavioural problems while children scoring less than the median score were grouped as children with low behavioural problems. Median for behaviour problem was 16.

On applying Chi-square test it was found that no significant relationship exists between nutritional status and behavioural problems, though the scores, of malnourished children were higher on behavioural problem inventory, as has been given in Table 4.

Similarly, duration of malnourishment did not seem to have significant relationship with behavioural problems as has been shown in Table 5.

DISCUSSION

A sample of 100 school students in age group of six to ten years were categorised into malnourished (54 per cent) and nourished (46 per cent) groups depending on their anthropometric measurement.

The two groups were compared with each other on the mean age, education of

TABLE 3
FREQUENCY DIATRIBUTION OF CHILDREN WITH MALNUTRITION OF
RECENT AND CHRONIC ORIGIN ACCORDING TO AGE

AGE	MALNUTRITION			
	RECENT ORIGIN		CHRONIC ORIGIN	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE"
6+	14	25.9	4	7.4
7+	10	18.5	2	3.7
8 +	8	14.8	4	7.4
9+	2	3.7	2	3.7
10+	4	7.4	4	7.4
Total	38	70.4	16	29.6

3. (a) RELATIONSHIP OF FATHER'S EDUCATIONAL GRADE TO THE
NUTRITIONAL STATUS IN CHILDREN

Father's Education	Nourished	Malnourished	Total
High	12	8	20
Low	34	46	80
Total	46	54	100

$\chi^2=0.9$; d.f.=1; P=Not significant

(b) LITERAY OF MOTHER AND NUTRITIONAL STATUS OF
CHILDREN

Literacy Status of Mother	Nourished	Malnourished	Total
Illiterate	26	40	66
Literate	20	14	34
Total	46	54	100

$\chi^2=1.4$; d.f.=1; P=Not significant

(c) PER CAPITA INCOME AND NUTRITIONAL STATUS OF THE
CHILDREN

Per Capita Income	Nourished	Malnourished	Total
High	14	16	30
Low	32	38	70
Total	46	54	100

$\chi^2=0.7$; d.f.=1; P=.Not significant

TABLE 4
RELATIONSHIP BETWEEN NUTRITIONAL STATUS AND BEHAVIOR PROBLEMS

BEHAVIOURAL PROBLEMS	NOURISHED %	MALNOURISHED %	TOTAL
Above Median	18	34	52
Below Median	28	20	48
Total	46	54	100

$\chi^2=1.7$; d.f.=1; P=(N.S.)

TABLE 5
RELATIONSHIP BETWEEN MALNUTRITION OF RECENT ORIGIN AND CHRONIC DURATION TO BEHAVIOR PROBLEMS

BEHAVIOURAL PROBLEMS	MALNUTRITION		TOTAL
	RECENT ORIGIN	CHRONIC ORIGIN	
High	18	14	32
Low	20	2	22
Total	38	16	54

$\chi^2=1.7$; d.f.=1; P=(N.S.)

father, literacy of mother and per capita income in the family. Analysis of the sample revealed that the groups were comparable to each other on all the variables covered in the study. However, median test and chi-square test revealed that there was no significant relationship in the state of nutrition, and behaviour problems in the children.

The study was initiated with the aim to determine the prevalence rate of malnutrition and understand the relationship between malnutrition and behavioural problems. In the present study, the prevalence rate of malnutrition was found as high as 54 per cent among children under study. Similar results have been shown by ICMR surveys (1976, 1977) in which prevalence rate was found to be 60-70 per cent^{8,9}. Malnutrition among children is one of the national problems like poverty, population explosion, illiteracy and unemployment. To overcome this problem of malnutrition among children, multifaceted development is required which will improve per capita income, bring awareness among people, reduce poverty and will raise literacy and employment levels in all parts of country.

The second objective of the study was to evaluate the relationship between malnutrition and behavioural problem. The present study could not prove any relationship between these two. Results of the present study are in line with the

results of another study conducted by other researchers in 1985, who found no significant relationship between affective and attentions Disturbances and iron deficient anaemic infants¹⁰. Whereas these are contrary to results of an study conducted in 1987 who have been able to show effect of excess and/or deficiencies in certain dietary components on central nervous system including learning disabilities and anti social behaviour¹¹. Therefore, it will be too early to come to the conclusion that any such relationship does not exist because effect of malnutrition c"n intellectual development is an established fact and impaired intellectual ability in turn may result in behaviour problems among children. Another study of the longitudinal type, studying not only different types of behaviour problems in detail but also inters relating it to degree and duration of malnutrition will definitely give a clear picture.

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प्रस्तुत अध्ययन में चुने हुए स्कूलों के बच्चों की पोषण स्थिति का जायजा लेने का एक प्रसास किया गया है। कुपोषण एवं व्यवहार-संबंधी समस्याओं के बीच संबंधी का पता लगाना भी इस अध्ययन का एक पक्ष है। सैम्पल के रूप में दिल्ली के दो प्राथमिक विद्यालयों के 6-10 वर्ष आयु वाले 100 बच्चों को लिया गया है। इस अध्ययन के लिए निम्नलिखित माध्यमों (टूल्स) को अपनाया गया है: (1) नेकीज बिहेवियर, प्रॉब्लम, और (2) एंथ्रोपोमैट्रिक मापन के लिए मापक फीता और वनज-मशीन। माताओं से बच्चों के बारे में सूचना प्राप्त करने के लिए प्रश्नावली भी प्रयोग में लाई गई। पोषण एवं व्यवहार संबंधी समस्याओं के बीच संबंध का अध्ययन करने के लिए मीडियन टेस्ट और कार्ड स्क्वैर टेस्ट अपनाये गए हैं। एंथ्रोपोमैट्रिक मापन के आधार पर 54 प्रतिशत बच्चे कुपोषित पाए गए। कुपोषण का व्यवहार संबंधी समस्याओं से कोई संबंध नहीं पाया गया। इसीप्रकार कुपोषण की मात्रा एवं अवधि का बच्चों के व्यवहार पर कोई प्रभाव नहीं देखा गया। इसी विषय पर पहले से किए गए अन्य उपयोगी अध्ययनों के साथ इस अध्ययन के परिणामों की तुलनात्मक चर्चा की गई है।

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MANAGEMENT OF THE ANAEMIA PROPHYLAXIS PROGRAMME IN THE ICDS IN URBAN BARODA

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ABSTRACT

Management of any programme critically influences its impact on the beneficiaries. In this study, managerial components of National Nutritional Anaemia Prophylaxis Programme (NNAPP) in ICDS were evaluated in a random sample of 30 ariganwadis in urban Baroda. It was found that perceptions of functionaries (ANMs, supervisors, anganwadi workers) regarding NNAPP related job functions were not clear. Training regarding NNAPP was negligible. Inadequacy and irregularity of supply of iron-folate tablets were found. Management Information System was weak and coverage of beneficiaries (especially children) was inadequate. Observation of activity pattern of functionary's revealed that only 1.6 per cent of the total working hours of functionaries was spent on NNAPP related work. Beneficiary mothers' responses corroborated findings of poor coverage and revealed a lack of awareness regarding benefits of iron supplementation. The study highlighted several managerial lacunae regarding implementation of NNAPP in ICDS which need to be addressed if iron supplementation is to have any measurable impact on the beneficiaries.

The management process of any national level programme has been a critical element in influencing the impact of the programme on the beneficiaries. Among the national nutrition programmes in India, the National Nutritional Anaemia Prophylaxis Programme (NNAPP) is an important programme aimed at combatting nutritional anaemia in underprivileged women and children of age 1-12 years. The nutrient supplement, i.e. iron-folate tablets, were delivered to the beneficiaries through several health care infrastructure, the Integrated Child Development Services (ICDS) being one of them. ICDS facilitates the total development of the child through an integrated package of services {e.g. supplementary nutrition, growth monitoring, immunisation, non-formal preschool education) which are delivered through a centre called the Anganwadi (AW); each AW catering to an urban or rural population of about one lakh. The key functionary in-charge of managing the AW is the Anganwadi Worker (AWW). The delivery of iron supplements to the mothers and children has been the responsibility of the Auxiliary Nurse Midwife (ANM) with assistance from AWW. The supervisors of AWW and ANM are the Mukhyasevika and Medical Officer respectively.

ICDS has been extensively researched with respect to immunisation, growth

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monitoring and supplementary feeding but the efficiency of delivery of iron-folate supplements to ICDS beneficiaries has received scant attention',². Furthermore, the few evaluative studies available on NNAPP have been impact evaluation studies with little focus on managerial components of the programme^{3,4}.

Thus, the present study was undertaken with the objective of assessing selected management components of NNAPP as implemented through the ICDS, that is, personnel management, material management and management information system.

MATERIALS AND METHOD

A sample of 30 AWs was randomly selected out of the 118 AWs in Baroda city. The number of functionaries interviewed comprised:

1. AWWs with less than five years experience: Group A (n = 13)
2. AWWs with more than five years experience: Group B (n= 13)
3. ANMs (n= 6)
4. Supervisors (n= 6)
5. Helpers (n = 30)

In addition, the beneficiaries of NNAPP residing in slums near the AWs were randomly selected, namely pregnant women (n= 15), lactating women (n= 15) and mothers of preschool children (n = 30). Further, four dais residing in the surveyed communities were interviewed to ascertain if they were involved in the programme in any way.

Data collection was undertaken in two phases: Phase I consisted of interviews with the ICDS functionaries and the beneficiaries regarding their perceptions and awareness of the NNAPP. Phase II consisted of an in-depth study in six AWs *i.e.* observation of the activity pattern of the functionaries and a scrutiny of NNAPP related records at the AWs.

During Phase I, pretested and modified interview schedules were administered which included questions pertaining to training, awareness of job functions, logistics of supply, supervision, monitoring and feedback: Management Information System. Beneficiaries were questioned regarding regularity of receipt of inputs and their perceptions regarding the benefits of the programme. During Phase II, a checklist was employed to ascertain the number of minutes spent by the functionaries on various job functions. In all, 12 such observation sessions were conducted, two in each of the six AWs. Records pertaining to receipt and distribution of iron-folic acid (FeFA) tablets were also scrutinized.

RESULTS AND DISCUSSION

Phase I: Regarding the job functions of the functionaries in ICDS in general, majority of the supervisors mentioned supervision of AWWs as their main job

function. ANMs viewed immunisation as their key job function. AWWs, both in Group A (less than five years experience) and Group B (more than five years experience) stated preschool education, giving supplementary food, maintaining growth charts and other records as their main job functions. None of the functionaries could clearly describe any job function related to NNAPP unless probed.

Specifically, with respect to NNAPP the ANMs described their job functions as: advising mothers on the importance of consuming iron-folate tablets, receipt of nutrient inputs, allocating them to the AWWs for distribution to the beneficiaries and referring patients with severe iron deficiency to the Medical Officer (MO) as has been shown in Table 1. According to supervisors, they referred anaemic beneficiaries to the MO and advised mothers regarding consumption of tablets. All the AWWs (100%) stated that their main task was distribution of the iron tablets to the beneficiaries. The main task of the helpers (93%) was to assist the AWW in her work.

The majority of the functionaries did report to have received training regarding their job functions in ICDS. However, more than half of the supervisors and AWWs were trained after having worked in ICDS, sometimes for even more than six months as has been shown in Table 2. On probing, above 50 per cent of the functionaries did say that they had received some information regarding the iron inputs in the programme. None of the functionaries except ANMs could elaborate on the NNAPP component of their training programme. A scrutiny of the training curriculum at an ICDS training centre at Panelav near Baroda also revealed that extremely inadequate training was imparted to the ICDS functionaries regarding NNAPP since this programme was not discussed specifically but only dealt with in general under the topic 'Nutrition and Health' to which only 13 per cent of the total training hours were devoted.

Regarding awareness of the various dimensions of the programme, pregnant women alone were universally recognized by all the functionaries as the beneficiaries of NNAPP. Majority (60-70%) of the supervisors and AWWs stated that severely malnourished children were also the preferred beneficiaries of NNAPP, *i.e.* in view of short supply; malnourished children receive the tablets first. None of the functionaries could give specific responses regarding the real objectives and benefits of distributing iron supplements nor were they aware of the specific signs and symptoms of iron deficiency except for 'pallor'.

Material Management: Regarding the source of supply of FeFA tablets, all six ANMs and five of the six supervisors were aware of the correct source *i.e.*, Baroda Municipal Corporation. The AWWs in turn received their quota of supply from the ANM. Selected major responses of ICDS functionaries relating to material management of the programme have been described in Table 3. Fifty per cent supervisors and 67 per cent ANMs reported that the supply of tablets has been regular while majority of the AWWs in Groups A and B said that the supply was irregular sometimes. Two supervisors responded that it was the responsibility of the ANMs, hence they were unaware of the irregularity or regularity of supply of FeFA tablets.

TABLE 1
JOB FUNCTIONS RELATED TO NNAPP AS PERCEIVED BY THE
FUNCTIONARIES

Job Functions	Percentage of ANM n=6	Responses Supervisor n=.6
1. Identifying beneficiaries	50.0	16.6
2. Storing supplies	50.0	0.0
3. Distributing inputs to AWWs	50.0	0.0
4. Maintaining records	50.0	0.0
5. Advising mothers on consumption of tablets	66.6	50.0
6. Explaining importance of taking the tablets	66.6	50.0
7. Dealing with side-effects, if any	50.0	16.6
8. Referring patients	66.6	66.6

ANM: Auxiliary Nurse Midwife

TABLE 2
TRAINING COMPONENT OF ICDS AS PERCEIVED BY FUNCTIONARIES

Training Component	Supervisors n = 6	Percentage of ANMs n=6	Responses AWWs Group A n=17	Responses Group B n = 13
A. ICDS in general*;				
1. Received preservice training	50.0	100.0	0.0	76.9
2. Received in-service training	83.5	100.00	62.3	100.0
3. Training period adequate	83.3	100.0	64.7	76.9
B. With respect to NNAPP;				
1. Received specific training for NNAPP	50.0	66.6	58.5	61.5
2. Job functions specified for NNAPP	50.0	83.3	58.6	61.5

*Multiple response hence total 100

Half of the supervisors were not aware of the criteria of allotment of the tablets to the AWWs, stated again that it was the ANMs' responsibility. The remaining 50 per cent supervisors and 67 per cent of the ANMs said that allotment was made as per the requirement assessed by the AWWs, who in turn based their requirements on the past records of receipt and distribution of tablets.

When asked about the adequacy of supplies, half of the supervisors, all the ANMs, all the AWWs in Group A and majority in Group B gave a positive response. However, in practice, the supplies were very inadequate as described in Phase II.

Regarding the place of distribution of iron tablets, most of the supervisors and AWWs in Group A and B said that the distribution took place at both the places i.e. homes of the beneficiaries and the AWWs. However, majority of the ANMs said that the distribution was done at the AWWs.

Regarding the means employed for identifying the pregnant women as the beneficiaries of NNAPP, multiple responses were obtained. According to the ANMs and supervisors, the AWWs enlist beneficiaries through a house-to-house survey, with the help of the older women and dais in the community as has been given in Table 3. However, the role of dais in NNAPP appeared to be negligible as suggested by interviewing four dais in selected communities.

On being asked if it is possible to give the full course of tablets to women who go away for their delivery, 67 per cent supervisors replied in the affirmative, whereas majority of ANMs and AWWs in Group A gave a negative response.

Management Information System (MIS): MIS related to NNAPP appeared to be very weak. Topics related to NNAPP were hardly discussed in the meetings between the supervisors and AWWs, ANMs and MOs, ANMs and AWWs - as revealed by interviewing the functionaries as well as through observations of meetings by the investigators. Further, NNAPP related records were rarely scrutinized by the supervisors or ANMs, according to a feedback obtained from the AWWs.

Phase II: The activity pattern of the functionaries have been shown in Table 4. The supervisors' time was found to be divided equally between observing the AWWs at their work, checking the records at the AW, doing their own register work and miscellaneous tasks such as giving suggestions to the AWW and meeting the beneficiaries. Most of the time of the ANMs were spent in immunisation and related work. The AWW devoted most of her working hours to preschool, education, supplementary feeding and register work. The helper was mainly concerned with distribution of supplementary food and helping the AWW in general. On an average, only a negligible amount of time (1-6%) was devoted to NNAPP by the functionaries during the observation period.

Scrutiny of records at the six AWWs revealed a very discouraging picture. Registration of the beneficiaries (pregnant women) was less than 50 per cent in four

TABLE 3
SELECTED MAJOR RESPONSES OF ICDS FUNCTIONARIES RELATING TO
MATERIAL MANAGEMENT OF NNAPP

Management Component	Supervisors n=6	ANMs n=6	AWWs	
			Group A N=17	Group B N = 13
1. Regularity in respect of supply:				
a. Yes	50.0	67.0	18.0	31.0
b. No	16.0	33.0	-	-
c Sometimes irregular	34.0	-	82.0	69.0
2. Criteria for allotment:				
a. As per requirement assessed by AWW	50.0	67.0	-	-
b. Did not know	50.0	0.0	-	-
3. Adequacy of supply:				
a Adequate	50.0	100.0	100.0	82.0
b. Inadequate	50.0	-	-	18.0
4. Place of distribution:				
a. Both home and AW	63.0	33.0	70.0	77.0
b. AW	17.0	67.0	30.0	27.0
5. Means employed for identifying pregnant women:				
a. Survey by AWW	33.0	63.0	-	-
b. Help of older women in community	50.0	50.0	-	-
6. Whether possible to give full course of iron tablets to pregnant women before they go away for their delivery				
a Yes	67.0	17.0	12.0	31.0
b. No	33.0	83.0	88.0	69.0

TABLE 4
ACTIVITY PATTERN OF I COS FUNCTIONARIES

Activity	Mean time spent (minutes)	Percentage of total time spent*
1. Supervisors		
a: Observing AWWs at work	425	25.6
b. Record maintenance	78.3	47.2
c. NNAPP related work	1.6	1.0
2. AN Ms		
e, Immunisation related work	124.9	60.0
b. NNAPP related work	10.6	6.7
3. AWWs		
a. Preschool education	579	39.7
b. Giving supplementary food	21.6	14.8
c. Record maintenance	222	15.2
d. Distribution Iron tablets	1.6	1.1
4. Helpers		
a. Giving supplementary food	18.3	47.8
b. Calling beneficiaries	10.0	26.0

*The balance of time (to make upto 100%) was spent in miscellaneous tasks, hence it is not represented here.

out of the six AWs as has been shown in Table 5. Number of child beneficiaries registered for NNAPP was fairly good: about 70 per cent in five out of the six AWs. Distribution of the tablets was dismally inadequate: less than 25 per cent of expected women were covered in three out of the six AWs and only 2-15 per cent children were covered. From the records it was not possible to ascertain whether the beneficiaries received the full course of the tablets or not.

Responses of the Beneficiaries: Table 6 reveals, except for pregnant women, majority of the beneficiaries interviewed stated that they had not received the iron tablets. Regarding the number of tablets consumed per day by women and children, responses varied from one to two tablets. Frequency of distribution varied from once a week, once a fortnight to once a month. Majority of the beneficiaries stated that they were given the tablets loose in the palm or wrapped in paper. Majority of the beneficiaries were not aware of the benefits of consuming the tablets.

DISCUSSION

In respect of personnel management, majority of the functionaries lacked

TABLE 5
PERCENTAGE OF BENEFICIARIES REGISTERED AND QUANTITY OF
IRON FOLATE AVAILABLE/DISTRIBUTED TO THE BENEFICIARIES IN SIX
AWa (1989-90)

Item	Anganwadi					
	1	2	3	4	5	6
I.1. Percentage of pregnant women registered*	77.2	50.0	33.3	20.0	37.5	106.6
2. Percentage of lactating women registered*	140.9	70.0	71.4	55.0	25.0	33.3
3. Percentage of required stock available in AW of adult tablets"	143.1	52.0	55.4	0.0	0.0	673.0
4. Percentage of women to whom tablets were distributed	51.1	23.0	19.2	0.0	0.0	23.5
II.1. Percentage children registered*	163.8	85.7	103.9	88.0	67.5	75.2
2. Percentage of required stock available at AW of paediatric tablets	24.9	28.7	9.0	NR	NR	55.2
3. Percentage of children to whom tablets were distributed	15.9	8.8	24	NR	" NR	NR

*Percentage of expected demographic break-up of population.

**Required stock determined on basis of total dose of 100 tablets required per registered beneficiary. NR Not Required

TABLE 6
SELECTED RESPONSES OF THE BENEFICIARIES REGARDING RECEIPT
OF IRON SUPPLEMENTS FROM ICDS

Item"	Pregnant women Lactating n=15	Percentage of Response Lactating women n=15	Mothers of preschool children n=30
1. Whether received tablets in last one year			
a. Yes	73.3	26.6	36.6
b.No	26.6	73.3	63.4
2. Number of tablets taken per day			
a. One	33.3	13.3	23.3
b. Two	40.0	13.3	13.3
3. Number of tablets given each time			
a. 15 tablets	20.0	0.0	3.3
b. 30 tablets	20.0	20.0	23.3
c. Don't know	33.3	6.6	10.0
4. Whether given			
a. Plastic cover	0.0	0.0	3.3
b. Paper	46.6	13.3	13.3
c. Loose	26.6	13.3	20.0
5. Benefits of the programme			
a. Gives strength	40.0	20.0	26.6
b. Don't know	60.0	60.0	73.4

Only selected responses given hence percentage may not add upto 100 per cent

specific information regarding implementation of NNAPP as has been revealed in Phase I of this study. Only general awareness, *i.e.*, distributing the iron tablets to the beneficiaries, was there. Further, there appeared to be confusion regarding the actual roles of the ANM and the AWW at the field level with respect to NNAPP. In practice, the AWW distributed the tablets though the ANM is the chief functionary responsible for the distribution. Thus, the precise job functions of the various functionaries need to be clarified with respect to NNAPP. The AWW may be made accountable for the programme since she distributes the iron tablets in practice. The present study also revealed that the supervisors, ANMs and AWWs had inadequate knowledge regarding clinical signs, symptoms and measures for preventing anaemia. The Indian Council of Medical Research (ICMR) in 1989 has also reported that the knowledge of the ANMs regarding the objectives, beneficiaries and dosage/duration of supplementation varied markedly from complete knowledge to extremely inadequate knowledge⁵. The training given to the functionaries paid very little attention to the implementation of NNAPP.

With regard to material management, no definite clear-cut criteria was followed for obtaining the supplies from the Municipal Corporation. Most of the functionaries replied that the stock of iron was adequate whereas actual scrutiny of records revealed that it was not so. The ICMR study made a similar observation, namely, 61 per cent of the ANMs interviewed responded that the supplies were adequate, whereas actual coverage as ascertained from beneficiaries' responses, was less than 10 per cent for children, in the present study also, coverage of the beneficiaries was dismally inadequate and record maintenance was also so poor that the level of dosing could not be ascertained. Records of two AWWs revealed that the stock of large iron tablets as compared to requirements (adult dose) was unbelievably high, yet distribution to pregnant women was poor.

Thus, record maintenance which is a critical element in a Management Information System was unsatisfactory. Supervision related to NNAPP was negligible at the field level as observed by the investigators. Implementation of NNAPP was not discussed at all in meetings between supervisors and field staff except cursorily by the ANMs and the MO. According to the field level functionaries, no positive feedback was received by them from their supervisors regarding their work.

Thus, data collected in the present study has revealed that there are several weak elements in the management of NNAPP as implemented through ICDS. These lacunae need to be immediately addressed if this programme has to have any measurable impact in reducing anaemia in the vulnerable groups.

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किसी भी कार्यक्रम का उसके लाभार्थियों पर पड़ने वाला प्रभाव उसके प्रबन्धन पर निर्भर करता है। इस अध्ययन में समेकित बाल विकास परियोजना के अन्तर्गत शामिल

राष्ट्रीय कुपोषण एवं रक्त अल्पता (अनेमिया) निवारक कार्यक्रम (एन.एन.ए.पी.पी.) के प्रबन्धन घटकों का मूल्यांकन किया गया है। यह मूल्यांकन बड़ौदा शहर की रैंडम विधी द्वारा चुनी गई 30 आंगनबाड़ियों में किया गया। अध्ययन में पाया गया कि कार्यकर्ताओं (ए.एन.एम., पर्यवेक्षक और आंगनबाड़ी कार्यकर्त्री) में एन.एन.ए.पी.पी. सं संबंधित प्रशिक्षण भी नाममात्र का पाया गया। आयरन फालिक गोलियों की आपूर्ति में अनियमितता और कमी पाई गई। यह पाया गया कि प्रबन्ध सूचना प्रणाली (मैनेजमेंट इनफोर्मेशन सिस्टम) अपूर्ण थी और लाभार्थियों खासकर बच्चों की संख्या इस कार्यक्रम के अर्न्तगत अपेक्षतया कम थी। कार्यकर्ताओं की कार्य प्रणाली के अध्ययन से यह पाया गया कि सम्पूर्ण कार्य-घंटों का मात्र 1-6 प्रतिशत एन.एन.ए.पी.पी. संबंधित कार्यों के लिए दिया जाता था। लाभार्थी माताओं से प्राप्त उत्तरो से भी कम थी। समेकित बाल विकास परियोजनाओं के अर्न्तगत चलाए जा रहे एन.एन.ए.पी.पी. योजना की क्रियान्वयन संबंधी अपेक प्रबन्धकीय त्रुटियों पर इस अध्ययन में प्रकाश डाला गया है। यदि इस योजना का प्रभाव लाभार्थियों तक उल्लेखनीय रूप से प्राप्त करना है तो इन कमियों को दूर करना अत्यन्त आवश्यक है।

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KNOWLEDGE OF ORAL REHYDRATION THERAPY AMONG PRIVATE PRACTITIONERS AND PHARMACISTS**

B.S. Nagi*

ABSTRACT

Diarrhoea is one of the main causes of death in children under 5 years of age in India. Roughly 1.5 million children die due to diarrhoea and diarrhoea related diseases every year.

In order to review the ongoing ORT Programme in the country, a study was conducted by the Council for Social Development in 1989. Six randomly selected States were covered under this study namely, Haryana, Maharashtra, Orissa, Rajasthan, Tamil Nadu and Uttar Pradesh.

Findings of the study revealed that the knowledge of the private practitioners about different aspect of diarrhoea was very poor in almost all the States. It is, therefore, recommended that the Government of India should launch an orientation programme throughout the country to equip the private practitioners with the requisite knowledge of ORT to implement the programme effectively. Pharmacists should also have correct knowledge about the preparation of ORS solution so that they should give proper advice for the management and prevention of diarrhoea to their customers. According to the recommendations of the study the Government of India should involve fully the private practitioners and pharmacists to play a potential role in the execution of the National COD Programme.

Diarrhoea is one of the main causes of death in children under 5 years of age in India. Roughly 1.5 million children die due to diarrhoea and diarrhoea related diseases every year; The Government of India through its National CDD Programme plans to reduce the infant mortality rate from 95 to 50 and pre-school mortality from 41.2 to 10 per 1000 by the year 2000 A.D. The CDD programme which was started in 1986 and covered 90 districts during 1986-87. During the period 1987-88 and 1988-89, another 90 and 120 districts respectively were covered and by 1989-90 the whole country was covered under this programme.

In order to review the ongoing ORT programme in the country, a study was conducted by the Council for Social Development in 1989. The study covered six randomly selected States, i.e., Haryana, Maharashtra, Orissa, Rajasthan, Tamil Nadu and Uttar Pradesh.

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Through the National CDD programme it was expected that every person would participate in a manner so that high mortality rate among children under 5 years of age could be brought down. Of course, major responsibility has to be shared by the health providers in the Government set up, like medical officers and health workers and also mothers/caretakers of children. Other non-government functionaries as well who could also contribute effectively in tackling the problem of diarrhoea! Illness. For example, the private practitioners and pharmacists could be of great use to combat this problem. It is a known fact that a high percentage of rural and urban population is being served by private practitioners for treatment. If motivated properly, these private practitioners could definitely play an important role in solving the diarrhoeal problem to a great extent. Similarly, it has been observed that many people go to pharmacists with a request to give some medicine for controlling the diarrhoea of their children. If the pharmacists possess the correct knowledge of ORT and give right advice to patients at the time of purchase of medicine, they can also help significantly to tackle this problem.

In order to assess the contribution of private practitioners and pharmacists in tackling the problem of diarrhoeal diseases, 424 private practitioners and 362 pharmacists were interviewed (in six sampled States, viz., Haryana, Maharashtra, Orissa, Rajasthan, Tamil Nadu and Uttar Pradesh). A structured questionnaire was administered to assess their level of knowledge in handling different aspects of diarrhoea disease. To facilitate comprehension, the study was divided into two sections, the first dealing with the knowledge of private practitioners while the second dealt with the pharmacists.

PRIVATE PRACTITIONERS

Knowledge of Private Practitioners about Oral Rehydration Solution Ingredients, Preparation of ORS Solution Correctly, and the Correct Estimation of Requirement of ORS Solution: The Statewise percentage distribution of private practitioners with respect to their knowledge about ORS ingredients, correct preparation of ORS solution, and correct estimation of requirement of ORS solution has been shown in Table 1. As per WHO formula, there are four ingredients of ORS, viz., Glucose, Sodium Chloride, Potassium Chloride and Sodium Bicarbonate/Citrate. As per assessment against these, only 43 per cent private practitioners who have the knowledge of all the four ingredients; 44 per cent of them know how to prepare the ORS solution correctly where as 48 per cent of private practitioners know the correct quantity of ORS solution required by diarrhoeal patients. It may also be noticed from the table that only in Tanjil Nadu where around 80 per cent private practitioners could prepare the ORS solution correctly has been found to be satisfactory as compared to other States in the study. Rajasthan with 57 per cent may be considered as unsatisfactory because being medical doctors all of them were supposed to have correct knowledge of preparation of ORS solution.

Knowledge about Signs to Assess the Diarrhoeal Patients: There are twelve major signs or symptoms through which the children under five years of age could be assessed for diarrhoea. These signs are: stools per day, vomiting, thirst,

TABLE 1
PERCENTAGE DISTRIBUTION OF PRIVATE PRACTITIONERS WITH
RESPECT TO THEIR KNOWLEDGE ABOUT ORS INGREDIENTS. CORRECT
PREPARATION OF ORS SOLUTION AND THE CORRECT ESTIMATION OF
REQUIREMENT OF ORS SOLUTION

State	Knowledge of all four ingredients in ORS	Knowledge of correct preparation of ORS solution.	Knowledge of correct estimation of ORS solution requirement
Haryana	37.9	37.9	41.4
Maharashtra'	35.7	3.6	66.1
Orissa	27.8	16.7	44.4
Rajasthan	17.0	56.6	41.5
Tamil Nadu	52.0	79.4	33.3
Uttar Pradesh	50.6	35.5	54.2
Total	42.9	43.9	47.9

urine, condition of child, skin pinch, sunken eyes, mouth/tongue (dry/wet), tears absent/present, pulse rate, fontaneile sunken (*in* infants), and respiratory rate.

Extremely low percentage of private practitioners who could recognise at least eight signs have been indicated in Table 2. Such a low knowledge (9.4%) may be attributed to the fact that special training for management of diarrhoea might not have been given to the private practitioners as is being imparted to medical officers in a government health set up. In Rajasthan and Maharashtra only private practitioners have been found in a better position to recognise eight or more signs, whereas in other States the situation was extremely dismal.

Knowledge About Treating Children with Diarrhoea Having no Dehydration, with Some Dehydration and with Severe Dehydration; Most of the private practitioners (91%) used drugs for treating simple diarrhoeal cases as has

TABLE 2
PRIVATE PRACTITIONERS RECOGNISING EIGHT OR MORE SIGNS OF
DIARRHOEAL ILLNESS

S. No.	State	Recognised eight or more signs (Percentage)
1.	Haryana	3.4
2.	Maharashtra	23.2
3.	Orlssa	11.1
4.	Rajasthan	28.3
5.	Tamil Nadu	2.9
6.	Uttar Pradesh	3.6
	Total	9.4

been shown in Table 3. This was a matter of great concern because drugs were not supposed to be given to children with simple diarrhoea. The table also indicates that most of the private practitioners recommend drugs for diarrhoeal children under 5 years of age having some dehydration. Majority of the private practitioners were of the opinion that ORS should be given to the children having some dehydration. More than 56 per cent of the private practitioners were of the view that they would treat the children having severe dehydration by giving intravenous fluid. However, about 41 per cent indicate* that they would refer cases of severely dehydrated children to clinics, hospitals^ etc. where IV fluid facility is available. In brief, adding columns 10 through 12 (Table 3), we find that the knowledge of IV fluid requirement among the private practitioners seems to be quite satisfactory.

Knowledge Among Private Practitioners Regarding the Advice to Mothers/Caretakers about Feeding During Diarrhoea: Table 4 indicates that more than 70 per cent of the private practitioners advise mothers to continue breastfeeding as usual during diarrhoea whereas only 2.4 per cent were of the opinion that breast-feeding should be increased and 10 per cent stated that it should be stopped.

About 50 per cent of the private practitioners were of the opinion that other fluids should be given in more quantity to children during diarrhoea. It was interesting to note that more than 83 per cent of the private practitioners in Tamil Nadu were of the opinion that other fluids should be given in more quantity to children during diarrhoea. Next to Tamil Nadu is the State of Uttar Pradesh where the percentage of such practitioners was found to be 56.

Knowledge about Case Management of Diarrhoea at Home: Generally, three aspects of case management of diarrhoea have been emphasised at home. i.e., more fluids should be given, breast-feeding (for infants)/solid foods should be given as usual, and medical help should be sought in case of dehydration or when blood is noticed in the stools. It was expected that mothers/caretakers should be accordingly advised about all the three aspects of case management of diarrhoea at home.

Tamil Nadu and Haryana were the only two States where the percentage of private practitioners giving advice on all the above three aspects was about 70 per cent or more as has been shown in Table 5. In other States the situation seems to be much unsatisfactory. For instance, in Rajasthan there was not even a single private practitioner who mentions all the three aspects.

PHARMACISTS

Knowledge of Pharmacists About ORS ingredients, Explaining to Customers About the Preparation of ORS Solution and the Correct Knowledge About the Preparation of ORS Solution Majority of the pharmacists do not know about all the four ingredients of ORS. Further, it has been found that almost all the pharmacists say that they explain to customers how to prepare ORS solution but surprisingly only 40.6 per cent themselves know how to prepare the ORS solution correctly. The percentage of pharmacists having the correct

TABLE 3
TREATMENT OF CHILDREN HAVING DIARRHOEA WITHOUT
DEHYDRATION, WITH SOME DEHYDRATION AND WITH SEVERE
DEHYDRATION

S.No.	State	Diarrhoea without dehydration*			Diarrhoea with some dehydration*					Diarrhoea with severe dehydration		
		ORS	SSS**	Drugs	ORS	SSS	IV Fluid	Drugs	Admit for I.V.	Refer with I.V./ORT in transit	Refer without I.V. or ORT in transit	Drugs
1	2	3	4	5	6	7	8	9	10	11	12	13
1.	Haryana	75.7	89.7	69.0	89.7	75.9	37.9	75.7	65.5	10.3	24.1	0.0
2.	Maharashtra	50.0	32.1	96.4	67.8	37.5	14.3	91.1	37.5	17.9	42.9	1.8
3.	Orissa	66.7	55.6	100.0	77.8	55.6	5.6	100.0	16.7	50.0	27.7	5.6
4.	Rajasthan	28.3	0.0	100.0	96.2	15.1	0.0	88.7	45.3	54.7	0.0	0.0
5.	Tamil Nadu	65.7	69.6	80.4	86.3	70.6	17.6	77.5	72.5	21.6	5.9	0.0
6.	Uttar Pradesh	65.1	36.7	95.8	87.3	38.6	22.3	94.0	60.2	13.9	22.3	3.6
Total		59.4	43.9	91.0	85.4	46.5	17.7	88.0	56.8	22.7	18.6	1.9

*Columns 3 to 9 have multiple answers.

**Sugar Salt Solution

TABLE 4
TYPE OF ADVICE GIVEN TO MOTHERS/CARETAKERS REQUESTING FEE-OF-MEDICINE
DURING DIARRHOEA

DURING DIARRHOEA																				
			Breast Feeding			BotSe FeeOn			Other fIMt											
S NO.	SUM	No. of Private Practitioner*	Stop	Decrease	Continue at usual	Increase	stop	Decrease	Continue as usual	Increase	Stop	Decrease	Continue as usual	Increase	Stop	Decrease*	as usual	Increase		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
1.	Haryana	29	0	3	28	0	17	7	5	0	0	0	20	9	0	0	21	8		
			(0.0)	(10.3)	(89.7)	(0.0)	156.6)	(24.1)	(17.2)	(0.0)	(0.0)	(0.0)	(89.0)	(31.0)	(0.0)	(0.0)	(72.4)	(27.8)		
2.	Maharamra	56	4	15	35	2	18	20	17	1	3	16	16	21	18	18	17	3		
			(7.1)	(26.8)	(82.5)	(3.6)	(32.1)	(36.7)	(30.4)	(1.8)	(5.4)	(28.6)	(28.8)	(37.5)	(32.1)	(32.1)	(30.4)	(5.4)		
3.	Orissa	16	1	1	16	0	9	1	6	0	2	0	16	0	8	3	7	0		
			(5.6)	(5.6)	(88.8)	(0.0)	(50.0)	(5.6)	(44.4)	(0.0)	(11.1)	(0.0)	(88.0)	(0.0)	(44.4)	(16.7)	(38.9)	(0.0)		
4.	Rajasthan	53	6	10	34	3	34	10	8	1	5	5	40	3	1	6	46	1		
			(11.3)	(18.9)	(64.2)	(5.6)	(84.2)	(18.9)	(15.1)	(1.9)	(9.4)	(9.4)	(75.5)	(5.7)	(1.9)	(11.3)	(64.9)	(1.9)		
5.	Tamil Nadu	102	11	9	82	0	53	8	39	1	0	5	12	85	31	4	66	1		
			(10.8)	(8.8)	(80.4)	(0.0)	(52.0)	(8.8)	(38.2)	(1.0)	(0.0)	(4.9)	(11.8)	(83.3)	(30.4)	(3.9)	(64.7)	(1.0)		
6.	UPv Pradesh	22	22	33	106	8	83	42	37	4	3	19	51	93	48	44	71	3		
			(100.0)	(150.0)	(481.8)	(36.4)	(377.3)	(190.9)	(156.5)	(18.2)	(13.6)	(94.5)	(235.3)	(422.7)	(218.2)	(195.5)	(322.7)	(13.6)		
Total		424	44	71	299	10	214	89	114	7	13	45	155	211	106	75	227	16		
			(10.4)	(16.7)	(70.5)	(2.4)	(50.5)	(21.0)	(28.9)	(1.7)	(3.1)	(10.8)	(38.6)	(46.8)	(25.0)	(17.7)	(53.5)	(3.8)		

Figures in parentheses* use M percentage*

Note. Percentages are calculated on the basis of Cd. 3.

TABLE 5
CASE MANAGEMENT OF DIARRHOEA; PERCENTAGE OF PRIVATE
PRACTITIONERS GIVING
CORRECT ADVICE

S. NO.	Slate	Mentioned all the three aspects
1.	Haryana	69.0
2.	Maharashtra	12.5
3.	Orissa	44.4
4.	Rajasthan	0.0
5.	Tamil Nadu	73.5
6.	Uttar Pradesh	33.1
	Total	38.9

knowledge of preparation of ORS solution was as high as 69 per cent in Rajasthan followed by Tamil Nadu (57.3%). However, in rest of the States the level of knowledge is extremely low as has been given in Table 6.

Knowledge of Pharmacists about Case Management of Diarrhoea at Home. The advice given by pharmacists to customers regarding the home management of diarrhoea. About 21 -25 per cent of the pharmacists have mentioned that they gave advice regarding the use of fluids, balanced diet and commercial ORS. About 47 per cent advised that if the diarrhoea was not controlled at home, medical help should be sought. There were only 0.8 per cent who said that breast feeding should be continued during diarrhoea as has been depicted in Table 7,

TABLE 6
KNOWLEDGE OF PHARMACISTS REGARDING ORS INGREDIENTS,
EXPLAINING TO CUSTOMERS ABOUT PREPARATION OF ORS SOLUTION,
CORRECT KNOWLEDGE ABOUT THE PREPARATION
OF ORS SOLUTION

State	Knowledge of all four ingredients	Explaining to customers about preparation of ORS solution	Knowledge about correct preparation of ORS solution.
Haryana	47.8	100.0	34.8
Maharashtra	27.8	100.0	25.0
Orissa	27.8	100.0	22.2
Rajasthan	16.4	100.0	69.1
Tamil Nadu	14.6	91.5	57.3
Uttar Pradesh	35.1	98.0	27.7
Total	27.3	97.2	40.6

TABLE 7
ADVICE GIVEN TO PHARMACISTS REGARDING HOME
MANAGEMENT OF DIARRHOEA

S. No.	State	No. of Pharmacists	Boiled water should be given to the child	Comitk.:ai ORS	Home made fluids	if net controlled seek medical help	Give balanced diet	Give SSS	Maintain better hygienic condition	Comma breast feeding
1	2	3	4	5	6	7	8	9	10	11
1.	Haryana	23	17 (73.9)	20 (37.0)	3 (13.0)	6 (26.1)	9 (39.1)	2 (8.7)	1 (4.3)	0 (0.0)
2.	Maharashtra	36	9 (25.0)	4 (11.1)	2 (5.6)	21 (58.3)	6 (16.7)	2 (22.2)	8 (5.6)	0 (0.0)
3.	Orissa	18	5 (27.8)	0 (0.0)	8 (44.4)	6 (33.3)	2 (11.1)	3 (16.7)	3 (16.7)	0 (0.0)
4.	Rajasthan	55	3 (5.5)	13 (23.6)	8 (14.5)	4 (7.3)	5 (9.1)	4 (7.3)	0 (0.0)	0 (0.0)
5.	Tami Nadu	52	11 (13.4)	2 (2.4)	27 (32.9)	19 (23.2)	37 (45.1)	8 (9.8)	7 (8.3)	2 (2.4)
6.	Uttar Pradesh	143	22 (12.2)	53 (35.8)	29 (19.6)	115 (77.7)	21 (14.2)	11 (7.4)	2 (1.4)	1 (0.7)
Total		362	63 (17.4)	92 (25.4)	77 (21.3)	171 (47.2)	80 (22.1)	36 (9.9)	15 (4.1)	3 (0.8)

Figures in parentheses are the percentages.

Note: Percentages are calculated on the basis of Col. 3.

CONCLUSION AND RECOMMENDATIONS

It was at least expected of the private practitioners to know about the signs and symptoms to assess the diarrhoeal patient, the correct preparation of ORS solution, the quantity of ORS solution to be given to diarrhoeal patients, how to handle severely dehydrated children, what advice should be given to mothers on feeding their children during and after diarrhoea, what advice should be given to mothers/caretakers about prevention of diarrhoea. It was found from the data presented above that the knowledge of the private practitioners about different aspects of diarrhoea was very poor in almost all the States. It is, therefore, recommended that the Government of India should launch an orientation programme throughout the country to equip the private practitioners with the requisite knowledge of ORT to implement the programme effectively.

It was "also expected that the pharmacists should have correct knowledge about preparation of ORS solution so that they should be able to give correct advice to the customers regarding the home management of diarrhoea and prevention of diarrhoea. Our data suggest that the pharmacists have very limited knowledge about these aspects of diarrhoea. As pharmacists were also expected to perform positive role in tackling the problem of diarrhoea, the Ministry of Health and Family Welfare should involve the pharmacists in the CDD programme and give them proper orientation in this regard.

It is, thus, imperative on the part of the Government of India to fully involve private practitioners and pharmacists and respect and recognise their potential role that they could play in the National CDD programme. Hence, an intensive orientation and training programme for them must be planned and executed to achieve the set goal by accelerating the rate of reduction in child mortality due to diarrhoea.

Lkkjk'k

भारत में पांच वर्ष से कम आयु के बच्चों में होने वाली मृत्यु के कारणोंमें दस्त लगना एक है। दस्त लगने और इससे संबंधित बीमारियों के कारण प्रतिवर्ष अंदाजन पन्द्रह लाख बच्चे मर जाते हैं।

देश में चलाये जा रहे मुख पुर्नजलीकरण चिकित्सा (ओ.आर.टी) कार्यक्रम का पुर्नवलोकन करने के लिए 1989 में सामाजिक विकास परिषद द्वारा एक अध्ययन किया गया। इस अध्ययन में रैंडम आधार पर छः राज्यों को चुना गया। ये राज्य हैं: हरियाणा, महाराष्ट्र, उड़ीसा, राजस्थान, तमिलनाडू और उत्तर प्रदेश।

अध्ययन में पाया गया कि लगभग सभी राज्यों में प्राइवेट प्रैक्टिशनर्स को दस्तों के विभिन्न पहलुओं के बारे में अल्प ज्ञान था। अतः यह सुझाव दिया गया कि भारत सरकार पूरे देश में एक अभिविन्यास कार्यक्रम चलाए ताकि प्राइवेट प्रैक्टिशनर्स

को ओ.आर.टी. कार्यक्रम के सफल क्रियान्वयन के लिए आवश्यक जानकारी दी जा सके। इसके अतिरिक्त फार्मासिस्टों को जीवन रक्षक घोल तैयार करने के बारे में सही-सही जानकारी दी जा सके ताकि वे अतिसार के प्रबन्धन और रोकथाम के बारे में अपने ग्राहकों को सही-सही सलाह-मशविरा दे सकें। अध्ययन में पेश की गई सिफारिशों के अनुसार राष्ट्रीय सी.डी.डी. कार्यक्रम के सफल एवं प्रभावी क्रियान्वयन में प्राइवेट प्रैक्टिशनर्स और फार्मासिस्टों की महत्वपूर्ण एवं अहम भूमिका को ध्यान में रखते हुए भारत सरकार को चाहिए कि उन्हें इसमें पूरी तरह शामिल कर ले।

**FERTILITY LEVEL IN URBAN NIGERIAN SOCIETIES: RECENT
OBSERVATIONS FROM EKET URBAN OF AKWA IBOM STATE OF
SOUTH EASTERN NIGERIA**

Itimitang Wilson Etukudo*

ABSTRACT

The Eket urban fertility survey was conducted between November and December, 1990. During the survey, information was collected from a scientifically designed and representative sample size of 614 respondents. They were all women of child bearing age. The data collected were analysed using percentages and arithmetical means.

The primary objectives of the survey was to obtain reliable information on the current levels of fertility in Eket urban. A brief demographic characteristics of the respondents were presented. It was done to provide background information relevant to the study. The data presented have shown a high fertility rate for Eket urban. According to the data on cumulative fertility, the mean number of children everborn (CEB) to all the women was 5.61. Completed fertility, as shown by the number of children everborn to the women, who have reached the end of their reproductive lives, was 7.14 at the time of the survey. The total fertility rate for the last twelve months proceeding to the study was 7.27. About 45 per cent of the women reported themselves as pregnant at the time of the study. It was observed that like the age specific fertility rates, the proportion of women pregnant was the highest for women in the peak years of childbearing, i.e. in the 20-24, 25-29, 30-34 and 35-39 age groups. The implications of the findings were also examined, and the suggestions if implemented would help bring down fertility level in the Eket urban in particular and Nigeria in general.

During the past twenty years, demographic researches have been focussed on fertility in Nigeria. The interests of the researchers arise from the fact that fertility has been viewed as the most disturbing component of population change and by the feeling that fertility is the most unpredictable of the population components. But despite these interests, substantial and reliable data on fertility were not readily available in Nigeria. The paucity of fertility data have shown the need for the luxuriant sprouting of demographic surveys which have increasingly been used in the study of vital population events in recent times most especially fertility in developing countries including Nigeria. With death rates declining and international migration

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fairly regulated, fertility has become the most important variable of the components. In Nigeria, both rural and urban death rates have started to decline, but fertility levels remained high. The high fertility levels and rates have brought a lot of problems to both urban and rural dwellers. Based on the above observations, it becomes imperative that fertility in Nigerian Societies should be thoroughly researched into in order to understand its level, pattern and implication for human society¹. This study has been carried out, chiefly to examine fertility levels and patterns, fertility, determinants and family planning in Ibibip communities of Akwa Ioom State, Nigeria.

The researcher, while conducting this survey adopted the usual approach of investigation of the frequency of childbearing among women who fall within the childbearing age bracket. The report presented in this paper has been concerned solely with live births to the women interviewed. It would be pertinent to say at this point that retrospective data on fertility of women are rarely free from errors². These errors may include total omission of births, because of memory lapses, omission of dead children, or those who have left home, births to older women that may have occurred for many years before the study and age shifting by the women. Thus, the findings presented in this paper should have tolerable level of generalization bearing the above limitations in mind.

OBJECTIVES OF THE STUDY

The following were the specific objectives of the paper: (1) To present the current fertility situation in Eket Urban. This would be discussed along the following dimensions: Cumulative fertility and fertility level in the area; and (2) The implications of the observed level of fertility in the area for population and socio-economic planning in Nigeria.

METHODOLOGY

The study was conducted in Eket Urban of Eket Local Government Area of Akwa Ibom State, Nigeria. A sample size of 614 women were used. In selecting the respondents, the researcher combined simple random sampling technique with multi-stage cluster sampling. For ease of sample selection, streets and roads were taken as clusters. And to avoid bias and ensure that each element had equal chance of being selected, random sampling technique was employed. Interview technique and questionnaire were used in collecting information for the study. The face-to-face interview technique was used in collecting information from those who were unable to read or write. The questionnaire was issued to and completed by literate ones in the community.

The research instruments contained questions on respondents' background characteristics, their fertility history, their parents' and grand parents' fertility history. Before the real fieldwork, a pretest of the survey instruments was conducted. This was to give the researcher the opportunity to know the people's attitude towards the survey and their general sensitivity to some of the questions asked. In analysing the data, analytical tools used included the compulation of arithmetical sums and frequency of the responses.

Demographic Characteristics of the Respondents: This study was conducted in Eket, a small urban centre in Akwa Ibom State, Nigeria; The study sample of 614 women of childbearing age was randomly drawn from within the urban area. In order to collect the necessary information for the study, the women were asked questions on their background characteristics and fertility history.

Unlike some other urban areas in Akwa Ibom State, Eket, because of the presence of Mobil Producing Nigeria (an oil company) is highly heterogeneous. The study was restricted to Eket women, other women were excluded from the study sample because of cultural differences that may effect their fertility behaviour.

Education: The people of Eket urban had been under the influence of western type of education for more than a century. This was because of their early contact with European traders and missionaries. The population is semi literate. Out of the 614 women interviewed, only about 25 per cent were unable to read and write and about 15.8 per cent had education beyond secondary level

Occupation: Although farming was one of the main occupations of the Eket people and other Ethnic groups found in the forest zone of South-Eastern Nigeria, only 3 per cent of the women said they were farmers. This is what one should expect in an urban area with industries. The results showed that 36.4 per cent respondents were traders while 60.6 per cent were those who were employed outside their homes most especially in the government and private establishments.

Religion: In terms of religion, Catholics and Protestants were the two dominant denominations in the area. From the survey, it was found that about 20 per cent of the people were Catholics, while about 80 per cent of the respondents were Protestants. Majority of these people were members of the newly established spiritual churches such as Assemblies of God Church, Mount Zion, Christ Mount Zion, Mount Zion Full Gospel, Sanctified Mount Zion, Apostolic Faith and a lot of others.

Marital Status: Out of the 614 women interviewed about 95.2 per cent were married, and about 4.8 per cent reported never married. These people were not excluded because they were within the childbearing age range and all of them had upto four children each. It should be noted that in Eket urban, premarital sexual union between a man and a woman has been frowned upon but children from such union suffer no disabilities.

The information presented in the study provided the background materials relevant to the research and against which data on fertility in Eket urban could be interpreted.

CUMULATIVE FERTILITY

The number of children everborn is often used as a summary measure of the cumulative fertility of a population². The distribution of women according to mean number of children everborn by current age has been shown in Table 1.

TABLE 1
THE DISTRIBUTION OF WOMEN ACCORDING TO MEAN NUMBER OF
CHILDREN EVERBORN BY CURRENT AGE FOR EKET URBAN

Current Age	No. of Women	Children Total No. of CEB	Everborn Mean No. of CEB
15-19	65	147	2.26
20-24	92	414	4.50
25-29	132	770	5.83
30-34	96	590	6.15
35-39	110	699	6.35
40-44	62	415	6.69
45-49	57	407	7.14
Total	614	3442	5.61

The data on cumulative fertility have revealed that the mean number of children everborn (CEB) to all the women was 5.61. As one would expect the mean number of children everborn for the different age groups increases by age since the older women have been exposed to the risk of childbearing for a greater length of time than the younger women. Since, women aged 45-49 (last cohort of women interviewed) have virtually reached the end of their reproductive life, the mean value of 7.14 could be regarded as a measure completed fertility of the population.

From Table 1 it has been observed that the average family size in Eket urban was 5.61. In fact, it should be mentioned here that, information concerning family size in any population would only be meaningful and useful if they were highly correlated with the information about actually completed family size. Moreover, a comparison of the actually completed family size and average family size for a population would indicate the level of reliability of the information on family size for that populaion. For the purpose of comparison data were collected on the fertility history of the 614 respondents, their mothers and their grandmothers. These data have been presented in Table 2. For the purpose of comparison 60 women aged 50 years and above were used and the data presented in Table 2.

It should be stated here that the 60 women in column 3 of Table 2 were not part of the 614 women interviewed. Even though they were interviewed they were excluded at the stage of data processing and analysis because their ages were outside the childbearing age bracket. Only their responses on family size were used for the purpose of analytical observation. It must be admitted that data on retrospective fertility especially those for previous generations of mothers were

TABLE 2
AVERAGE FAMILY SIZE FOR THREE GENERATIONS OF
MOTHERS IN EKET URBAN

Generation of Mothers	Average	Family Size
	N=614	N=60
1. Respondents (Present Generation of Mothers)	5.61	7.40
2. Their mothers	7.25	7.61
3. Their Grandmothers	7.14	7.36

normally not easy to collect because of memory lapses. Cognizance of this fact, the data collected were seriously cross-checked and where the women expressed the slightest doubt, they were given enough time to check for accurate information and the research assistants would have to either confirm the information or substitute the corrected information. Based on this rigorous procedure, it can be said that the data presented in Table 2 were the most reliable and valid. A consistency in the average completed family size of about seven has also been shown in Table 2. The low figure of 5.61 for the study sample has been affected by the relative youthfulness of the population since the women were yet to complete the cycle of childbearing. This fact confirms that the completed family size in Eket urban was around seven, live births. However, given the spread of family planning information in the area, the positive attitude of women towards white collar jobs and business, rapid wind of-urbanisation blowing across and increased rate of female education in Eket urban there was every likelihood of the completed family size falling slightly below those of previous generation's of mothers in the society.

The age specific fertility rates for the women have been shown in Table 3. There exists a high correlation between the information in Table 1 and in Table 3. The reported mean live births of 7.14 for women completing the childbearing cycle (i.e. women in the 45-49 years age group) has been found consistent with a total fertility rate of 7.27. The rates, as expected, were considerably lower for the older women who were approaching the end of their childbearing. These women were found in age groups 40-44 and 45-49. Their age specific rates were 194 and 70 respectively. The data presented in the Table 3 confirms that the most fertile period for women is the 20-34 years age bracket. Given the semi literate character of the population and the empirical observations made during the field interviews, the above information should be considered as reliable and valid. The computed total fertility rates as has been given in Table 3 were 7.26. This means that an average woman in Eket urban was supposed to have about seven live births by the "time she completes the childbearing cycle. It was considered relatively high for an urban population. However, given the small size of Eket and the low levels of knowledge and use of contraceptives in the area, the figure of 7.0 seems valid. The observed rate was

TABLE 3
CURRENT FERTILITY
AGE SPECIFIC FERTILITY RATES FOR WOMEN OF CHILD-BEARING AGE IN EKET
URBAN INTERVIEWED

Age Group	No. of Women	Age Specific Fertility Rates	
		Reported Current Births	Age Specific Fertility Rate (ASFR)
15-19	65	10.	154
20-24	92	28	304
25-29	132	33	250
30-34	96	27	281
35-39	110	22	200
40-44	62	12	194
45-49	57	4	70
Total	614	136	1453

$$\text{Total Fertility Rate} = \text{ASFR} \times 5 = 7.27$$

consistent with Ekanem's findings of 7.20 total fertility rate for some urban centres in the former Eastern Nigeria, and findings of 7.12 total fertility rate for Ikot Ekpene urban of Cross River State³.

These areas just like Eket, lie in one of the highest fertility zones of the Southern part of Nigeria, where there persists a very high value for children and seriously dominated by Christians, hence low usage of modern methods of contraception.

For the second measure of Current Fertility, the data has been presented in Table 4. All the women of childbearing age have been interviewed of which 45 per cent reported pregnant at the time of the survey. It should be noted that pregnancy rates were highly susceptible to under-reporting because pregnancies of less than or around three months' duration were commonly omitted by the women either because they were not very sure of the pregnancy or were unwilling to report it². Again just like the age specific fertility rates, the proportion of women pregnant was the highest for women in the peak years of child bearing, i.e., in the 20-24, 25-29, 30-34 and 35-39 age groups.

The two measures of current fertility which have been presented here can be compared to reflect a consistent age pattern. The two- relative distributions

TABLE 4
PERCENTAGE OF ALL WOMEN REPORTING CURRENT
PREGNANCY BY AGE

Current Age	Women Reporting Pregnancy	
	No. of Women	Percentage
15-19	20	7.2
20-24	56	20.1
25-29	66	23.7
30-34	70	25.1
35-39	63	22.6
40-44	4	1.4
45-49	0	0.0
Total	279	100.0

correspond very closely, thus suggesting that the age pattern of fertility derived from the births in the twelve months preceeding the survey was correct.

DISCUSSION OF FINDINGS

Discussion: The observations outlined in the above sections of the paper have been further discussed and summarised in terms of their implications for socioeconomic development in Nigeria in general and Eket in particular. The picture of the population situation in Eket urban in particular and Nigeria in general was that of a rapidly expanding population because of the phenomenon of high fertility. Further, it has been observed that a large increase in the size of the population was mainly attributed to the past and present levels of fertility and mortality in the country. All available evidence indicated that the level of reproduction has been persistently high for the last three or four decades and still remained so at present⁴. The United Nations Population Division indicated that the Nigerian Population was growing by more than three per cent per year, the population could reach 163 million persons by the year 2000 and 281 million persons by the year 2015 (UNFP, 1980).

At the current level of reproduction, the average number of children born to each woman by the end of her reproductive life is close to seven (according to World Bank, 1981, UNFP, 1980 and NPB, Lagos, 1983). Equally important was the fact that Nigerian Fertility surveys have not revealed any evidence that fertility has declined historically in Nigeria. Estimates indicate that the birth rate has been high over the past 30 years. The fertility rate of between six and seven children implies a crude birth rate of 46 per 1000 population⁵. From the facts presented above it becomes

clear that the population of Nigeria has been growing at a high rate and this implies to the rapidly expanding total population. The rapid growth of the population has been a serious strain on the economy as increasingly larger 'scarce' resources were being allocated to the provision of basic social services such as education, health facilities and housing, instead of investments on capital development¹.

Sustained high fertility levels observed in Nigeria, coupled with declining mortality rates has resulted in the country having a youthful population. Given the young age structure of the Nigerian population, the number of young women continually entering their reproductive years exceeds the number of older women moving out of that age span. This phenomenon has consequences for the future size of the country's population. Children who are potential parents of the future, are already so numerous, an irresistible momentum for growth has already been built up into the age structure of the population*. This confirms that Nigeria has a very young population. According to population projections in 1985, over 47 per cent of the population was under the age of 15. Consequently, Nigeria has a high child dependency ratio. For every 100 adults, there were about 94 children to be supported and educated, or close to one child for each adult⁵. Nigeria's relatively young population places high demand on education, housing, health care, food supply and employment at rapidly increasing rates⁸. Also, youthful population has a serious burden to progress. This is because a large part of the productivity of the adults was consumed so that little has been left for investment in improving agriculture, building modern infrastructure, generating jobs for employment and advancing economic and social development, and self-reliance. It should be pointed out here that the problems of inadequate accommodation and poor housing, congestion, unemployment, filthy and poor environmental sanitation in Nigerian towns and cities were in many ways consequences of the pressure of population on urban resources and facilities. At the family level, the greatest effect of high fertility was on the health of mothers and children. High fertility itself tends to be related to high rates of sickness and death among women and young children. Rapid population growth in Nigeria also affects the ability of the country to develop adequate and comprehensive health service.

In Nigeria where agricultural production has not kept pace with rapid population growth, further population would aggravate the dangers of insufficient domestic food supply and dependence on imported food items.

CONCLUSION

The paucity of fertility information in Nigeria has given rise to the proliferation of small scale fertility studies by scholars, organizations and institutions. Despite this effort, there is still insufficient information on the interrelationship between fertility and socio-economic variables. This notwithstanding a reasonable level of knowledge has been gained in the areas of fertility trend and pattern in Nigerian societies. The present study one of those studies that examined and presented the fertility picture of some of the Nigerian Communities. The data presented have shown a high fertility for Eket urban in particular and for Nigeria in general.

Completed fertility, as has been shown by the number of children everborn to women, who have reached the end of their reproductive lives was seven children at the time of the survey. The total fertility rate for the last twelve month's preceeding the study was 7.27 for the women. The average family size is relatively large and indicates little or no knowledge about the practice of contraception, rather large families were preferred by Nigerians for economic, social and political reasons supported by institutionalised beliefs and practices in the society.

The study sheds more light on the fertility situation in Nigeria, and exposes us to a rewarding experiences about fertility situation in Nigeria and the available evidence is indicative of the need for a population policy in Nigeria. The findings of this study will be useful to the government, social agencies and organizations as well as departments which were interested in population policy formulation, implementation and evaluation. And also to those interested in the socio-economic development of the society. Based on these findings, Nigeria should as a matter of urgency formulate an articulate population policy and programmes within the framework of integrated socio-economic planning, if the development process in the country was to be properly harnessed and in order to avoid those disastrous consequences associated with high fertility. For checking the astronomical growth rate and its inevitable consequences such as bleak socio-economic outlook, industrial stagnation, the vicious circle of unemployment and general depression in Eket urban in particular and Nigeria in general, population programmes which should be part of a broader development effort should be vigorously pursued. The following issues should form parts of the programmes:

Government should as a matter of urgency develop strong population policies. The government should make it compulsory for population education to be taught in our primary, secondary, and adult educational institutions. This education should emphasise the consequences of population changes and the need for family planning. Although family planning was voluntary, it should be based on full knowledge, which the mass media was supposed to provide. The mass media should spread information and also the sense of **Tightness** about the practice of family planning. In order to make the impact of birth control felt among the people of Eket (in particular and Nigeria in general) whose fertility rate has been found to be very high, the government should make bold moves to institutionalize maternal health care in rural as well as urban areas as a means of offering family planning education and services. Those services should be made accessible and available and at affordable prices.

The government should establish as a matter of urgency a socio-political system that will create opportunities and structures for the totality of the people and ensure the abolition of poverty and ignorance which were the main responsible factors to stimulate a high birth rate. This political system should be that which commits itself to improving the life style of the citizenry. Such a commitment will include the provision of schools in all communities (urban and rural), employment for both able and disabled persons, redistribution of *income*, wealth and social benefits, social security, pension schemes, urban and rural industries. This would ensure that

the population problem is not segmented from the overall problem of development planning. It may be recalled that this is consistent with the view held by economists that for success in population issues, the population and development problems must be handled simultaneously.

Lkkjk'k

नवम्बर-दिसम्बर 1990 के दौरान एकेत शहर में प्रजनन-क्षमता सर्वेक्षण किया गया। सर्वेक्षण के दौरान वैज्ञानिक नियमावली अनुसार तैयार और प्रतिनिधित्व करने वाले 614 प्रत्यर्थियों के एक आकार सैम्पल से सूचना एकत्र की गई। वे सभी संतानोत्पत्ति-आयु-समूह वाली स्त्रियां थी। प्रतिशत और गणित के नियमों के आधार पर संकलित आंकड़ों का विश्लेषण किया गया।

एकेत शहर में वर्तमान प्रजनन-क्षमता स्तर कव विषय में विश्वसनीय सूचना प्राप्त करना सर्वेक्षण का प्रमुख उद्देश्य था। प्रतिवादियों की जनांकिकी विशेषताओं का सार प्रस्तुत किया गया। अध्ययन से संबंधित आवश्यक पष्ठभूमि (पूरक) सूचना एवं सामग्री उपलब्ध कराने के लिए ऐसा किया गया। संकलित आंकड़ों से एकेत शहर में उच्च प्रजनन-क्षमता दर का आभाष होता है। प्रजनन-क्षमता संबंधित आंकड़ों के अनुसार पहले उत्पन्न हुए बच्चों की औसत संख्या 5.61 तक सभी स्त्रियों का प्रजनन-क्षमता काल लगभग पूरा हो चुका था और जैसा कि पहले उत्पन्न बच्चों की संख्या से प्रतीत होता है कि संतानोत्पत्ति आयु काल पूरा हो चुकने तक सर्वेक्षण के समय यह संख्या 7.14 थी। अध्ययन से पूर्व बारह महीने के दौरान कुल प्रजनन-क्षमता 7.27 थी। अध्ययन के समय लगभग 45 प्रतिशत स्त्रियों ने स्वयं को गर्भवती बताया। सन्तानोत्पत्ति आयु सीमा के चरम वर्षों अर्थात् 20-24, 25-29, 30-34 और 35-39 वर्षीय आयु-समूह वाली गर्भवती स्त्रियों का उच्च अनुपात था। निष्कर्षों के झंझटों की जॉच-पड़ताल भी की गई और पेश किए गए सुझाव यदि लागू किए गए तो खास तौर पर एकेत शहर में सामान्यतयः नाइजीरिया में प्रजनन-क्षमता स्तर में गिरावट लाने में सहायक और लाभदायक सिद्ध होंगे।

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A COMPARATIVE ANALYSIS OF STATUS OF WOMEN AMONGST THE SEVEN STATES OF NORTH-EASTERN INDIA

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ABSTRACT

Since the status of women plays an important role in control of population growth, an attempt has been made to assess the status enjoyed by the women of the seven North-Eastern States of India and also to examine the extent to which the status of women of these States are related to the awareness and practice of family planning methods. The findings revealed that nearly all the women of the tribal dominated societies enjoy much higher status than that of the women of the non-tribal dominated societies of this area. Further, it was also found that amongst the tribal dominated States the women of matrilineal Meghalaya are enjoying much higher status as they have very high rates in most of the status affecting variables. But it has also been observed that in most of these seven States the awareness and practice of family planning methods are still in a very low level in comparison to that of all India level.

India, the second most populous country in the world after the main land China, is divided into twenty four States of varying sizes and seven union territories. Assam, Meghalaya, Nagaland, Manipur, Tripura, Arunachal Pradesh and Mizoram are the seven States which constituted the North-Eastern part of India. The population composition of these seven North Eastern States has been shown in Table 1,

It is clear from the Table 1 that amongst the seven States of NE India four States viz. Meghalaya, Nagaland, Arunachal Pradesh and Mizoram has a very high percentage of scheduled tribe population. Therefore these four States can be said to be tribal dominated whereas the other three States viz. Assam, Manipur and Tripura are non-tribal dominated.

The rapid population growth poses a serious threat to the development efforts of the less developed countries. On the other hand by controlling the fertility levels of these countries the status of women plays an important role in the control of population growth.

The subject of status of women is multi-dimensional and dynamic, which is very vast and complex. Since, the status of women is a multifaceted concept, several different variables and their interactions need to be considered in such measurements^{1, 2}. Among the indicators of female status two broad categories i.e. quantitative and qualitative are basic³.

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TABLE 1
DIVISION OF POPULATION ACCORDING TO SCHEDULED CASTE AND SCHEDULED
TRIBE

States	1971		1981	
	Percentage of SC to total population	Percentage of ST to total population	Percentage of SC to total population	Percentage of ST to total population
India	14.82	6.82	15.75	7.76
Assam	6.24	10.99	-	-
Manipur	1.53	31.18	1.25	27.30
Meghalaya	0.38	80.48	0.41	80.58
Nagaland		88.61	-	83.99
Tripura	12.39	28.95	15.12	28.44
Arunachal Pradesh.	0.07	79.02	0.46	69.82
Mizoram	.0.02	94.26	0.03	93.55

Source: Census of India 19B1, , India. Part II B (III) Primary Census Abstract Scheduled
Series 1 Census of India 1961, Tribes; Part II 8 (II) Primary Census Abstract Scheduled
Series I. Castes.

Several- studies have noted the regional variation in status of women in India^{4, 5, 6, 7}. But the focus on studying female status as a topic in its own right is relatively new in NE. India. It should be mentioned here that women of NE Indian societies can not be placed under one category. The position of women in tribal dominated areas is certainly not the same as that of the non-tribal dominated areas. Again amongst the hill tribals it-differs noticeably from society to society. As an example, it can be pointed out that the position of women in Khasi matrilineal society is remarkably different from the rest of the societies. The present study focuses on the quantitative status of women in the seven States of NE India, using data on education, employment, marriage, fertility and family planning obtained mainly from the last three census publications *viz.* 1961, 1971 and 1981. In the light of the available data we will try to portray a comparative picture of the status possessed by the women of these seven States and also would try to examine the extent to which the women of these States are related to the awareness and practice of family planning methods. It has to be mentioned here that a few of the States of this region namely Meghalaya and Mizoram, both have been carved out of Assam in 1972. Therefore, for obvious reasons, some of the data were not available for these two newly created States.

STATUS AFFECTING VARIABLES

Marital status is often used as an index of women's status. The proportion of female married in the age group 15-19 and the singulate mean age at marriage for female have been used to have an idea about the marriage status of women.

Remunerative employment was one of the important status deciding factors. Female work participation rate, female workers as a percentage of male workers,

percentage of female in non-agricultural activities have been used to indicate the employment status of women.

Education also played a crucial role as a determinant of women's status as it promotes knowledge and self-confidence. As a measure of educational status, female literate per hundred male literates, enrolment of girls in primary and matriculation levels have been used as they were important indicators of women's status.

The linkage of female status with the dynamics of reproduction was pivotal in context of family as well as the society.. As a measure of fertility, the total fertility rate (TFR) and crude birth rate (CBR) have been used for the purpose of the study.

Family limitation which helped in alleviating the heavy burden of natural fertility on women also reflected the status enjoyed by them. Percentage of couples protected by sterilisation and percentage of couples protected by other family planning methods have been used to show the extent of the female awareness and practice of family limitations.

ANALYSIS AND DISCUSSION

It has been observed that during the last three census decades the proportion of married female in the age group 15-19 has been decreasing considerably in all - the seven States of North-Eastern India as shown in Table 2. In all these States, this proportion is quite low in comparison to the all India proportion 43.44 in 1981. According to 1981 census, out of the six States (excluding Assam) this proportion was the highest in Arunachal Pradesh (29.53). In both Arunachal Pradesh and Nagaland it was observed that the proportion of urban female in the age group 15-19 was much higher than that of the rural, while it is clear from Table 2 that this proportion has always been higher amongst the rural women than that of the urban women at the national level.

Marriage is universal, though the singulate mean age at marriage has given up steadily in all these States during the last three census decades. The total singulate mean-age at marriage were higher in all the States than the all India level in 1961 and 1971. But according to 1981 census in all these States except Nagaland it has become lower than the national level. Further, it has been observed that throughout the last three decades the urban singulate mean-age at marriage has always been higher than that of the rural in all the States excluding Nagaland and Mizoram.

The difference in age at marriage to some extent reflects the differences in social and cultural background of different sections of the population. There has been a considerable difference in age at marriage between the tribal and non-tribal dominated areas of this region as given in Table 2. Further, it has been revealed from Table 2 that throughout the last three decades the four tribal dominated States viz. Meghalaya, Arunachal Pradesh, Nagaland and Mizoram have higher singulate mean-age at marriage than non-tribal dominated Assam and Tripura. So, it may be pointed out that early marriage was not prevalent amongst the tribal societies of North-Eastern India.

TABLE 2
INDICATORS OF MARRIAGE STATUS OF WOMEN BY THE SEVEN NORTH-
EASTERN STATES OF
INDIA

State/UT		Proportion of female married in the age group 15-19			Singulate mean age at marriage		
		1961	1971	1981	1961	1971	1981
India	T	69.57	55.41	43.44	16.83	17.76	23.68
	R	73.655	61.03	48.80	16.46	17.29	18.11
	U	51.60	35.91	28.08	18.19	17.33	20.22
Assam	T	53.47	42.86	-	18.36	18.71	-
	R	54.08	44.20	-	18.59	18.58	-
	U	45.92	30.40	-	19.16	20.02	-
Manipur	T	29.66	18.31	11.78	19.85	21.75	23.31
	R	30.08	18.52	12.09	19.38	21.74	23.35
	U	24.97	17.07	10.91	19.74	21.67	23.12
Tripura	T	68.04	45.69	26.44	16.76	18.53	20.32
	R	70.97	49.32	27.9B	16.54	18.27	19.96
	U	42.13	24.38	15.97	18.81	21.02	22.71
Arunachal Pradesh	T	62.62	35.77	29.53	16.93	19.58	20.20
	R	62.62	35.41	28.87	-	19.63	20.61
	U		45.07	38.18	-	16.31	18.86
Nagaland,	T	14.98	10.08	9.67	22.30	23.75	24.57
	R	14.16	8.16	8.36	22.38	24.18	25.22
	U	30.74	34.13	17.23	20.56	19.44	21.36
Meghalaya	T	-	29.24	21.47	-	20.07	20.93
	R	-	31.69	23.08	-	19.76	20.66
	U	-	17.57	15.17	-	23.63	22.39
Mizoram	T	-	-	10.81	-	-	22.17
	R	-	-	10.87	-	-	22.69
	U	-	-	10.65	-	-	22.40

T c Total; R = Rural; U = Urban

Source: Census of India 1961,1971,1981; Social and Cultural
Tables.

An important variable that is closely related to the status of women was their work participation rate. The work participation rate of women in India at present is very poor. Women's work participation rate fluctuated considerably from relative high in 1961 to the lowest in 1971. The work participation rate of Indian rural female has always been higher than that of the urban female. In all the three decades which have been considered for the present study, this rate was much higher in all the four tribal dominated States than the all India level. It was remarkable to note that out of the seven States this rate was the highest in Nagaland (42.45%) in 1981 and was also the highest amongst all the States of India.

When considered the Indian female workers as a percentage of male workers which has become slightly better in 1981 as compared to 1971. The State of Assam and Tripura were found to be below the national level of 25.33 per cent, whereas all the other five States were much above the all India level in 1981. Manipur has the highest percentage (73.09) while Tripura has the lowest (17.19) in 1981. It is clear from Table 3 that in all the seven States the percentage of rural female workers is much higher than that of the urban.

While considering the percentage of female in non-agricultural activities it was clear that Tripura, Arunachal Pradesh and Nagaland were below the all India percentage of 2.89, whereas Assam, Manipur, Meghalaya and Mizoram were found to be all above it. Again urban female has a higher percentage in this case than the rural female in all the seven States. In 1981, this percentage was the highest in Manipur (10.24) out of all these seven States.

If considered the female work participation rate and female workers as a percentage of male workers in tribal and non-tribal dominated areas separately, than it becomes clear from Table 3 that in all the four tribal dominated States have exceeded all India level where as non-tribal dominated Assam and Tripura were well below the national level. But in this case the position of Manipur has always been better than Assam and Tripura. Again, amongst the tribal dominated areas, the women of Meghalaya play an important role in socio-economic life of their society. Table 3 further indicates that the matrilineal tribal dominated Meghalaya has higher rates in all the three cases (*viz.* female work participation rate, female workers as a percentage of male workers and percentage of female in non-agricultural activities) than those of all India level.

Educationally women lag far behind men throughout India, though the growth of female literacy in Indian history has been encouraging. Female literates as a percentage of male literates in all India level have gone up steadily from 35.38 in 1961! To 49.44 in 1981. This consistent trend has been observed for both rural and urban areas. The percentage was quite low in Arunachal Pradesh. In other six States this percentage was higher than the India's total percentage 49.44 in 1981 as has been shown in Table 4. This percentage was the highest in Meghalaya in 1971, but Mizoram recorded the highest percentage of 78.33 in 1981. Amongst the rural women this rate has always been lower than that of the urban, where Nagaland was the only exception. In Nagaland the rural female literates as a percentage of male'

TABLE 3
INDICATORS OF EMPLOYMENT STATUS OF WOMEN BY THE SEVEN
NORTH-EASTERN STATES OF
INDIA

State/UT		Female work. participation rate			Female workers as a percentage of male workers			Percentage of female in non- agricultural activities		
		1961	1971	1981	1961	1971	1981	1961	1971	1981
India	T	27.96	11.87	13.99	46.07	21.01	2533	5.71	2.36	2.89
	R	31.42	13.10	15.99	51.99	23.25	28.94	5.12	1.69	204
	U	11.08	6.61	7.28	17.89	11.62-	13.19	8.58	5.18	5.73
Assam	T	30.91	5.45	-	50.07	10.00	-	9.94	359	-
	R	32.41	5.58 -	-	53.79	10.44	-	9.97	360	-
	U	9.87	3.97.	-	12.06	593	-	9.49	2.58'	-
Manipur	T	44.48	23.62	34.59	95.44	51.10	73.09	20.56	7.37	10.24
	R	44.86	24.95	38.85	95.31	52.69	79.09	18.70	6.35	8.77
	U	40.43	14.87	22.71	97.13	38.36	53.69	14.42	14.06	14.36
Tripura	T	20.93	4.63	8.95	35.77	922	17.19	5.45	1.57	2.65
	R	22.40	4.76	9.03	37.97	8.94	17.14	5.48	1.13	1.98
	U	6.46	5.43	8.25	10.30	12.14	17.69	5.17	5.29	8.08
Arunachal Pradesh	T	17.21	57.28	40.55	5.64	69.93	60.88	16.50	1.54	2.16
	R	-	52.33	42.24	-	73.43	65.05	-	1.43	1.81
	U	-	10.58	11.19	-	6.88	11.74	-	5.71	8.21
Nagaland	T	58.23	45.24	42.45	89.79	70.89	70.59	0.39	1.06	2.44
	R	60.33	47.64	47.50	94.17	83.14	82.07	0.28	0.71	1.61.
	U	9.87	9.11	10.52.	11.66	6.16	14.14	2.81	5.79	7.71
Meghalaya	T	-	34.57	33.29	-	61-20	59.77	-	3.78	6.19
	R	-	37.97	37.05	-	6759	6569	-	2.43	4.49
	U	-	13.36	15.61	-	23.47	29.61	-	12.24	14.19
Mizoram	T	-	-	32.33	-	-	58.99	-		3.73
	R	-	-	36.78	-	-	66.00	-		1.52
	U	-	-	18.45	-	-	35.53	-		10.61

Source: Census of India 1961 . 1971.1981: General Economic Tables

TABLE 4
INDICATORS OF EDUCATIONAL STATUS OF WOMEN BY THE SEVEN
NORTH-EASTERN STATES
OF INDIA

State/UT		Female literates as a percentage of male literates			Enrolment of Girts as a percentage of total enrolment in primary level			Enrolment of Girts as a percentage of total enrolment in matric and above		
		1961	1971	1981	1961	1971	1981	1961	1971	1981
India	T	35.38	44.08	49.44	26.43	3269	35.79	15.49	21.77	28.26
	R	28.32	38.99	41.91	20.37	2938	32.24	8.63	13.67	18.36
Assam	U	50.71	59.00	63.92	35.04	41.53	43.38	19.33	27.11	35.60
	T	37.53	46.48		25.23	33.13	-	13.12	17.68	-
	R	35.42	43.95		23.49	3257	-	7.12	13.62	-
Manipur	U	49.67	59.08	-	34.59	42.79	-	19.94	23.89	-
	T	35.85	41.59	52.93	20.89	2847	35.78	10.04	22.58	28.77
	R	34.68	37.25	49.38	19.06	26.49	35.11	5.19	17.68	24.35
Tripura	U	43.22	60.24	60.59	27.95	3999	40.09	19.64	29.39	34.45'
	T	32.06	49.71	58.56	25.42	35.88	38.19	10.57	22.69	29.69
	R	25.40	44.74	52.98	20.44	34.77	35.75	5.27	15.58	24.23
Arunachal	U	60.02	-71.07	50.27	37.78	4954	50.13	16.29	29.51	3756
	T	10.27	17.90	33.73	8.80	17.38	23.05	5.89	9.53	20.47
	R	-	16.75	32.07	-	1662	21.75		6.58	18.41
Pradesh	U	-	24.06	42.59	-	22.33	29.93		12.46	25.13
Nag a land	T	43.99	46.38	58.45	20.97	33.87	36.24	755	13.68	24.34
	R	44.36	49.85	59.03	18.39	35.01	3557	5.57	10.36	20.47
Meghalaya	U	42.12	35.31	56.57	26.10	25-79	37.19	11.72	18.62	30.45
	T	-	67.81	75.73	-	41.97	44.75	-	32.11	38.22
	R	-	65.54	75.00	-	40.51	43.64	-	26.40	34.71
	U	-	72.78	77.79	-	52.53	48.04	-	33.99	39.70
Mizoram	T	-	-	78.33	-	-	39.20	-	-	29.74
	R	-	-	77.08	-	-	37.63	-	-	21.96
	U	-	-	81.42	-	-	42.27	-	-	35.69

Source: Census of India 1961,1971,1981; Social and Cultural Tables

literate exceeded that of urban in all the three decades. In primary as well as matriculation level of education, in last three decades, proportionately less girls were enrolled than boys in all the seven States.

While considering the female literates as a percentage of male literates, it has been clear from Table 4 that Mizoram tops the table and Meghalaya comes next in 1981. It has also been clear that the enrolment ratio of girls to boys both in rural and urban areas were always highest in Meghalaya throughout all the three census decades.

Two important indicators of fertility, which have been considered here *viz.* Total Fertility Rate (TFR) and Crude Birth Rate (CBR); shown a declining trend in all the seven States of North-Eastern India. Although the data showed a declining trend in fertility, it is still higher than the national level in most of the seven States. During 1971-76 the TFR of only Assam and Nagaland were lower than the national level. During 1976-81 Assam, Nagaland and also Tripura have lower TFR than that of all India level. But all other States always have a higher TFR than the national level in all the three decades.

In case of Crude Birth Rate (CBR) all the six States except Assam have a very high CBR during 1971-76. But during 1976-81 the CBR of Nagaland and Tripura has declined significantly and as a result all these three States including Assam have lower CBR than the national level of 33.7 in 1976-81.

Tribal and non-tribal dominated States if considered separately, then it becomes clear from Table 5 that the fertility rates of non-tribal dominated Assam and Tripura have gone down tremendously and now found to be well below the national level. But all the tribal dominated States except Nagaland have considerably higher fertility rate than that of the national level.

The family planning behaviour of women by way of couples protection rate has been analysed in Table 5. During 1977 the percentage of couples protected by sterilisation was the highest in Assam, whereas in Tripura and Arunachal Pradesh it was almost negligible. During the last decade Mizoram has a record change in this case. In 1988 this percentage was the highest in Mizoram (26.5%). It is clear from Table 5 that this percentage was under low level in most of the North-Eastern States of India.

There has been an increasing trend in the percentage of couples protected by all methods in all the seven States. But still it has been marked in a very low level in most of the States except Assam and Mizoram in comparison to the national level of 39.8 in 1988.

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जनसंख्या-नियन्त्रण में स्त्रियों के स्तर की भूमिका के महत्व को ध्यान में रखते हुए उत्तर-पूर्वी भारत के सात राज्यों में स्त्रियों के स्तर तथा परिवार नियोजन हेतु अपनाए जाने वाले साधनों के प्रयोग और उनके प्रति उनमें व्याप्त आवश्यक

TABLE 5
INDICATORS OF FERTILITY AND FAMILY PLANNING BY THE SEVEN NORTH-EASTERN STATES OF INDIA

State/UT		Fertility measures				Family planning indicators			
		TFR		CBR		Percentage of couples protected of couples protected by sterilisation		Percentage of couples protected by all methods	
		1971-76	1976-81	1971-76	1976-81	1977	1988	1977	1988
Mia	T	5.2	45	35.4	33.7	21.1.	28.9	23.9	39.8
	R	5.4	4.8	38.9	35.1				
	U	4.3	3.3	29.1	27.7				
Assam	T	5.2	4.1	33.9	319	212	245	23.2	262
	R	5.3	42	34.8	32.7				
	U	3.7	2.6	28.4	235				
Manipur	T	5.32	4.69	41.2	36.1	85	18.1	10.5	23.1
	R	5.39	4.69	41.9	389				
	U	5.00	4.63	38.3	35.4				
Tripura	T	5.61	428	41.8	315	11.3	13.9	13.3	15.7
	R	5.90	451	43.1	325.				
	U	3.65	2.74	31.8	245				
Arunachal Pradesh	T	5.70	5.62	40.3	39.7	05	3.7	0.7	7.2
	R	5.71	5.63	40.2	397				
	U	5.54	SAO	40.8	398				
Nagabnd	T	5.20	4.45	38.4	32.7	0.6	2.7	0.8	3.8
	R	5.07	4.32	38.1	325				
	U	5.98	5.18	43.6	375				
Meghalaya	T	5.73	5.46	43.9	418	7.3	3.6	10.1	5.7
	R	6.01	5.77	45.4	435				
	U	4.55	4.17	37.2	34.0				
Mizoram	T	5.59	5.46	41.9	409	3.9	26.5	62	26.9
	R	5.79	5.69	43.0	42.1				
	U	4.85	4.79	37.4	379				

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जागरूकता का जायजा लेने के लिए एक प्रयास किया गया है। अध्ययन से प्राप्त निष्कर्षों से पता चलता है कि इस क्षेत्र में जाति-प्रभाव से मुक्त समाज की अपेक्षा जाति-प्रभाव वाले समाज की करीब-करीब सभी स्त्रियों का स्तर कहीं ज्यादा ही ऊंचा पाया गया। इसके अतिरिक्त यह भी देखने में आया है कि स्त्रियों के स्तर को प्रभावित करने वाली उच्च-स्तरीय अस्थिरताओं के कारण जाति-प्रभाव वाले परम्परावादी मेघालय राज्य में परिवार नियोजन के उपायों की स्वीकृति एवं प्रचलन के प्रति जागरूकता का स्तर अभी भी अखिल भारतीय स्तर की अपेक्षा अति निम्न है।

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MOTOR FITNESS TEST ON RURAL AND URBAN INDIAN SPORTS WOMEN

N.B. Shukla*, A.K. De, S.S. Sharma*** and Sudha Bhushan******

ABSTRACT

In the present study 120 sportswomen (60 urban and 60 rural) were included. They hailed from the States of Uttar Pradesh and Punjab. They participated in games like hockey, handball, cricket, kho-kho, athletics and volleyball. Urban, boys participated in mininational, State and national games, while rural boys participated inter-collegiate rural tournament, Statesand national games. Age group was varied between 13 to 22 years. For comparison, they were divided in three groups A (13 to 16 years), B (17-19 years) and C (above 19 years). Height and weight recorded, A A H P E R test were employed which consisted of the following: Soft Ball Throw (SBT), Situp (SU), Pushup (PU), Shuttle Run (SR), 50 yards dash (50 Y), Standing Board Jump (SBJ), and 600 yards dash (600 Y).

The result revealed that in SBT the sportsmen had very poor result indicating very low explosive capacity of the upper limb muscle. Further, the rural sportswomen were poor in shuttle run indicating minimum agility in them. The rural girls of A and B groups were observed to possess poor anaerobic muscle power as had been revealed by 50 yards dash run. The overall performance of the urban sportswomen were higher than the rural counterpart. On further analysis it has been observed that C group of urban sportswomen were comparatively superior in 50 Y, SBJ, SR, SU, than those of lower age groups. Further, in Uttar Pradesh both rural and urban sportswomen were very efficient. The overall superiority of urban sportswomen than their rural counterpart might be attributed to better coaching and other facilities.

The basic element of physical fitness is muscular strength, muscular endurance and circulatory endurance. The aspect of motor fitness mainly includes endurance, powerstrength, agility, flexibility and balance. The person having the motor fitness can efficiently do the running, jumping, dodging, .climbing, falling, carrying loads, lifting weight and can continue the sustained effort in a_ variety of activities. There are various types of tests to assess the motor fitness',2. However,

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the American Association of Health Physical Education and Recreation (AAHPER) launched youth physical fitness project 1967 and surveyed 16,500 boys and girls from V to XII grade to assess the general fitness level in USA^{3,12}. The battery of test became very popular all over the world as It required minimum equipment, easy to conduct, less time consuming and well informative. However, such study of fitness assessment on Indian school children is very scanty^{3,4,5,V,a,V°}. However, motor fitness test of the school children was available but test exclusively conducted on Indian sportswomen were not available". The battery of motor fitness test, might be utilized to assess the effect of various trainings on the sportsmen and sportswomen. These could also be used for screening and selecting the potential sports men and women. The present investigation was undertaken on the sportswomen to document the level of motor fitness as well as to compare the level of motor fitness between the rural and urban sportswomen.

MATERIALS AND METHOD

A total of 115 (60 urban and 55 rural) sportswomen were included. They hail from the States of Uttar. Pradesh and Punjab India. They participated in games like hockey, handball, cricket, kho-kho, atheletics and volleyball. Urban girls participated in mininational, State and national, games, while rural girls participated in intercollegiate, rural tournament, States and national games. Age group was varying between 13 to 22 years. For comparison, they were divided into three groups: A (13 to 16 years), B (17 to 19 years) and C (above 19 years). Height and weight were recorded. AAHPER tests were employed which consisted of the following: Soft Ball Throw (SBT), Situp (SU), Pushup (PU), Shuttle Run (SR), 50 Yards Dash (50 Y), Standing Broad Jump (SBJ), 600 Yards Dash (600 Y) as has been shown in Table 1.

RESULTS AND DISCUSSION

The results have been summarised in Tables 1 -4.

The overall growth assessment of the three groups of subjects have been considered and indicated in Table 1 by the height and weight. A gradual increase of height and weight was noted with, increase of age. While considering the data of SBT, an indicator of explosive power of the upper arm muscles, it was observed that ail the three groups of rural girls had shown higher values, however, only B group had shown statistically significant higher value ($P < 0.05$) [Table 2]. The explosive power of the upper arm muscles was higher in rural girls than the urban counterpart. However, the values when compared with age-matched American non-sportswomen, it was found to be 10 to 15th percentile (as has been shown in Table 4.), SU the indicator to assess the abdominal muscle power including back muscles; when comparing with the rural and urban sportswomen it was observed that group A subjects of both had similar values and for B and C groups the values of urban sportswomen were higher than those of rural counterpart ($P < 0.05$). However, B and C group values were for 40th and 60th percentile respectively when compared with American non-sportswomen (Table 4).

PU, portray the combined explosive power of upper arm, shoulder, chest and

TABLE 1
PHYSICAL CHARACTERISTICS OF RURAL AND URBAN SPORTS
WOMEN OF UTTAR PRADESH AND PUNJAB
AGED 13-22 YEARS

Groups	R		Age U		't'	R		Height U		't'	R		Weight U		't'
	M	S.D.	M	S.D.		M	S.D.	M	S.D.		M	S.D.	M	S.D.	
A	15.69	2.21	14.66	1.91	1.17	137.76	11.4	142.11	8.61	1.004	48.89	4.88	49.33	556	506
B	17.64	1.56	17.81	1.71	.438	143.64	9.19	145.15	14.5	.530	54.70	4.16	50.97	5.97	3.05
C	19.75	2.36	19.31	2.66	.379	157.25	9.71	151	14.16	1.08	57	6.0	54	3.11	1.45

A = 13-16 years, B = 17-19years, C = 19years * P < 0.05

R = Rural, U = Urban, M = Mean, S.D. = Standard Deviation

TABLE 2
PHYSICAL FITNESS SCORE OF INDIAN RURAL AND URBAN SPORTSWOMEN

Groups	R		SBT			R			SU		R		PU		T
	M	S.D.	M	S.D.	‘t’	M	S.D.	M	S.D.	‘t’	M	S.D.	M	S.D.	
A	71.23	8.07	64.4	6.97	0.815	24.92	2.88	24.16	2.61	0.655	20	5.15	34.3	6.12	1.99"
6	77.3	6.66	69.01	6.26	1.24	20.93	2.42	29.22	2.47	13.20"	27.5	4.97	32.7	4.14	486
C	74.37	7.11	69.37	9.33	1.28	25.62	1.88	32.27	3.26	0.436	22.3	6.33	34.3	6.22	4.21"

Groups	R		SR		
	M	S.D.	M	S.D.	‘t’
A	14.15	0.99	11.8	1.71	4.09"
3	14.20	0.85	12.8	1.77	4.04"
C	14.12	0.95	10.1	2.5	4.32"

Groups	R		50Y			R			SBJ			R		600 Y			‘t’
	M	S.D.	M	S.D.	‘t’	M	S.D.	M	S.D.	‘t’	M	S.D.	M	S.D.	‘t’		
A	9.21	2.02	8.63	1.24	0.797	5.06	1.26	5.16	1.13	0.097	3.11	0.50	2.45	0.87	2.29"		
B	9.07	0.86	8.40	1.07	2.90"	5.75	0.47	5.63	1.31	0.436	3.04	0.77	2.46	0.48	2.76"		
C	7.81	0.71	7.02	1.16	1.33	5.78	1.01	5.82	2	0.052	3.06	0.46	3.02	0.63	1.73		

R - Rural. U Urban
SBT = Soft Ball Throw. SUG Man, PU in Max, SR in Second, 50 Y in Sec. SBJ in feet and 600 Y in Sec.

upper back muscles. The data on this aspect, were found to be higher in all the three groups of urban sportswomen, ($P \leq 0.05$), which have been presented in Table 2. The values of rural and urban sportswomen were found to be varying between 90 to 98 percentile of American non-sportswomen. Such higher value in all the groups of sportswomen from rural and urban community indicated that the upper half of the body was quite powerful. It may, therefore, be presumed that the Indian sportswomen possess the potentiality to excel in such type sports in which explosive power of upper half of body is needed, viz. volleyball, cricket, basketball, hockey and throw events. However, the other factors like height, jumping capability, agility, speed, endurance muscle power etc. cannot be ignored.

SU, the test of agility and speed, when considered, it was observed that the urban sportswomen were superior to rural, showing statistically higher value ($P < 0.05$). However, the C group values had shown 90th percentile of American non-sportswomen as has been given in Table 4.

Fifty Y, a test frequently used to assess the anaerobic power of the muscles of an individual. The data of this on comparison, it was recorded that the urban sportswomen had shown better efficiency than the rural groups. The data of group B had shown statistical significance ($P < 0.05$), but only 20th percentile of American non-sportswomen. However, the performance of group C in urban group was 80th percentile (Table 4).

TABLE 3
SIGNIFICANT DIFFERENCE OF EACH CATEGORY OF RURAL AND URBAN SPORTSWOMEN

Groups	SBT RVsU	SU RVsU	PU RVsU	SR RVsU	SOY RVsU	SBJ RVsU	600 Y RVsU
A	NS	NS	S	S	NS	NS	S
B	S	S	S	s	S	S	S
C	NS	S	S	S	NS	NS	NS

TABLE 4
COMPARISON OF AMERICAN NON-SPORTS WOMEN WITH INDIAN RURAL AND URBAN SPORTS WOMEN

Groups'	SBT		SU		PU		SR		50Y		SBJ		600 Y	
	R	U	R	U	R	U	R	U	R	U	R	U	R	U
A	10th	10th	25th	25th	90th	97th	5th	30th	10th	20th	35th	38th	25th	25th
B	15th	10th	25th	40th	96th	97th	5th	25th	10th	20th	68th	60th	25th	40th
C	15th	10th	25th	50th	96th	96th	8th	90th	55th	82th	58th	58th	25th	60th

R = Rural, Vs = Versus, U - Urban

SBJ, A TEST OF EXPLOSIVE POWER OF THE LOWER LIMB MUSCLES. THE RURAL AND URBAN GROUPS HAD SHOWN SIMILAR PERFORMANCE AND B AS WELL AS C GROUP SUBJECT, HAD SHOWN 50 TO 68 PERCENTILE.

SIX HUNDRED Y, FOR ASSESSING THE AEROBIC POWER OF MUSCLES OF AN INDIVIDUAL, THE DATA WERE NOTED TO BE HIGHER IN URBAN SPORTSWOMEN. HOWEVER, ONLY A AND B GROUPS HAD SHOWN .STATISTICALLY SIGNIFICANT VALUES ($P < 0.05$), AND 20TH TO 45TH PERCENTILE, RESPECTIVELY.

THE DATA REVEALED THAT IN SBT THE SPORTSWOMEN HAD VERY POOR RESULT INDICATING VERY LOW EXPLOSIVE CAPACITY OF THE UPPER LIMB MUSCLES. FURTHER, THE RURAL SPORTSWOMEN WERE VERY POOR IN SHUTTLE RUN INDICATING MINIMUM AGILITY IN THEM. THE RURAL GIRLS OF A AND B GROUPS WERE ALSO OBSERVED TO POSSESS POOR ANAEROBIC MUSCLE POWER AS HAD BEEN REVEALED BY 50 YARDS DASH RUN. THE OVERALL PERFORMANCE OF THE URBAN SPORTSWOMEN WERE HIGHER THAN THE RURAL COUNTERPART. ON FURTHER ANALYSIS, IT HAS BEEN NOTED THAT C GROUP OF URBAN SPORTSWOMEN WERE COMPARATIVELY SUPERIOR IN 50 Y, SBJ, SR, SU, THAN THOSE OF LOWER AGE GROUPS. FURTHER, IN PU BOTH RURAL AND URBAN SPORTSWOMEN WERE VERY INEFFICIENT. THE OVERALL SUPERIORITY OF THE URBAN SPORTSWOMEN THAN THE RURAL COUNTERPART MIGHT BE ATTRIBUTED TO BETTER COACHING, AND OTHER FACILITIES. ACCORDING TO VARIOUS REPORTS THE PHYSICAL EFFICIENCY OF THE INDIAN RURAL SCHOOL CHILDREN HAVE SHOWN HIGHER VALUES THAN URBAN COUNTERPART^{13,4}-IT IS, THEREFORE, FELT THAT HAVING BETTER PHYSICAL EFFICIENCY THE RURAL SCHOOL CHILDREN MIGHT WELL BE IMPROVED IN STANDARD OF SPORTS AND GAMES IF THE FACILITIES OF COACHING, PLAY GROUND, NUTRITION, ETC. WERE MADE AVAILABLE TO THEM. THE OVERALL IMPROVEMENT OF BASIC FITNESS LEVEL BY TRAINING WILL NATURALLY BE HELPFUL TO ACHIEVE BETTER STANDARD IN SPORTS AND GAMES.

Lkkjk'k

यह अध्ययन 120 महिला खिलाड़ियों पर किया गया। इनमें 60 शहरी क्षेत्र की और 60 ग्रामीण क्षेत्र की थीं। इनका चुनाव पंजाब और उत्तर प्रदेश से हुआ। इन्होंने हाकी, हेंडबाल, क्रिकेट, खो-खो, एथेलेटिक्स और बाली-बाल जैसे खेलों में हिस्सा लिया था। शहरी खिलाड़ियों ने लघु-राष्ट्रीय, प्रादेशिक और राष्ट्रीय स्तर के खेलों में भाग लिया। जबकि ग्रामीण खिलाड़ी अंतर-विश्वविद्यालयीय, ग्रामीण प्रतिस्पर्धा, राज्य एवं राष्ट्रीय खेल खेले थे। इनकी आयु वर्गों में विभाजित किया गया था। ये आयु वर्ग हैं, क (13-16 वर्ष), ख (17-19 वर्ष), ग (19 से अधिक)। इनका वनज लिया गया था और इनकी ऊँचाई भी नापी गई थी। ए.ए.एच.पी.आर. परीक्षण अपनाया गया। इस परीक्षण में निम्नलिखित शामिल थे: सॉफ्ट बाल प्रक्षेपण, उट्टक-बैठक, दंड, शटल दौड़, 25 गज डैश दौड़, एक स्थान पर उछलना (स्टैंडिंग बोर्ड जम्प) और 600 गज डैश दौड़।

परिणाम में यह पाया गया कि साफ्ट बाल प्रक्षेपण का स्तर बहुत खराब था। इससे यह पता लगता है कि ऊपरी अंगों की मांसपेशियों की शक्ति बहुत कम थी और ग्रामीण महिला खिलाड़ियों का शटल दौड़ में प्रदर्शन बहुत खराब रहा। इससे उनकी निरन्तर फुर्ती का पता चलता है। क और ख वर्ग की ग्रामीण महिला खिलाड़ियों में अनेरोबिक मांसपेशियों की शक्ति बहुत कम थी। इसका प्रमाण 50 गज की डैश दौड़ में देखने को मिला। कुल मिलाकर शहरी खिलाड़ियों का प्रदर्शन ग्रामीण खिलाड़ियों की अपेक्षा बेहतर पाया गया। और विश्लेषण करने पर यह पाया गया कि ग वर्ग की महिला खिलाड़ी किस आयु वर्गों की खिलाड़ियों की तुलना में 50 गज की डैश दौड़ एक स्थान पर उछलने (स्टैंडिंग बोर्ड जम्प), शटल रन और उट्टक-बैठक खेलों में बेहतर थी। इसके अलावा, उत्तर प्रदेश में ग्रामीण और शहरी दोनों महिला खिलाड़ी काफी पक्ष थी। कुल मिलाकर, ग्रामीण महिला खिलाड़ियों की तुलना में शहरी महिला खिलाड़ियों के बेहतर प्रदर्शन का श्रेय अपेक्षाकृत अच्छे प्रशिक्षण एवं अन्य सुविधाओं को जाता है।

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