# ICDS—EVALUATION AND RESEARCH 1975 - 1988



Central Technical Committee Department of Women and Child Development Ministry of Human Resources Development Government of India, New Delhi

# ICDS Integrated Child Development Services

With the compliments of Chairman (CTC)

I C D S Secretariat Central Technical Committee Dept. of Gastroenterology All India Institute of Medical Sciences Ansari Nagar, New Delhi-110029 (India)

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# From Editor's Desk

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### From Editor's Desk

Several countries of the world have been expressing their deep concern for the problems related to the child survival and the child development. From time to time, a variety of programmes, under different names but with almost similar objectives, for reducing the mortality rate and improving the health, nutrition and psycho-social development of children, have been introduced by the governmental and non-governmental organizations of different countries as well as by the number of international agencies. The Government of India after Independence, has been committed to ensure optimal development for every child of the country. The following statement of the first Prime Minister of the Country, Late Pt. Jawaharlal Nehru aptly emphasises this point :

But somehow the fact that ultimately everything depends on the human factor, gets rather lost in our thinking of plans and schemes of National Development in terms of factories and machineries and general schemes. It is all very important and we must have them but ultimately, of course, it is human being that counts, and if human being counts, well, he counts much as a child than as a grown up.'

The development of India has been through Five-Year Plans and we will soon be starting the Eighth Five-Year Plan from April 1, 1990. From time to time, special programmes for one or more components of the child development have been started by the Indian Government. On October 2, 1975, the auspicious day of the Birth Day of the Father of the Nation, Mahatma Gandhi, after a critical appraisal of the experiences in the past, an Integrated Programme for Child Development was started as an experiment. This programme known as the Integrated Child Development Services (I.C.D.S.), has expanded with very fast speed during the past 14 years. With a humble beginning with 33 Projects, it increased to 1952 Projects by March, 1989. Another 500 Projects have been approved for the year 1989-90. An announcement has been made by the Prime Minister of India to cover the whole country by the ICDS in the Eight Five-Year Plan Period (1990-95).

The ICDS has several unique features and one of them is a built-in low-cost, efficient and realistic strategy of evaluation and research. It is realistic because it can be carried on with the resources available for evaluation and research from the budget of the programme without depending on the loans or grants from the international and bilateral agencies of the world. It is efficient, because it has utilized the trained and experienced Faculty members form the different Medical Colleges as Principal Investigators for operational research, instead of establishing a fresh man-power organisation for this activity. It is cost effective because the Principal Investigators and their teams have undertaken the evaluation and research as an honorary ongoing academic activity with absolutely minimum funds necessary for field visits and data collection. I can stress with all humility that the system of evaluation and research established in the ICDS does not have any parallel example anywhere in the world. It has been possible in India, because still the philosophy of 'Service before Self', is alive in this country. The present document is compilation of evaluation and research data in the ICDS for a period of slightly more than a decade. It reflects the success of the ICDS which is today the largest and the longest duration National Programme for children in the world. It also identifies the weaknesses which are being attended to by the planners and administrators to improve the success rate. It will be correct to state the despite the financial constraints, the Government of India has expanded the Programme with a fast speed, because the evaluation and research data have convinced the Planners the relevance of the ICDS to the human resource development in the country.

# ICDS RESEARCH AND EVALUATION 1975-1988

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This document is dedicated to all my colleagues who have been serving the women and children of India with concern, commitment and compassion for their welfare and development

### Editor

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Evaluation and research in ICDS has a unique contribution of several consultants (as listed elsewhere in this document). They have carried out the stupendous task of operational research in this important National Programme with the co-operation of young postgraduate students of their departments with full commitment and sincerity. An exemplary role of academics in this national programmes has been established by this group of dedicated personnels. I am extremely grateful to all of them for their valuable contribution. All these studies have been done at a very minimal cost. However, without adequate financial support it would not have been possible to undertake so many field investigations. The Department of Women & Child Development of the Union Ministry of Human Resource Development has been very liberal in providing the financial assistance and academic freedom for evaluation and research in ICDS. I am grateful to the officials of this Department for their generosity.

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Lastly, I express my sincere thanks to Shri N.C. Jain, for secretarial assistance.

B.N. Tandon

## I. BACKGROUND

The ICDS-Integrated Child Development Services Scheme in India was launched on October 2, 1975. Almost at its outset in 1975 it was decided that the academic community of the medical colleges of India would constitute its "external investigator" component for evaluation and research. In this endeavour as many as 29 senior faculty members from 27 medical colleges, located within a reasonable distance to 33 experimental ICDS projects, unanimously resolved at a meeting held at the All India Institute of Medical Sciences (AIIMS), New Delhi in November 1975, to act as its honorary consultants with twin roles of (i) evaluation and research; and (ii) orientation as well as training of the functionaries.

These consultants agreed to work under the overall guidance of the Central Technical Committee (CTC) of ICDS, located at the AIIMS. The group unanimously laid following guidelines to achieve various goals of ICDS: (a) the evaluation and research methodology should be developed and this should be updated from time-to-time through meetings of the consultants and the academic staff of the CTC; (b) the evaluation and research should involve minimum possible resources with active participation of the postgraduate students and faculty members belonging to the respective departments of the ICDS consultants; (c) the collation of data and its first stage tabulation should carefully be done by the research teams of the consultants; (d) the consistency checks and the final tabulation of data should, however, be undertaken by the Biostatistics Cell of the CTC: (e) the consultants may freely communicate the findings of their ICDS studies in appropriate journals; (f) the national data, as a matter of policy, would invariably be published by the CTC with due acknowledgement to the consultant's work or their inclusion as co-authors as the case may be; and (g) evaluation and research data generated by the consultants will be used mainly for three purposes, *viz.*, (i) to know the coverage and impact of ICDS services in health and nutrition sector; (ii) for planning the expansion of ICDS; and (iii) to disseminate globally the results of Indian experiments of ICDS.

The contribution by the consultants proved to be highly cost-effective. The number of consultants increased periodically, with the expansion of ICDS. In fact progressive increase was observed during 13 years' period in reference to the number of projects from initial ,33 to 1952 in 1988-89 (Figure-1). Figure-1a depicts the location of the consultants in different states of India between 1975 and 1988 (March).

#### Fig. 1: Progressive increase in ICDS projects.



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Appendix I lists the name of consultants, their academic status and institutional affiliation and the period of association with ICDS.

#### **Evaluation and Research Approaches:**

Following two approaches were adopted:

I. Multi-centre projects initiated by the CTC. This included

- (i) Annual surveys
- (ii) Infant and early childhood mortality studies

(iii) Special research investigations

II. Individual research projects by the consultants, usually as operational project for post-doctoral thesis work.

The annual survey and research studies by the consultants provided data on the coverage of the beneficiaries by the ICDS services such as supplementary nutrition, immunisation and primary health care and its impact on the health and nutritional status of the beneficiaries. However, the multi-centre special studies generated data related to the specific objectives of the studies.

# II. HEALTH AND NUTRITION COVERAGE OF MOTHERS AND CHILDREN AND IMPACT ON THE NUTRITIONAL STATUS OF CHILDREN

1. Methodology :

3.

- (a) Annual Surveys
- 2. Presentation of data.

Comments

- (b) Research by Doctoral Students (M.D. Theses)
- Presentation of data. Results and (a)
  - (a) Antenatal Services Coverage
  - (b) Post- natal Services Coverage
  - (c) Immunisation Coverage
  - (d) Nutritional Services Coverage
  - (e) Impact on Nutritional Status of Children

# 1. Methodology

#### (a) Annual Surveys

Annual surveys on health and nutrition parameters have been conducted through an external evaluation system by teams led by senior faculty members of the departments of community medicine and paediatrics of various medical colleges in the country.

The Central Bio-Statistics Cell at AIIMS with the advice of consultants and the CTC of ICDS on Health and Nutrition has been developing necessary details for annual surveys. Uniform sampling procedure and survey techniques have been adopted. The survey cards and dummy tabulation sets alongwith the detailed guidelines for data collection and tabulation analysis have been provided by the Central Bio-Statistics Cell. The design and mechanism of survey including sampling, methodology, formats, organisation of field work and the process of data analysis has been accordingly modified with the expansion of the programme. This evaluation process through annual surveys is reviewed by the consultants at brain storming sessions of Regional Meetings and Annual National Convention.

From 1976 to 1987 as many as 627 annual surveys (baseline and follow-up) have been carried out by the consultants. Its various components are briefly described as follows :

**Sampling Procedure :** Sampling has been done in two stages :

- (A) The first stage of the sampling selects the ICDS projects (blocks/ primary health centre/ a group of urban slums); and
- (B) The second stage of sampling indentifies the anganwadi. (The focal point for the delivery of ICDS package of services) from within the sampled ICDS projects. The total population of the selected anganwadis then has been subjected to the survey, by the field research teams of the consultants.

#### (A) First Stage Sampling :

The first stage sampling procedure has undergone following modifications since its inception to till date:

- (a) In the initial phase from 1976 till 1980, when number of ICDS projects were not too large (33-150 projects), it was decided to conduct surveys in as many projects as possible, so as to obtain baseline and the follow-up information on the impact of ICDS in majority of the projects.
- (b) During the following two years (i.e., 1980-81 and 1981-82) for the first stage sampling, the baseline surveys in the newly sanctioned projects were dropped, and the study was focussed on the projects which have been operational for different length of time.
- (c) During 1982 and 1983, the first stage sampling procedure was modified so as to include newly sanctioned projects for baseline study, 1975-76 projects for longitudinal study and follow-up study of projects which have been operational for few years. The total number of projects at the national level were considered as universe to draw the first stage sample.
- (d) During 1984 the principle of state level sampling for larger states and clubbing of smaller states was introduced. A few *World Food Programme* supported ICDS projects were selectively included in the sample.
- (e) Annual survey of 1985 once again included projects both for baseline and follow-up study. First stage sampling was guided by following criteria :

- Projects sanctioned during 1975-76, where five surveys were carried out up to 1984.
- (ii) Projects sanctioned during 1978-79 and 1979-80, where at least three surveys were conducted till 1984.
- (iii) Projects of 1980-81, 1981-82, and 1982-83, where at least one survey was taken up till 1984.

Only those projects from each of the above groups were considered for 1985 survey, where survey was not carried out during 1983 and 1984.

- (iv) Newly sanctioned projects for baseline study giving due consideration to location of the projects i.e., rural, tribal or urban.
- (f) During 1986, only baseline study for sample of projects sanctioned in 1985 was carried out.
- (g) The annual survey methodology was scrutinized by the CTC and consultants in 1987 after about a decade of experience and it was decided that the 1987 survey should primarily focus on essential and identifiable information in the projects which are in the category of either baseline or 3-5 years of operational period. It was also decided to drop a few more parameters to further simplify the format and added all those which were considered important to obtain essential information.
- (B) Second Stage Sampling :

The second stage of the sampling has also been modified from time-to-time.

In the first three annual surveys (1976-

1978) a stratified random sample of 10 anganwadis of each project were selected for field study as follows :---

- (a) A map of the block to scale, indicating the village boundaries, the PHC headquarters (Hqs.) and the ANM centres (of about 5000 population each) was prepared.
- (b) Following three geographic areas were marked out on the map :
  - (a) Areas within a radium of 5 kms from PHC Has.
  - (b) Areas between 5 and 10 kms from PHC Hqs.
  - (c) Areas beyond 10 kms from PHC Hqs.

Within each of the above area, list of

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ANM centres was prepared in alphabetical order (of nearly 5000 population each). Then using a random number table, two ANM centres each from (a) and (b) and one ANM unit from (c) were selected. Alternatively consultant could use the following procedure: To write out the serial number of the centres with (a), (b) and (c) on small chits, separately for each area and pick blind folded 2 chits from areas (a) and (b), and one from area (c). This provided a sample of five ANM centres. From each of the five selected ANM centres one anganwadi placed essentially at the ANM headquarters village and the other from rest of the anganwadis of each ANM centre, was selected by random method. Thus a sample of 10 AWs was obtained for each project.

The sampling method has been schemetically presented as follows.

Same Albert	Samping M	lethou for ICD3 Surveys:	and the second second
Area	Distance, in km	Selecting ANM Centre's	Select AWs
	from Block Hq.	(random method)	
			1st at Hqs
			2nd randomly
(a)	≤ 5	2 ANM Centres	3rd at Hqs
	and a state state state		4th randomly
		and the second sec	5th at Hqs
			6th randomly
(b)	6-10	2 ANM Centres	7th at Hqs 8th randomly
	and the states		9th at Hqs
(c)	> 10	1 ANM Centre	10th randomly

(c) The second stage sampling was modified in 1979-80 survey which is still being followed at present. Instead of 10, six AWs are selected for survey by following method. The consultants are provided following guidelines :—

The three geographic sectors (of approximately equal population) under supervision of the three medical officers of the PHC were demonstrated on the map of the Block (PHC area). Two serial lists of anganwadis by village name i.e., one for all anganwadis located in the sub-centre headguarter villages and other for all other anganwadis located outside the sub-centre headquarters villages was prepared for each of the three geographic areas. The AW at the PHC headquarters village was not included in this list. One anganwadi was selected at random from each of three lists (one for each geographic sector) of anganwadis located in the sub-centre headquarters villages. Then at random one anganwadi each from the three lists of anganwadis located outside the subcentre headquaerters villages was selected. Random picking was done by writing the serial numbers of the anganwadis in each list on separate chits of paper, shuffling them thoroughly and picking one chit blindfolded. Thus six anganwadis, three located in the sub-centre headquarter villages (one each in the three geographic sectors) and three located outside the sub-centre headquarters villages (again one each in the three geographic sectors) were finally available for survey in the project.

In respect of urban slum projects however, only one serial list was prepared for the three geographical sectors, and at random two *anganwadis* were selected from each sector.

As mentioned earlier, the total popu-

lation of the selected AWs had been subjected to annual surveys except in 1979-80 and 1980-81, when the survey was conducted only for preschool children.

#### Format and Schedule for Health Checkup and Interviews :

A comprehensive schedule for collection of background and followup information on a large number of parameters related to the beneficiaries of the programme and general population in the project area was prepared for 1976 to 1978 surveys. The format was adjusted to match with computerised data analysis system. Vital parameters used for survey schedules are grouped below:—

- (a) Identification information on households and target beneficiary groups to have a complete census of the population in selected AWs.
- (b) Demographic pattern including religion and castewise break-up and family size.
- (c) Socio-economic variables, literacy and occupational status.
- (d) Growth and development of preschool children and pregnancy and lactation details such as order of pregnancy and parity number *etc*.
- (e) Vital statistics
- (f) Nutritional status of preschool children and prevalence of major illnesses in child population.
- (g) Coverage of essential health and nutrition services as follows:—
  - (i) Immunisation : BCG, DPT, smallpox and tetanus toxoid.
  - (ii) Nutrition supplementation including therapeutic food, vitamin 'A',

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iron and folic acid.

(iii) Health check-up including antenatal and postnatal care, and severely malnourished and ill children's care.

Separate schedule was used for every household and individual beneficiary of ICDS.

During 1979 and 1980, the survey was confined to the sampled AWs. The parameters were essentially the same, as above but data on polio-immunisation was also gathered. Vital statistics was not recorded. Especially designed *punch-hole edged cards* instead of computer schedules were used to facilitate the manual compilation and analysis of data.

1981 and 1982 survey formats included households, pregnant and lactating women and preschool children data as had been done in first phase up to 1978. Separate survey cards and forms were designed for each group. Data on socio-economic conditions, occupation and literacy status and vital events were not scheduled.

Consultants recommended in 1982 that *punch-hole card* system was not much helpful at the time of data analysis which had been decentralised. The cards used for subsequent surveys were without punch-holes. Survey cards were suitably modified to include columns for occupational and literacy status, DT immunisation, goitre, major disabilities,family welfare, preschool and nutrition and health education. Appropriate alterations were also made in the organisation and process of data collection and data analysis.

Again in 1987, in the revised format the parameters such as religion, literacy status, vitamin A, iron and folic acid, clinical signs of malnutrition, current illness, services for current illness, supplementary nutrition, health check-up, non-formal preschool education (in the household and preschool children format), supplementary nutrition and nutrition and health education (in the lactating women format) have been dropped altogether. Whereas few additional parameters like socio-economic status, eligibility for ICDS services and utilization of services (household composition format) have been introduced.

All the parameters of pregnant women format except birth order and parity number have been dropped.

# Organisation of survey team and its schedule of work:

Each consultant constituted a team of 10-15 members of their respective department. The teams included a few female members also to facilitate the health checkups and interviews with pregnant and lactating women. Medical and paramedical staff of the project was excluded in the survey teams. The survey team members were oriented about the aims and objectives of ICDS and the various survey techniques employed. Consultants were advised to complete the survey within a maximum stretch of three months form October to December. Each team, on an average completed the survey within 15-20 days period, often in two phases of field visits. Consultants did not make use of AWW's data but were advised to have cross consistency checks consulting registers wherever the informant's statement appeared doubtful.

# Tabulation, analysis and presentation of data:

The tabulation and analysis of data from 1976-1978 were done at the Biostatistics Cell at AIIMS, through computerised system. The consultants had collected the data on pre-designed formats. Original formats were forwarded to Central Cell after cross consistency checks at the project level. A comprehensive analysis of the data was done to prepare study reports for each project.

With the valid expansion of ICDS projects from 1979 onwards, the consultants decided to take up the first stage analysis at the project level itself. At present, a *decentralised data analysis* system is operating where the first stage analysis by the team members of the consultants is being done at the consultants' headquarters and the final stage analysis is carried out at the Central Cell. This system is briefly described as follows:—

- (a) After completing the survey, the consultants have been advised to apply certain data consistency checks.
- (b) A set of dummy tables corresponding to each survey card is being provided by the Central Cell alongwith the guidelines for tabulation.
- (c) On an average a team of 10-15 members supported by local statistician takes nearly 10 days to complete the analysis.
- (d) The consultants forward the tabulated data to the Central Cell for scrutiny and the lapses/lacunae/ discrepancies so detected are immediately brought to the notice of respective consultants. The data screened through the above process is finally compiled at the Central Bio-Statistics Cell.
- (e) Consultants prepare reports of the annual surveys for the officials of the State government which enable them to take appropriate actions to improve the implementation of ICDS.
- (f) Central Bio-Statistics Cell of ICDS at

AIIMS prepares the projectwise data report for the whole country as discussed in the CTC and at the Annual Convention of ICDS. It is finally submitted to the nodal department for the ICDS of the Government of India, and other appropriate agencies.

The annual survey data have been classified into three major groups :---

- (i) Baseline or the control data for the year when a survey was carried out in an ICDS project which has been recently sanctioned and where the services have not yet initiated. It was classified as baseline data. In fact, even after the approval to establish an ICDS project, it generally takes about 18 to 24 months before it becomes fully operational with signs of impact on health and nutrition of mothers and children. The baseline survey for the year under reference becomes the control data at that particular period of the study.
- (ii) Survey of fully operational projects : The second type of projects included as samples in the survey work are those where ICDS has been operational at least for one year, in other words, generally such projects are of three years' duration. The coverage and the impact of ICDS in these projects which can also be described as experimental projects, have been compared with the control data as defined in para (i) above for the reference year.
- (iii) Longitudinal survey of the project started in 1975. (ICDS scheme was launched with 33 Central and 3 State projects). The baseline survey followed by the repeat surveys in these projects have been considered as longitudinal

surveys to assess the long-term effects of ICDS on the health and nutrition status of women and children.

#### Surveys allotted and completed:

Since 1976, each year after a detail discussion on the plan of survey, the consultants have been alloted to conduct the studies. The number of surveys alloted and finally completed each year till 1988 is shown in Fig. 2. The commitment of the consultants

# Fig. 2: Annual ICDS surveys allocated and completed by the consultants.



and their team members has been commendable as is reflected from the insignificant dropout which was often related to unmanageable local situation to complete the survey work.

# (b) Research by Doctoral Students

#### The M.D. Theses Work of Integrated Child Development Services:

The research studies by the students registered for their doctorate in Community

Medicine and Paediatrics have been a unique feature of this nationwide programme. M.D. students have to submit a research thesis as part of their doctorate programme. The CTC has not contributed funds for this activity. However, the consultants of ICDS themselves have alloted the subjects to their postgraduate students for their MD theses.

A total of 108 theses have been written on ICDS subjects at different medical colleges of the country till early 1989 (Fig. 3). These research studies, according to the rules

#### Fig. 3: Research in ICDS through M.D. thesis projects by the post-doctoral students of the medical colleges.



of Academic Institutions were planned and carried out by the doctoral students under supervision and guidance of the senior faculty members of the department. No financial assistance was provided from ICDS budget for these studies. Data of these research studies have been presented in the different sections of the results. Appendix-II lists the subjects, the year of study and designation of the principal guide.

# 2. Presentation of Data

Enormous data have been collected through 627 surveys, 108 research theses and more than 12 special research projects. It has been organized on rational and scientific basis, so as to provide clear message and sound conclusions. Following approach has been taken to organize the data :

1. Base-line data have been used as control data. Several base-line surveys have been done at different years during 1976-1988. These data have been used for three purposes as control data (a) 'coverage and impact' related to State Nutrition and Health Services Programmes, without ICDS inputs, at periodic intervals; (b) 'coverage and impact' associated with ICDS programme from the base-line of 1976 to the follow-up longitudinal study of 1985; and (c) 'coverage and impact' associated with the ICDS Programme by comparing the results of study in 3-5 years old ICDS project with the control data (baseline) of 1985.

2. Longitudinal study of the original

projects of 1976: The original projects of 1976 had 2-3 follow-up studies. The data of the last study in 1985 have been used for comparison with the base-line data of 1976 to assess the long-term effect on coverage and impact of ICDS programme.

3. Data of 3-5 years old ICDS Project: Several projects surveyed at different years were in the category where the ICDS has been analysed as a group. It has been compared with the base-line data, if the later was available for the corresponding period.

4. Comparative special research study in 3-5 years old operational ICDS project with the matched controls : These data have been separately analysed and its conclusions have been compared with the results of surveys and doctoral MD thesis research studies.

5. Data of special research projects have been presented separately except in chapters of coverage and impact and infant and early childhood mortality, where it has been presented along with the survey and post-doctoral thesis research studies.

# 3. Results and Comments

### (a) Antenatal Services

1. The evaluation and research studies on antenatal services show convincingly that the coverage of pregnant women has significantly improved in operational ICDS projects which are of 3 years or longer duration. Since the coverage remains on an average about 50 per cent, more team efforts of ICDS and Health Services staff were called for to cover almost all the pregnant women. Rural group with a comparatively lower coverage than the urban needs more attention.

2. Comparative study of ICDS and matched control non-ICDS pregnant women is quite revealing. Though the sample size is small, conclusions are almost similar as that of like the other ICDS studies, annual surveys and doctoral student research investigations.

(a) Coverage of pregnant women by antenatal services is almost double in ICDS group (71.9%) as compared to control group (40.3%). (b) The antenatal services coverage as revealed by this study in control group is significantly lower from those as observed in operational ICDS projects by annual surveys and doctoral thesis research.

3. The home delivery continues uniformly as the favoured practice in both ICDS as well as non-ICDS groups. However, significantly high proportion of ICDS projects pregnant women utilise trained paramedical personnel for home delivery (76.3 %) as comapred to non-ICDS project group (49.4 %). It is obvious that ICDS is stimulating the utilisation of trained parmedical personnel for intranatal services for pregnant women. This trend needs to be provided a momentum so that almost all the pregnant women are delivered by the trained personnel at the village level itself, even at their own houses.

The consultants of ICDS evaluated the antenatal and intranatal coverage through following methods :

(i) Annual surveys of operational projects.

(ii) Research investigations by the postgraduate students (M.D. theses work).

(iii) Special multi-centre research studies.

The results of these three methods are presented in the following three sections and the details of the data are provided in Tables 1 to 77 and Appendices III and.IV.

#### A. Results of the Annual Surveys:

The antenatal services were evaluated through annual surveys and data were compiled in projects of more than 3 years old duration. As many as 50.8 per cent of the pregnant women received antenatal checkup and 40.9 per cent had received both the doses of T T. The coverage was comparatively better in urban projects as compared to the rural projects.

The nutritional supplements to pregnant women during antenatal care is highlighted in rural,tribal and urban projects in Fig. 4. The coverage of supplementary nutrition

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### Fig. 4: Antenatal services in 3 years old ICDS projects

and the iron and folic acid was 41.2 and 42.9 per cent respectively. The urban pregnant women received the services in higher proportion as compared to the rural group (Fig. 4).

The delivery at home and by trained personnel was investigated in 44 projects. A total of 76.3 per cent of the women had delivery at their own houses. However, it was significant to note that nearly half *i.e.*, 47.9 per cent deliveries were done by trained personnel, either by a birth attendant or a multi-purpose female worker (ANM).

# **B.** Study of antenatal services in more than 3 years old projects as undertaken by M.D. students :

The study was carried out in 10 projects, which comprised 7 rural and 3 urban. The coverage of antenatal services was 54.4 per cent and there was no appreciable difference between the rural and urban groups. The T T immunisation coverage was 57.5 per cent of the rural but only 46.5 per cent of the urban pregnant women. The home delivery was performed in 95.9 per cent of the rural and 62.3 per cent of urban women. The delivery by the trained person was noted in 63.5 per cent of urban and 57.8 per cent of the rural women. There is satisfactory delivery of antenatal services in the ICDS projects (Fig. 5).

#### Fig. 5: Antenatal and intranatal services in more than 5 years old rural and urban ICDS projects (research data)



#### C. Comparative Study of Antenatal Services to Pregnant Women in ICDS & Non-ICDS Population

Antenatal services which included antenatal check up, tetanus immunisation, the place of delivery and the paramedical services for delivery were compared for the sample of 1114 pregnant women from ICDS projects (experimental group) of more than **3** years duration with their matched controls of 1031 women drawn from non-ICDS community development blocks (control group). Antenatal check up was done in 71.9 per cent of the pregnant women in experimental group as compared to 40.3 per cent of the control group. Further, coverage of antenatal check up was significantly more in rural population of, both the groups. The tetanus immunisation was received by 70.8 per cent in the experimental group as against 44.0 per cent in the control group. In this case also, the coverage was better for the rural women. The delivery at home was recorded almost equally in experimental (95.4 %) as well as the control group (93.8%). The hospital delivery was recorded in just 4.6 and 6.2 per cent respectively, in two groups. The delivery was conducted by trained paramedical functionaries in 76.3 per cent of the pregnant women in the experimental group as compared to 49.4 per cent in the control group. The trained paramedical personnel conducted the delivery more frequently amongst the rural pregnant women as compared to the urban group (Fig. 6).





(APPN-III-TAB : 9 & 10)

### (b) Postnatal Services

Data on postnatal services to the lactating women show that all services in ICDS group have better coverage than the control and the baseline data. However, it is evident that the overall success rate remains less than 50 per cent in rural and 30 to 40 per cent in tribal women. These results, though satisfactory, call for augmentation of ICDS and health staff activity to achieve much more success in future. Postnatal services coverage will definitely have a positive impact on population control programme.

The coverage of lactating mothers by the postnatal services was evaluated through the annual surveys. The postnatal services included health check-up, nutrition and health education, family welfare advice and supplementary nutrition. Data from 44 projects of more than three year duration with a sample size of 3100 lactating mothers have been compared with the baseline data of the corresponding year in 28 projects which provided a sample size of 1938 mothers. Except for health check-up, all other parameters showed a significant improvement of coverage in

Fig. 7: Postnatal services in more than 3 years old ICDS projects and in non ICDS control lactating women (annual survey data).



#### (APPN-III-TAB : 11)

ICDS operational group as compared to the baseline. Coverage for nutrition and health education and family welfare advice was 44.6 and 43.6 per cent, respectively in ICDS operational group as compared to 27.6 and 30.0 per cent respectively in control population. Distribution of supplementary nutrition to eligible lactating women in ICDS operational project was 29.4 per cent compared to 15.4 per cent in the non-ICDS (or control) group (Fig. 7).

The health check-up, nutrition and health education and family welfare services are better in the urban projects followed by rural and the tribal ICDS project of more than three years duration. Nutritional services coverage is almost identical in the three groups (Fig. 8).

A nine year follow-up study for coverage by the postnatal services in the initial ICDS projects started in 1976 was carried out in 13 ICDS projects and data were compared with the baseline study in 27 projects. All the services to lactating mothers observed a significant improvement in the coverage. The health check-up and supplementary nutrition coverage increased to 53.2 and 35.6 per cent from the baseline of 10.8 and 14.2 per cent respectively. The family welfare, nutrition and health education coverage were merely 0.3 and 0.5 per cent at the beginning

#### Fig. 8: Comparison of perinatal services in urban, rural and tribal ICDS projects (annual survey data)

of ICDS and both increased steeply to 55.9 and 56.4 per cent in the follow-up study (Fig. 9).

#### Fig. 9: Postnatal services follow-up study in 1985 compared with baseline data of 1976 ICDS projects (annual surveys data)



(APPN-III-TAB : 12)

#### (APPN-III-TAB : 13)





## (C) Immunisation coverage

Evaluation through different approaches estimates the significant contribution of ICDS to increase the immunisation coverage for BCG, DPT, polio and tetanus in all three types of population *viz.*, rural, tribal and urban. The immunisation by 3 vaccines for children reached to nearly 50 per cent by 1985 compared to the baseline of less than 21 per cent. Similarly, TT immunisation for pregnant women showed more than 5-fold increase.

All the studies comparing immunisation coverage in ICDS operational project with the baseline control population confirmed a very significant increase in the immunisation rate for children below 6 years age, below 2 years age and the pregnant women in the ICDS group. The increase though significant was of variable degree for different vaccines. Research studies revealed higher success rate of immunisation programme than the annual surveys.

Comparative study of immunisation in ICDS and matched control non-ICDS group of children was done as special research project. It corroborated the conclusions of earlier evaluation through annual surveys and doctoral students' theses work. There was very significant increase of the coverage by all the 3 vaccines in 0-3 and 0-6 years age group children of ICDS project compared to the matched control non-ICDS group.

ICDS approach is successful for enhancing immunisation coverage and thus continues to contribute significantly in achieving the goals of Universal Immunisation. It is expected that with proper coordination between ICDS and health functionaries we could complete our targets of immunisation much earlier than the year 2000 AD. High cost UIP surveillance studies have also confirmed a very good immunisation coverage in ICDS projects.

The impact of ICDS on immunisation of the children was evaluated through the annual surveys, research investigation by the principal investigators (working for their M.D. theses in various medical colleges of the country) and by UIP evaluation team as per guidelines of the World Health Organization, Geneva.

- (i) Immunisation evaluation through annual surveys
  - (a) BCG coverage was 42.9 per cent and that of DPT 45.0 per cent in

ICDS group as compared to 22.6 per cent in the control population. Polio vaccination in ICDS group was 46.0 as compared to 23.1 per cent in control group. Tetanus immunisation of pregnant women had also shown a significant gain in ICDS population. Immunisation coverage was maximum in urban ICDS project, followed by rural and tribal areas (Figs. 10 and 12).

(b) A comparison of immunisation in

Fig. 10: Immunisation of preschool children and pregnant women in more than 5 years old ICDS projects compared to non-ICDS control group (annual survey data)

(APPN-III-TAB : 14)



Fig. 12: Immunisation status of preschool children and pregnant women in urban, rural and tribal more than 3 years old ICDS projects





children of 0-2 years in 3 years old ICDS projects with the control population at the corresponding period is presented in Fig. 11. The BCG immunisation was 17.3 per cent in control and 32 per cent in ICDS projects. DPT immunisation was 13.7 per cent in control and 27.7 per cent in the ICDS projects. The polio coverage was 14.8 per cent and 28.5 per cent in control and ICDS projects respectively. The urban ICDS projects recorded highest rate in term of coverage while the success rate in rural and tribal projects was almost similar.

#### Fig. 11: Immunisation of less than 2 years age children in more than 3 years old projects compared with non-ICDS control group



(c) The results of longitudinal studies of immunisation coverage of the first group of ICDS projects started in October 1975 and studied in 1976 and follow up data of immunisation status in 1985 are shown in Fig. 13. The immunisation coverage has shown an overall increase in 1985 when compared to the baseline status in 1976. The data on polio in 1976 was not collected as it was not a part of the National Immunisation Programme. A maximum increase in the coverage for DPT from 4.9 to 50.2 per cent was noticed. Similarly toxoid coverage for the pregnant women showed highly significant increase from 6.0 to 32.1 per cent

Fig. 13: Immunisation status of preschool children and pregnant women in 1985 compared to the baseline status of 1976 ICDS projects

(APPN-III-TAB :16)



(ii) Immunisation evaluation through research studies:

> The results of research studies by doctoral postgraduate medical students in immunisation coverage is presented in Fig. 14.

#### Fig. 14: Immunisation coverage of children in more than 3 years old ICDS projects (research data)



#### (APPN-III-TAB : 17 & 18)

 Immunisation status of 0 - 6 years preschool children in more than 3 years old ICDS projects:

This was investigated in 31 projects which comprises 12 rural, 16 urban and 3 tribal projects. Of the 32,169 children, 69.9 per cent had received BCG vaccination. The coverage was highest in the rural group (75.5%) followed by urban (59.6%) and tribal (30.8%) projects. Immunisation status of DPT and polio was studied only in rural and urban projects in a sample of 32,458 children. As many as 65.4 per cent had received all the three doses of DPT and 64.0 per cent had received complete immunisation with polio vaccine. The impact of coverage was better in the rural projects as compared to the urban projects.

(b) The immunisation status of 0 - 3 years age group in more than 3 years old ICDS projects.

> This study was carried out in 13 projects which comprised 5 rural. 4 each of tribal and urban. Half of the 2894 children had received BCG immunisation. The coverage for BCG was significantly more in the urban children (80.3%) as compared to rural and tribal children (46.0 and 40.6% respectively). In the sample of 3113 children, 50.3 per cent received complete immunisation with DPT. The coverage in this case was also significantly more in urban group (70.4%) as compared to rural (50.7%) as well as tribal projects (27.9%). The polio immunisation was studied in 5 rural and 4 urban projects. As

many as 56.3 per cent of the rural and 69.0 per cent of the urban children had complete immunisation with polio vaccine. Compared to data presented for 0-6 years of age group, the immunisation coverage was less in the younger children (Fig. 14).

(c) Comparative research studies in ICDS and non-ICDS projects areas (Fig. 15):

Immunisation status of the children in ICDS projects of more than 3 years' duration was compared with a matched control non-ICDS population with similar socio-economic status in 5 rural and 6 urban projects each. In the age grop 0-6 years of the rural blocks, BCG immunisation was 38.4 per cent, DPT 50.5 per cent and polio 51.4 per cent which is significantly higher than the respective figures of 24.1, 18.6 and 19.8 per cent in control population. The degree of the differences was more in 0-3 years of age group, where DPT and polio immunisation in ICDS projects was 65.8 and 79.6 per cent as compared to 22.4 and 21.4 per cent respectively in control non-ICDS population (Fig. 15).

# Fig. 15: Comparison of immunisation in more than 3 years old rural ICDS projects with matched control non-ICDS group (resarch data)



The immunisation status of children in urban ICDS projects was also better than the non-ICDS control group. The BCG, DPT and polio immunisation in the former group with age group <6 years was 57.4, 68.7 and 67.5 per cent as compared to corresponding immunisation figures of 22.5, 45.8 and 40.4 per cent respectively, in the latter group (Fig. 16).

#### Fig. 16: Comparison of immunisation in children 0-6 years in urban ICDS and non-ICDS controlgroups (research data).

(APPN-III-TAB : 20)



This comparative study in ICDS and non-ICDS population confirms the positive contribution of ICDS in ameliorating the immunisation status of the children as well as the success of the National Immunisation Programme. However, this study points out that the coverage of younger children should get much more attention so that prophylaxis can be successfully carried out in the proper age group.

The data from annual survey 1987-88 on complete immunisation coverage for young children between 12 to 24 months: Despite intensive effort through EPI and UIP, the immunisation coverage in control group (without ICDS component) remained low for all the vaccines and in all the states studied except in Tamil Nadu (urban). Immunisation coverage is extremely poor in control group in Karnataka, Orissa, Rajasthan, Uttar Pradesh and West Bengal. Immunisation data in 3-5 years old project shows a significantly higher coverage in ICDS project as compared to the control group. In fact, coverage with complete immunisation in states other than Rajasthan, U.P. and West Bengal is nearly 50 per cent or more. Immunisation coverage for young children during 1987-88 is better than those of 1985 and 1982. Additional data on immunisation for the projects surveyed in 1987-88 for non-ICDS (control) and ICDS group are presented in Figs. 17 and 18. BCG immunisation coverage below the age of 2 years in control group is only 23.3 per cent as compared to 46.4 per cent in ICDS group. Comparative data for measles in two groups is 8.4 vs. 20.5 per cent, for DPT it is 29.3 vs. 50.6 per cent and for polio it is 27.4 vs. 48.8 per cent. Maximum increase in immunisation coverage is recorded in urban ICDS children, followed by tribal and rural children.



### Fig. 17: Immunisation status of 12+ to 24 months children in 3-5 years old ICDS and non-ICDS control group (annual survey data).

Fig. 18: Immunisation status of children (12+ to 24 months age) in urban, rural & tribal more than 3 years old ICDS projects (annual survey data)



# (d) Nutritional Services Coverage

Nutrition intervention by supplementary food to prevent and improve the state of undernutrition, iron and folic acid to control nutritional anaemia and vitamin A to prevent blindness due to xerophthalmia, is a major component of ICDS programme. Despite several difficulties inherent in implementing nutrition intervention programme in remote rural and tribal villages at the doorsteps of underprivileged population, data of survey and research studies presented in this section establishes the utility of ICDS in improving the coverage of preschool children by nutritional services. Coverage of urban children by ICDS is better than the rural and tribal children. This is simply because of the difficulties in maintaining the uninterrupted supply of supplementary food, iron and folic acid and vitamin A to the remote villages. Further, older children of 3 to 6 years show much better coverage than younger children below 3 years. Participation of infants and very young, below 3 years age children in a spot feeding programme even in their own villages is rather difficult. Mother or elder sibling is expected to bring the younger children to the anganwadi worker. This is often not possible daily. Some alternative strategy to improve the coverage of below 3 years age children by nutritional services has to be evolved and tried in pilot experiments. Management of quality of food and its uninterrupted supply to anganwadis of remote village also needs strengthening to ensure further improvement in nutritional services in ICDS.

(i)

Data on the coverage of preschool children by the nutritional services have been presented in the following sections:

- Nutritional services survey in more than 3 years old ICDS projects and their comparison with the same years' baseline data in newly sanctioned ICDS projects;
- Longitudinal 8 years follow-up survey of nutritional services in ICDS projects started in 1975;
- (iii) Research studies (M.D. theses) for nutritional services coverage of 0-6 and 0-3 years old children in operational projects of 3 years duration; and
- (iv) Comparative nutritional services coverage research study in ICDS and matched

control non-ICDS groups of children.

Nutritional Services to preschool children in rural, tribal and urban ICDS projects of more than 3 years' duration are shown in Fig. 19. Data have been compared with the baseline (control population) status of these services in newly sanctioned ICDS projects in the same year (1985). The coverage for each of the services in operational projects, listed as experimental group. is significantly more as compared to the control population. Vitamin A, ironfolic acid and supplementary food coverage for preschool children in the experimental group was 37.1, 22.5 and 42.3 per cent respectively, as compared to 19.7, 7.2 and 23.6 in the

Fig. 19: Nutritional services to preschool children in control non-ICDS and more than three years old ICDS projects (annual surveys data).



control group. For all the three nutritional services, coverage was best in the urban ICDS projects. Tribal projects which are generally more difficult for the delivery of services were covered as well as the rural projects.

- (ii) Data of follow-up survey (8 years after the start of ICDS services) for coverage of nutritional services, is presented in Fig. 20. Both the vitamin A coverage and supplementary nutrition for preschool children increased to 39.2 per cent from 10.3 and 25.2 per cent respectively. Iron and folic acid coverage was 25.1 per cent in 8 years old projects. It may be noted that without ICDS services and through routine MCH services of Health Department, there has been some improvement in the delivery of nutrition services to the preschool children. However, coverage showed more significant rise in 8 years old ICDS projects as compared to baseline data of 1975 and 1985.
- (iii) Number of research investigators conducted studies in 3 years old ICDS projects to find out nutritional services

Fig. 20: Nutritional services to preschool children in control population in 1976 and 1985 and experimental group of 8 years old ICDS projects (annual surveys data)



coverage in two age groups of children viz., 0-6 and 0-3 years. The study for supplementary food coverage for 0-6 years age children was carried out in 2 rural, 3 tribal and 3 urban projects, in a sample of 2884, 1811 and 888 children respectively. It was recorded that 39.9 per cent of the rural, 45.8 per cent of the tribal and 49.8 per cent of the urban children were receiving supplementary nutrition. Iron and folic acid distribution study was carried out in two projects (1 each rural and urban) covering a total sample of 752 preschool age children. It was noted that 48.5 per cent of the total group (41% of the rural and 57.1% of the urban) of children studied were receiving iron and folic acid tablets. The vitamin A distribution study was carried out amongst the preschool children in 2 each rural (n = 2884) and urban (n = 1254) projects. As many as 77.5 per cent of the rural and 66.0 per cent of the urban preschool children were receiving vitamin A according to the schedule of the National Programme (Fig. 21).

Fig. 21: Coverage of pre-school children (0-6 years) by supplementary nutrition, iron and folic acid and vitamin 'A' administration in ICDS projects operational for more than 3 years (research data).



(APPN-III-TAB : 24 & 25)

Nutrition intervention services to 0-3 age group were separately analysed by some other investigators. The supplementary food covered was studied in 2 tribal (n = 416) and one urban (n = 140) project each. Only 16.6 per cent (69/416) of the tribal children in this age group were receiving supplementary food while 61.4 per cent (86/140) of urban children were covered by this service (Fig. 22). The vitamin A distribution in this age group was studied in 1 rural (n = 754) and 2 urban (n = 1472) projects. Only 31.0 per cent (234/754) of the rural children received the vitamin A while 77.4 per cent (1139/1472) of the urban children were covered by this service.

It is evident that nutritional services provided a better coverage for the preschool children group as a whole as compared to 0-3 years age group in particular. To put in other words, the elder children received a better coverage than the younger children. Further, it may be noticed that the delivery of nutritional services was significantly more for urban children as compared to rural and tribal children.





(iv) A comparative study for vitamin A, iron and folic acid supplementation to the preschool children was carried out in 2 each ICDS and non-ICDS matched control projects.

It is noted that taking all the projects. rural and urban together, the coverage for iron-folic acid and vitamin A was in 19.5 and 24.7 per cent of the preschool children in non-ICDS projects. Compared to this, in the ICDS projects which have been operational for more than 3 years, iron and folic acid was distributed to 48.5 per cent and vitamin A to 69.1 per cent. The separate analysis of the rural and the urban sample reveals a more significant increase in the coverage of preschool children by these two nutritional supplements in rural population as compared to the urban. The increase for iron and folic acid was 10.4 to 41.0 per cent and for vitamin A from 17.9 to 76.3 per cent in the rural population. The corresponding increases in urban population were from 28.7 to 57.1 per cent

for iron and folic acid and from 31.5 to 61.1 per cent for vitamin A distribution (Fig. 23).

# Fig. 23: Comparative study of iron and folic acid and vitamin 'A' coverage for pre-school children in ICDS and non-ICDS population (research data).



(APPN-III-TAB : 26)

# (e) Nutritional Status of Preschool Children

Various approaches adopted to assess the impact of ICDS on nutritional status of 0-3 and 0-6 years old children confirm a decline in moderate and severe undernutrition and increase in the proportion of children with normal or grade-I undernutrition.

The longitudinal study showed that severe undernutrition amongst the preschool children in the population where ICDS was started as pilot project in 1975, had declined from 19.1 to 6.3 per cent in 8 years follow up study. Corresponding decline for moderate undernutrition was from 27.0 to 19.7 per cent. Further, in a very large pooled sample of preschool age children, in the population where ICDS projects were established for 3-5 years, the prevalence rate for severe and moderate undernutrition was noted to be 6.4 and 18.1 per cent respectively. The research study by doctoral student recorded severe and moderate undernutrition in 9.1 and 25.1 per cent preschool age children, respectively. A comparative research study for undernutrition in ICDS and non-ICDS matched control samples showed severe undernutrition in 6.5 per cent and moderate undernutrition in 22.3 per cent of preschool age children. All these figures tend to confirm a considerable decline of severe and moderate malnutrition in ICDS projects.

The impact of ICDS on nutritional status of younger children between 0-3 years age group was also positive. Moderate and severe malnutrition together was recorded in 30.6 per cent of the children in ICDS projects as compared to 38.5 per cent in the matched control (non-ICDS) group. Severe malnutrition in 0-3 years age group was higher as compared to 0-6 years age group which points that ICDS nutrition services are not reaching to younger children to the same extent as they are being provided to the older children. Improvement in the nutrition coverage of younger children by strengthening the current management and developing the alternate models is strongly recommended.

#### A. Annual Surveys

**Results**:

- (a) The longitudinal study of the ICDS projects started in 1975 revealed improvement in the nutritional status in 1985. Data are presented in Fig. 24.
- (b) Severe malnutrition declined from 19.1 to 6.3 per cent and grade II malnutrition declined from 27.0 to 19.7 per cent. Normal and grade I nutritional status in 8 years old ICDS projects improved to

72.6 per cent as compared to 47.2 per cent in 1976.

(c) A comparative evaluation of the nutritional status of preschool children in the control and experimental group was carried out in 1985. The sample for control was taken from 28 projects selected for ICDS services on the same socio-economic criteria which have been





decided and followed since 1975. These projects were considered for control population as at the time of baseline survey they still did not have inputs of the ICDS package of services. The sample for experimental group was drawn from 43 ICDS projects which have been operational for more than 3 years. The severe malnutrition in the experimental group was 6.4 per cent as compared to 8.4 per cent in the control population. The difference between the two is statistically significant (p < 0.001). This difference was more obvious in tribal and rural experimental group where the severe malnutrition was 3.9 and 6.6 per cent, respectively. The grade II malnutrition also showed a significant reduction in rural and tribal population but there was an increase in the proportion of this group in the urban population. Normal and grade I nutritional status of children were in a higher proportion of 73.7 per cent in the experimental group as compared to 69.5 per cent in control sample. The difference in this case was

also more pronounced for rural and tribal population (Fig. 25).



(APPN-III-TAB : 28)



(d) The control population (where ICDS services had not yet started though the projects have been selected) has shown progressive decline in the severe malnutrition and increase in normal and grade-I nutritional status children. In 1985, severe malnutrition was recorded only in 8.4 per cent as compared to 15.1 per cent in 1979 and 19.1 per cent in 1976, while corresponding figures for normal plus grade-I nutritional status were 69.5, 56.2 and 47.2 per cent respectively (Fig. 26).

#### **B.** Research

Nutrition status research studies in 0-6 years old children in more than 3 years old ICDS projects:

(a) Research studies were carried out to record the nutritional status of 0-6 and 0-3 years old children in ICDS projects which were functional for more than 3 years. Nutritional status assessment for




0-6 years age group was done in 46 projects which comprised 19 rural, 4 tribal and 23 urban projects. The total sample size was 61725 children. As many as 33.4 per cent had normal nutritional status, 32.5 per cent had grade I and 25.1 per cent had grade II malnutrition (Fig. 27). Tribal children had maximum severe malnutrition amounting to 17.3 per cent compared to 7.4

per cent in the rural and 9.8 per cent in the urban groups. The distribution of moderate degree of malnutrition was almost same in all the three groups. However, normal and grade-I nutritional status was considerably less in tribal population compared to rural or the urban children.

Nutritional status of 0-3 years age children in more than 3 yars old ICDS projects was studied in 11 rural, 4 tribal and 6 urban projects drawing a total sample of 10,141 children (Fig. 27). Normal nutritional status was recorded in 29.5 per cent, grade-I undernutrition was noted in 29.1 per cent, grade-III in 10.5 per cent and grade-IV in 4.3 per cent. It was also noted that the nutritional status of children in this age group was better in the urban projects as compared to the rural and tribal projects. The severe malnutrition comprising grades-III and IV was present in 9.4 per cent of the urban children as compared to 22.0 per cent of the tribal and 18.0 per cent of the rural children.

# Fig. 27: Nutritional status of 0-6 years and 0-3 years child population in more than 3 years old ICDS projects (research data).

(b)



Further, it was noted that overall nutritional status of younger children *i.e.*, in the age group 0-3 years was worse than the pre-school age group children as a whole. Severe malnutrition in 0-3 years age group was recorded in 14.8 per cent which was high compared to 9.1 per cent in 0-6 years age group.

## C. Comparative Studies:

Comparative Study of Nutritional Status of Children in ICDS and Non-ICDS Population:

(a) The studies were carried out by several consultants to compare the nutritional status of the preschool age group children, 0-6 and 0-3 years of age in ICDS projects which have been operational for 3 years or more and matched control population of non-ICDS area. This special research was done by 12 consultants in 12 ICDS projects (4 rural and 8 urban). The population covered in the experimental group was 4980 and in the control group it was 4220. The distribution of nutritional status in the control population was normal 35.4. grade-I 28.9, grade-II 24.7, grade-III

8.0 and grade-IV 3.0 (Fig. 28). Corresponding to this, the distribution of nutritional status in the experimental population was, normal 40.8, grade-I 30.5, grade-II 22.3, grade-III 5.1 and grade IV 1.4. The severe malnutrition comprising grades III and IV was recorded in 11 per cent in the control population as compared to considerably less proportion of 6.5 per cent in the experimental group. The moderate grade-II malnutrition was also less in the experimental population. Normal and grade-I nutritional status was considerably high (71.3%) in experimental group as compared to 64.3 per cent in the control population.

(b) The nutritional status of younger children of 0-3 years was studied in 2 each rural ICDS (experimental group, n = 545) and rural non-ICDS matched control group n = 549. The severe malnutrition in control group was 12.1 per cent as compared to experimental group of 11.5 per cent and moderate malnutrition 26.4 compared to 19.1 per cent (Fig. 29). The normal and grade-I proportion was very high in the







(b)

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Fig. 29: Nutritional status (0-3 years) A comparative study of rural ICDS vs. rural non-ICDS group (research data).

experimental group—69.4 per cent compared to control group (61.6%). The impact of ICDS in the improvement of nutritional status in 0-3 years young children was considerable but distinctly less than what was recorded for the whole group of 0-6 years age indicating that the nutritional benefits were more to the elder children above the age of 3 years.

## **D.** Clinical vitamin deficiency study in more than 3 years old ICDS projects

(a) A study was conducted in more than 3 years old 30 ICDS projects which comprised 9 rural, 3 tribal and 18 urban projects. This study was aimed to record clinical evidence of B-complex and vitamin A deficiency and nutritional anaemia in the preschool age children. The B-complex deficiency was present in 3.4 per cent with a higher frequency in the urban and rural group as comFig. 30: A comparative study of clinical vitamin B-complex, vitamin 'A' deficiency and nutritional anaemia in more than 3 years old rural, tribal and urban ICDS projects (research data).



pared to the tribals. Vitamin A deficiency features were recorded in 10.4 per cent. The clinical anaemia was present in 25.8 per cent with highest incidence in the rural group (Fig. 30).

The clinical evidence of vitamin B-

complex and vitamin A deficiency were recorded in ICDS operational projects (experimental group) and matched control non-ICDS projects (control group). In the experimental group Bcomplex deficiency was present in 5.5 per cent, vitamin A deficiency in 6.6 per cent and anaemia in 6.6 per cent (Fig. 31). Compared to this, in control group B-complex deficiency was present in 14.1 per cent, vitamin A deficiency in 17.3 per cent and anaemia in 11.6 per cent. Thus ICDS population demonstrated significantly less features of B-complex, vitamin A deficiency and anaemia as compared to the controls.

Fig. 31: A comparative study of clinical vitamin B-complex and vitamin 'A' deficiency and nutritional anaemia in pre-school (0-6 years) children in ICDS and non-ICDS projects (research data).

(APPN-III-TAB: 35)



## III. SPECIAL RESEARCH STUDIES

Study of morbidity during infancy and early childhood leads to the following conclusions:

1. ICDS village level infrastructure with proper linkage and supervision of health staff of the Primary Health Centre can be successfully utilised to record morbidity and disease specific mortality of the infants and young children. These observations can be very useful to strengthen the primary health care for preschool age children and achieving the goals of child survival and child development. Monitoring of the coverage of the beneficiaries by the services of the programmes is simpler than the assessment of the impact. Present study suggests that the impact of ICDS or any other similar programme on morbidity of young children can be monitored by the village level worker.

2. Epidemiology of illness in rural and urban slum setting is different as is revealed by the present study. Crowding and air pollution contribute significantly to acute respiratory infections which forms the major cause of morbidity in urban slums. Personal, environmental, food and water hygiene influence the high prevalence of diarrhoea in rural setting. Diarrhoea and respiratory infection call for maximum attention in ICDS projects.

3. High annual frequency of illness per child per year and seasonal variations in the morbidity pattern noted in the results of this study deserve consideration in planning and operation of preventive and curative actions by the medical officers and the paramedical staff. A rational approach to the strategy of medical care will be cost effective.

- Management of severely malnourished children by anganwadi worker 1.
- 2. Morbidity during infancy and early childhood
- 3. Mortality during infancy and early childhood
- 4. Effects of drought and its management
- 5. Mothers perception of child development and ICDS
- 6. Anganwadi workers knowledge, attitude and practice towards their job in ICDS
- 1. Management of severely malnourished children by anganwadi workers.

## Background

the most important singular factor associatd

Severe protein-calorie malnutrition is with high infant and child mortality. Malnutrition predisposes to infection and infection in



#### Fig. 35: Children suffering from specific morbidity in a week (special research study)

of 8865 children, diarrhoea was recorded in 10.3 per cent in one week, with a prevalence of 9.0 per cent in urban, 10.2 per cent in rural and 12.7 per cent in tribal pre-school children.

The respiratory infection was recorded in 15.6 per cent per week in a sample of 8660 pre-school children. The highest prevalence was in the urban group (19.4%) followed by rural (15.3%) and tribal (11.2%) projects.

The fever was studied in a sample of 8001 children and it was recorded in 9.0 per cent in a period of one week, again with its highest prevalence in urban (13.9%) followed by rural (8.7%) and tribal (2.1%) children.

The study for eye infection was done in a sample of 6317 children. It was recorded positive in 6.3 per cent with low prevalence in the urban group (3.1%) compared to rural projects (7.1%).

The study of pyoderma was done in 7892 children and 9.0 per cent had the

disease with its distribution of 7.3 per cent in the urban projects, 4.9 per cent in the rural projects and 29.6 per cent in the tribal population. The data are presented in Fig. 35.

- (b) In the second study, number of episodes of illnesses per child per year in the pre-school children in more than 3 years old ICDS projects were recorded in one rural, one tribal and 3 urban projects. In a sample of 1863 children the diarrhoea was recorded as one episode per year, respiratory infection 1.5 episodes per year, pyoderma 0.4, fever 1.7 and eye infection 0.4 episode per child per year in a sample of 1065, 1027 and 1508 population respectively.
- (c) In the third study, the morbidity prevalence amongst the preschool children in more than 3 years old ICDS projects was compared (experimental) with non-ICDS (control) population. This study was carried out in 4 rural and 4 urban matched control non-ICDS projects. In the rural ICDS projects, 17.3 per cent

had diarrhoea and 19.0 per cent had respiratory infection. Compared to this in non-ICDS control population 22.2 per cent had diarrhoea and 14.6 per cent had respiratory infection. The comparative study of these two diseases in urban ICDS and non-ICDS projects revealed that in case of former group, 9:0 per cent had diarrhoea and 19.4 per cent had respiratory infection. While in the case of later i.e., control population, the prevalence of diarrhoea was 16.7 per cent and respiratory infection was 45.8 per cent in children. Thus, it was noted that both in rural and urban, the prevalence of diarrhoea was significantly less in ICDS urban and rural projects compared to the control urban and rural population.

The prevalence of three other diseases-pyoderma, fever and eye infection were also compared in ICDS and non-ICDS population. The prevalence of pyoderma was 5.0 per cent in rural and 7.3 per cent in urban ICDS projects. Compared to this, the corresponding figures were 10.7 per cent and 22.3 per cent in control population. The skin infection was more pronounced in non-ICDS population compared to ICDS population. Fever was recorded in 6.8 per cent of the rural and 13.9 per cent of the urban preschool children of ICDS projects. The corresponding data for non-ICDS group was 8.2 per cent and 26.3 per cent, respectively. Eve infection was observed in 4.3 per cent of rural and 3.1 per cent of urban ICDS pre-school children, while the corresponding figures in the matched control non-ICDS group were 7.0 and 4.8 per cent. Thus, both fever and eye infection were more common in non-ICDS population.

In conclusion the morbidity of the

common childhood diseases was considerably more in both rural and urban non-ICDS control pre-school children when compared to ICDS experimental project as shown in Fig. 36.

## Fig. 36: Percentage of children suffering from specific morbidity in a week (special research data).

(APPN-IiI-TAB : 42 & 43)



## Study of Morbidity during Infancy and early Childhood in ICDS Blocks.

A multi-centric morbidity study amongst infants and pre-school children was undertaken in 9 ICDS projects. This study was aimed to record the incidence of sickness amongst the infants of 0-12 months and the children between 1-3 years.

The study sample (of infants and 1-3 years old children) was drawn from 15 anganwadis in each of the 9 ICDS projects. Of the 15 anganwadis, 10 provided the sample for study of morbidity amongst the infants and five children between 1-3 years. The cluster sampling approach was followed to select these as outlined below:

 (i) The total number of AWs in the project area was sub-divided into the groups (clusters) of 3 AWs each. The 3 AWs in a cluster were close to one another for the purpose of visits. This process provided nearly 33 clusters in rural and urban projects. The number of clusters in a tribal project varied from 12 to 25. Each cluster had a population of usually 3000 distributed equally amongst the three AWs (1000 each).

- (ii) Five clusters of AWs were selected randomly from the list of clusters prepared for the whole project area. This was done by using a random number table or standard system of chits with serial numbers.
- (iii) From each of the 5 selected clusters at random, 2 AWs were fixed for the morbidity study amongst the infants, and sickness data in 1-3 years group were collected from the third AW of each cluster. The sampling procedure provided a set of 10 AWs (2 from each selected cluster) for the infant morbidity and 5 AWs (1 from each cluster) for the early childhood morbidity study.

Data on morbidity were recorded by anganwadi workers, especially oriented for this study. AWWs paid a minimum of four visits every month to every house hold for the infant morbidity and once in 10 days in the early childhood. A junior investigator from the consultants' department visited the anganwadis once a month to check the data as recorded by the anganwadi worker and sorted out discrepancies wherever possible. The consultants reviewed the data once a month and forwarded it to the Central Cell of ICDS at AIIMS periodically.

Children who crossed the age group or left the anganwadi area during the study period or expired were excluded from the investigation for the remaining period. However, infants and children who entered the anganwadi area by migration or as new birth were registered for the rest of the study. A format to cover 12 common illnesses was prepared and filled by the *anganwadi* workers during their house visits. The final tabulation of data was done after consistency check and discussion with the investigators by the Central Bio-Statistics Cell of the CTC.

## Results

Of the 5350 infants, 2779 (51.9%) were males. As many as 73 per cent were from the rural and 27 per cent from the urban population.

The design of the study predicted a follow-up period varying from 1 to 52 weeks per child. The average number of weeks of follow-up per child was determined by dividing the pooled total weeks of follow-up by total number of children registered. On an average each infant was followed for period of 23 weeks. Average follow-up period for male and female, as well as, rural and urban slum areas was almost the same.

Fig. 37 presents estimated incidence rate of different illnesses among the infants of rural and urban location during an average period of 6 months. Diarrhoea, cough, short fever without rash and sore eyes were recorded to be the common illnesses, in decreasing order of frequency. The major cause of infant morbidity in the present series was, however, diarrhoea (60%). Cough was more prevalent in urban slums (P < 0.001) but the rest of the three diseases were significantly more common (P < 0.001) amongst rural infants.

Fever is recorded as the commonest illness preceding the death of infants (32%), diarrhoea as the next common killer disease (20%), and prematurity has the third place in the aetiology of infant mortality. It is recorded Fig. 37:Percentage incidence of various illnesses among infants (special research data).



more frequently in urban slums as compared to rural population. Tetanus and respiratory infection were registered as other important causes of death and occupied the fourth place. However, tetanus and birth injuries, as the underlying causes of infant deaths were recorded exclusively in rural areas. Respiratory infection was more fatal in urban population as compared to the rural areas (Figs. 38 and 39).

Three common illnesses, *viz*., diarrhoea, cough, and fever without rash have almost similar number of episodes, during the study period (Fig. 40). The number of episodes of cough per sick child is recorded to be significantly higher in urban infants as compared to the rural. There was no difference of the

## Fig. 38: Percentage infant deaths by underlying causes (special research data).



## Fig. 39: Percentage infant deaths by underlying cause in rural and urban ICDS areas (special research data).

(APPN-III-TAB: 47)



# Fig. 43: Percentage incidence of various illnesses among children (1-<3 years. (special research data).





(APPN-III-TAB: 57)





All children Sick children (1-<3 years) Cough 5.1 3.4 Diarrhoea 4.6 2.9 Fever without rash 4.5 3.0 Sore eye 3.0 0.9 Cuts, wounds and accidents. 2.6 0.2 Fever with rash 2.2 0.4 Skin boils 2.5 0.7 Scabies 2.6 0.2 Ear discharge 2.4 0.3 Tetanus 1.3 0.002 Paralysis of limbs 1.4 0.005 Others 3.5 0.8 5 2 1 0 6 4 3 1 2 3 4 5 6

total group of children registered for the study and the group of children identified as sick during the period of study. Morbidity was higher in rural group as compared to the urban group for almost all the illnesses.

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(APPN-III-TAB : 56)



## Fig. 46: Seasonwise average monthly incidence of illness.

Frequency of any illness, as none to 6 or more was calculated for rural and urban children. Data are presented in Fig. 45. It is noted that the highest proportion (27.2%) had 6 or more episodes of illness in an average follow up of 6 months. Only 9.9 per cent remained free of any illness. Distribution of illness according to 4 quarters reflecting winter (1st and 4th quarter), summer (2nd quarter) and rainy season (3rd quarter) is presented in Fig. 46. Cough was more frequent in winters as compared to summer and rainy seasons. Diarrhoea was more frequent in summer and rainy seasons as compared to the winter season.

## 3. Infant and early childhood mortality study

Reduction in the infant and early childhood mortality is one of the objectives of ICDS. Government of India collects information on vital events and provides estimates of infant mortality rate, crude birth rate, death rate etc. at the national and state levels. This system does not permit separate information for population receiving ICDS package of services. It was decided by the CTC to study the *trends* of IMR, early childhood mortality rate and births at the *National Level* in a proper sample of ICDS projects periodically.

## I. Method and Material

Study sample: The three stage sampling procedure was followed for the multicentre study during 1982 to 1987 excepting 1984 and is being continued in the study of 1988. A few modifications were introduced in the first and second stage samples guided by feasibility and reliability of data collection.

(a). First stage sampling: This was done to select adequate number of projects out of the total ICDS projects in operation. In the first study in 1982, 40 projects out of the 200 in operation for more than two years providing a sample of 1.5 per cent were selected at the national level. The study was continued in the same projects in 1983. In 1985, the first stage purposive sampling was done for 21 projects with two preferential criteria viz., proximity to the consultants i.e., within a distance of 15 km and projects which had earlier annual surveys on health and nutrition parameters. The purposive first stage sampling was also done in 1986 giving chance for appropriate distribution of the selected subjects in rural, tribal and urban areas, besides the period of implementation of ICDS programme. A total of 27 projects were selected in this study. In 1987 so as to get the information on IMR independently for large states as well as groups of small states. All the ICDS projects of more than three years' duration were taken as universe. A sample of 15-20 per cent projects in each large state or a group of small states with stratification of tribal, rural and urban categories was drawn. A very significant modification has been introduced in 1988 to bring the methodology of the study closer to national system of Sample Registration System (SRS). This approach warranted a very large sample for states with infant mortality rate less than 80 and, therefore, it was decided to limit the studies into 16 states bracketed in four groups based on the range of IMR as published by SRS in 1985.

(i) IMR above 115: Madhya Pradesh, Orissa and Uttar Pradesh.

(ii) IMR 108-114: Assam, Bihar, Gujarat and Rajasthan.

(iii) IMR 87-95: Andhra Pradesh, Haryana, Jammu & Kashmir, Tamil Nadu and Himachal Pradesh.

(iv) IMR 78-80: Karnataka, Maharashtra, Punjab and West Bengal.

The sample size for each bracket of the study could be calculated on statistically sound principles. As many as 102 projects in 8 states have been selected, giving due consideration to division of the state, rural and tribal location and 4 years of functional age by random sampling method.

(b) Second stage sampling: This selected the anganwadis for the studies. During 1982

and 1983, 6 anganwadis were selected by stratified sampling procedure. From 1985-87, 12 anganwadis were selected by cluster sampling method. In 1988, the second stage sampling has been modified. All anganwadis are listed according to the middle level supervisor zones and divided into cluster of three each. One cluster from each of the middle level supervisor zone is taken up in the sample. Minor modifications are permitted if the middle level supervisors' zone has less than 12 anganwadis.

(C) Third stage sampling: Since 1982, this includes all the house-holds of the selected anganwadi village for recording of the events.

Data collection : The consultant's, investigators from his department, the medical, paramedical team of the primary health centre and anganwadi worker formed appropriate teams for data collection. The first point of data collection, at the house was carried out by the anganwadi worker, if necessary, assisted by local informant and entered on appropriate forms printed in the regional language. The verification at the first stage was done by the investigator of the consultant, often taking help from the paramedical team of the primary health centre in each anganwadi, at a minimum frequency of once in three months in the beginning, which was later reduced to once in a month. At the fixed interval, the tabulated data were sent by the consultants to the CTC. This provided check every 2-3 months on the quality of data and continuation of the study in each anganwadi. The mid-year population was collected and reported half yearly. All data were recorded on designed performae jointly by the consultants and the CTC. The data analysis was done at the Central Cell and vital rates were calculated in reference to estimated mid-year population after sorting out the discrepancies with the help of the consultants. To compare with the SRS the methodology of data collection has been substantially modified in 1988 study, as indicated below

## Flow of Reports and Information

A.	Anganwadi - Workers	Monthly collection of events by house to house visit and monthly submission reports on the prescribed formats by 3rd of the following month.	of
B.	Middle level super- visors/surveyers	Independent survey of events by house to house visit of all alloted/ determined (2 or 3 AW's every quarter) and submitting the reports on prescribed formats to project level supervisor (PHC) by 10th of the following quarter.	
C.	Supervisor of project (PHC)/ verifier/evalu- ator(Medical Officer/ senior most non-medical	Matching of A & B Recording of discre- pancies	Verification of discrepancies and correction of the events (of

#### supervisor)

A&B), within 15 days *i.e.*, 25th of the following month.

## D. Consultant

Meeting the consultant at the headquarters, sending the Inland Letter report to Central Cell signed by Consultant by 30th of the following month (of quarter). Visit project after supervisor meeting within few days for sample check, and monthly reports of the quarter by the consultants within 15 days (45 days after the end of quarter) sent to Central Cell.

## Number of Infant and Early Childhood Mortality Studies carried out till March 1988.

The infant and early childhood mortality studies were started as multi-centre projects in 1982. As shown in Table I (p.52) the number of studies allotted and carried out till March 1988, a very high proportion of consultants were able to complete the infant and early childhood mortality studies alloted to them.

Comparative Research Study of Infant and Early Childhood Mortality Rates in ICDS and Non-ICDS Populations. A multi-centre research study to compare the infant, perinatal, neonatal and postnatal mortality rates in ICDS and non-ICDS population was planned according to the following methodology:-

- (a) The ICDS blocks which have been operational for more than two years and the nearby blocks matched for socioeconomic factors but without ICDS were selected to draw the sample for the study.
- (b) The study was carried out in the sample drawn from the following locations:-

State/UT	ICDS block	Non-ICDS block
Andhra Pradesh	Narsapur (R)	Takmal
Uttar Pradesh	Sohawal (R)	Rudanli
	Gorakhpur (U)	Gorakhpur (U)
Gujarat -	Ahmedabad (U)	Ahmedabad (U)
Pondicherry	Villianur (R)	Oulgrapet (R)

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The cluster sampling system was adopted to select the study sample from the ICDS and non-ICDS projects. The total number of anganwadis were grouped into the clusters where each cluster was constituted by 3 anganwadis. Thus in standard ICDS project with 100 anganwadis, 33 clusters were formed.

Seven clusters were selected from each project through randomised selection system. Thus in a standard project with 100 anganwadis, 20-21 anganwadis in 7 clusters constituted a study sample. Similar approach was for non-ICDS matched control study projects.

A population of 66,322 rural and 45,196 urban was indentified from 59 rural and 42 urban *anganwadis* of ICDS projects for this study. Corresponding to this non-ICDS population sample size was 64,241 and 36,718 for rural and urban group, respectively.

All the pregnant women of the selected AWs were registered during the first 12 months of the study and each one was followed up till six months after delivery. All the new borns were registered for the initial 12 months of the study and each one was followed till he/she completed 12 months of age or had a fatal end before he reached to this age. Three separate proformae were used to record the events in each child.

Anganwadi worker was specially trained for recording data by house-to-house visit. She was assisted by informants belonging to the same village. The supervisor and the junior investigator of the consultant cross checked the events and verified the cause specific mortality.

## Results

II.

Data on infant and early childhood mortality study were obtained through the surveys by the consultants and by special multi-centre research studies. Data of 1982-83 evaluation study were considered adequate to provide the national estimates at the national level and their comparison with the estimates of the Sample Registration System (SRS) of the same period. The multi-centre research data provided a comparative estimate between the ICDS and similar non-ICDS population.

A : Infant and early childhood mortality estimates through annual surveys 1982-83 and its comparison with the estimates of SRS:

The detail of the methodology of the study have already been provided earlier. A total of 2,30,231 population was covered belonging to 227 *anganwadis*. This sample was considered good enough to provide the national estimates.

The infant mortality rate (IMR) according to the sex and location of the project is presented in Fig. 47. The national estimate was 85.9 per 1000 live births in ICDS projects population which was lower than 105 as estimated by the SRS during the corresponding period. Both male and female sexes had lower IMR in ICDS projects as compared to the SRS estimates (Fig. 47). However, in the urban slums, the infant mortality rate was 80.2 in ICDS projects as compared to the SRS estimates of 65. This was reflected in both the sexes. The higher IMR in ICDS in urban slums could be explained due to highly selective location of these projects. The SRS estimate was related to the total population of





the cities. Due to different methodology of the study, it is not appropriate to compare ICDS urban slums and SRS estimates of infant mortality rates.

The cause specific infant death rate in ICDS projects is presented in Fig. 48. Respiratory infections were responsible for infant deaths in 16.4, diarrhoea in 12.5 and fever in 10.8. The less important causes of death were tetanus and accidents. Non-specific unexplained causes were recorded in 40.8.

The sex specific and cause specific death rate for below 5 years old children and neonates were estimated in multi-centre studies. Fig. 49 presents the sex specific death rates for 0-4 years old children in ICDS projects as compared to the SRS estimates. Death rate in this age group was 20.6 in ICDS as compared to national estimate of 39.1. The lower death rate in ICDS group of children was recorded both in males and females, as well as, for the urban and rural population.

Fig. 48: Cause specific infant death rates in ICDS projects (special research data)



Fig. 49: Sex specific death rates (0-4 years) in ICDS projects compared with SRS estimate of 1982-83 (special research data)



The death rates in urban children both in ICDS and SRS was lower than the rural and tribal children. The cause specific death rate in this age group excluding the infants, indicated that diarrhoea, respiratory infection and fever were equally common causes (death rate respectively of 5.2,4.9 and 5.0).

Fig. 50 presents the neonatal mortality rate estimates in ICDS population and its comparison with SRS estimates. The comparison for sex was not possible as the SRS data of 1982-83 did not provide the distribu-





tion of neonatal mortality rate according to the sex. The neonatal mortality rate in ICDS group was 49.3 as compared to the much higher figure (66.7) for the SRS estimates. The neonatal mortality rate in ICDS urban slums was higher (46.3) when compared to 38.8 of the SRS estimates for overall urban population which included slums, as well as, socio-economic better colonies. The neonatal mortality rate in rural and tribal ICDS group was 51.2 which was much lower as compared to the SRS figure of 72.9.

Fig. 50 shows the cause specific neonatal mortality rate. Respiratory infection is formed the common and important cause of mortality.

The death rates for 0-3 and 0-6 years age groups were also calculated during this study (Fig. 51). In this age group for the SRS estimate, the comparison was out of question. It is, however, noted that the death rate in 0-3 years age group was all through higher for both the sexes and both the locations (rural or urban) as compared to corresponding figure for 0-6 years age group.

The cause specific death rate in 0-3 and 0-6 years age groups, also indicated the high

fatality due to diarrhoea, respiratory infection and fever.

## Fig. 51: Sex specific death rate in age group 0-3 years and 0-6 years in ICDS projects (special research data)



## B. Results of IMR study - 1987:

State level IMR data were obtained for 8 states (Fig. 52) in 1987 and for a group of small states and compared with 1985 SRS estimates of IMR. For all the states excepting Rajasthan combined rural and urban IMR in ICDS population was less than SRS estimates. Comparison of IMR in rural population of ICDS population was considerably less as compared to SRS estimates in Andhra Pradesh, Gujarat, Kerala, Orissa, Uttar Pradesh and West Bengal. However, reverse was true in case of Maharashtra and Rajasthan. The IMR was lower in female of ICDS population as compared to the male infants. Cause specific death rate indicated diarrhoea and acute respiratory infection as the most common causes recorded in 12.5 and 16.4 per cent infant deaths, respectively. Tetanus was also recorded as important cause of mortality.

Cause and sex specific mortality rate below the age of 5 years and amongst the neonates were studied in Andhra Pradesh, Gujarat, Kerala, Maharashtra, Orissa, RajastFig. 52: Infant mortality rate (IMR) and mortality rate of 0<5 years age children in 1987 (special research data)



han, Uttar Pradesh and West Bengal.

Fig. 52 shows that overall mortality rate for both the sexes and rural and urban combined group varied from 6.7 (Kerala) to 41.9 (Orissa). In all the 8 states the preschool age child mortality rate was lower in ICDS population as compared to SRS estimates. This was true irresptective of the sex and location (rural as well as urban) excepting an isolated case in Orissa where ICDS urban group had a higher mortality rate as compared to SRS estimate.

Cause specific death rate study revealed diarrhoea and acute respiratory infection as the two major killers (14.6 and 18.5%, respectively). Prematurity and short fevers also accounted for high mortality rates. The pattern of cause specific mortality was almost same in all the states included in the study (Fig. 53).

## Fig. 53: Cause specific mortality rate amongst 0<5 years age group (special research data)



Data on neonatal mortality in ICDS population in the 8 states investigated in 1987 were compared with SRS estimates of 1985. Neonatal mortality rate varied from 18.0 (Kerala) to 72.7 in Uttar Pradesh. In 6 states, it was lower in ICDS group as compared to SRS estimates while in the remaining 1 state *viz.*, Rajasthan, it was higher than SRS estimate in the ICDS group (Fig. 54).

# C. Results of comparative research study of IMR in ICDS and non-ICDS populations:

A total of 2074 and 1425 pregnant women were registered in rural and urban ICDS sample populations, respectively. Registration of pregnant women in non-ICDS population was 2164 for the rural and 1116 for the urban group. Pregnancy rate was 4.0 and 3.3 in rural and urban ICDS and 4.1 and 3.0 in rural and urban non-ICDS population. Fig. 55 presents the birth rate and IMR in ICDS and non-ICDS samples.

All the live births were followed up till to the age of one year to record the infant

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mortality rate and cause specific death rate.

Fig. 55 presents the infant motality rate in ICDS and non-ICDS groups according to the location (rural and urban) and its comparison with non-ICDS group. IMR in non-ICDS group was higher, both for the rural (85.5 cf. 67.0) and urban (87.0 cf. 80.0) infants. The infant mortality rate was higher in the males as compared to the females both in ICDS and non-ICDS populations. However, in urban population IMR was higher in females as compared to males in ICDS but lower in non-ICDS group.

The cause specific infant mortality rate in ICDS and non-ICDS study samples is presented in Table II (p.52). Of the known four important causes of high IMR death rate due to diarrhoea and tetanus was much higher in both rural and tribal non-ICDS infants as compared to ICDS infant population. Whereas acute respiratory infection (ARI) was significantly less common in non-ICDS group compared to the ICDS group. Prematurity as the cause specific death rate was more common in rural non-ICDS as compared to the

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rural ICDS group but the reverse was true for urban group.





## III. Comments on IMR Research Study:

Various ICDS projects viz., tribal and urban are located in socio-economically backward areas with relatively poor MCH outreach of the health department. Demographic



Year of study			IMR study			
	in the second	No. allotted	No. completed	(%)		
1982-83		48	38	(79.2)		
1983-84		32	26	(81.2)		
1985-86		28	21	(75.0)		
1986-87		33	27	(81.8)		
1987-88		113	98	(86.7)		

## Table I : Infant and early childhood mortality studies by consultants.

Table II : Cause specific death rates in ICDS and non-ICDS infant population

Location		Diarrhoea	ARI	Tetanus	Prematurity
Rural	ICDS	8.0	15.5	4.6	10.9
nulai	Non-ICDS	17.4	11.1	12.1	12.1
Urhan	ICDS	10.5	33.1	0.0	16.2
Croan	Non-ICDS	16.6	17.6	10.7	6.8

Table III : Perinatal, neo-natal and post neo-natal mortality rate in ICDS vs. Non-ICDS groups (per 1000 live births)

ICDS-projects	Peri-natal mortality rate	Neo-natal mortality rate	Post neo- natal mortality rate	Non-ICDS projects	Peri-natal mortality rate	Neo-natal mortality rate	Post neo- natal mortality rate
Norsapur (R)	78.7	49.8	16.1	Tekmal (R)	45.2	45.2	29.6
Sohawal (R)	70.6	46.5	29.7	Rudauli (R)	49.6	58.2	49.7
Villianur (R)	58.1	38.7	22.9	Oulgrapet (R)	55.9	41.0	29.8
Ahmedabad (U)	53.0	50.2	37.7	Ahmeda- bad (U)	62.5	44.6	35.7
Gorakhpur (U)	39.0	55.0	21.1	Gorakh- pur (U)	68.4	62.5	41.0

parameter in these are expected to be worse as compared to the national average. The present study was done by altogether a different design with more research input to corroborate if favourable trends of IMR in ICDS reported earlier can be further confirmed through an improved research protocol. Important characteristics of this study- (i) simultaneous data, by similar method, have been collected in ICDS and comparable non-ICDS population; (ii) it is a cohort study. All children born during the period of study in ICDS and non-ICDS population have been followed for 12 months; (iii) in non-ICDS area, since there were no AWW, local village informant system was established; (iv) supervision for accuracy of data collection was improved in the form of detailed methodology; (v) urban and rural data have been considered separately; and (vi) sample includes both high as well as moderate IMR areas according to the SRS reports. There were 1746 live births in ICDS rural sample and 1894 in non-ICDS sample. IMR in these two groups was respectively 67.0 and 85.5 which is statistically significant in favour of ICDS projects. Significant decline of IMR was recorded both amongst male and female sexes. In fact, favourable impact was more significant for female infants. Further, it was noted that IMR in U.P. sample showed most significant decline in ICDS as compared to non-ICDS group. U.P. happens to be one of the states with very high IMR in SRS reports. It is possible that higher the IMR, better will be the impact of ICDS. Our current ongoing design of IMR study will be providing more data to suitably comment on this problem in another 3 years' time.

Cause specific IMR showed a considerable finding. There was considerable reduction in mortality due to diarrhoea and tetanus, the two diseases where ICDS programme can make a very important impact. Comparative figures for IMR due to diarrhoea in ICDS and non-ICDS groups were 8.0 and 17.4 and corresponding figures for tetanus were 4.6 and 12.1, respectively.

Comparative cohort study of IMR in ICDS and non-ICDS groups at the micro level established the following facts: (a) IMR in ICDS group was significantly lower as compared to the non-ICDS group; (b) favourable impact of ICDS was noted for both male and female children; (c) there was greater reduction of IMR in ICDS projects which to begin with had a high IMR; and (d) there was considerable reduction in deaths due to diarrhoea and tetanus in ICDS groups. This is a strong point for expansion of ICDS in reference to diarrhoeal disease control programme at the village level and control of mortality due to tetanus.

There was better utilization of services of the Primary Health Centres for infants in ICDS group as compared to non-ICDS group. These services included referral to the hospital (18.8 vs 11.1) care by PHC medical officer (17.1 vs 13.6) and services by LHV/ANM (11.1 vs 6.8). On the other hand local *dai* was preferred assistance before infants death in non-ICDS group (16.0 vs 8.5). These data establish the positive role of AWW and ICDS system for better utilization of health services infrastructure of rural area for sick and dying infants.

As already stated and earlier published that the ICDS infrastructure in urban area is almost different from rural areas. Essentially unlike the rural ICDS, which has become strong complement of health services at the village, the urban ICDS remains a very weak support for urban MCH services. Still it was

COLEMAN TO SEA ST	Severe n	nalnutrition	Moderate	malnutrition	
	Drought survey (Perc	Predrought survey eentage)	Drought survey (Perc	Predrought survey entage)	
0 to below 3 years	12.3 (4203)	8.7* (2938)	19.6 (4203)	16.5* (2938)	
3 to 6 years	10.0 (4015)	7.1* (2954)	21.0 (4015)	22.2 (2954)	
0 to below 6 years	11.2 (8218)	7.9* (5892)	20.3 (8218)	19.3 (5892)	

# Table IV : Prevalence of protein-energy malnutrition (weight for age criterion)

Figures in parentheses show no. of children studied. \* Statistically significant change

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Statistically significant change.

## Table V : Prevalence of protein-energy malnutrition (mid upper arm circumference criterion)

Age group	Severe malnutrition (Percentage)	Moderate malnutrition (Percentage)
1 to below 3 years	11.41	23.59
3 to below 5 years	6.77	19.72
1 to below 5 years	10.69	21.65

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## Table VI : Prevalence of protein-energy malnutrition (weight for height criterion)

Age group	Severe malnutrition (Percentage)	Moderage malnutrition (Percentage)	
0 to below 3 years	8.75	13.90	
3 to below 6 years	9.50	14.82	
0 to below 6 years	10.90	14.35	

the projects, except in one case where a decrease was reported to the range of 2 to 7 per cent in case of jowar and paddy respectively. This fall was reported to be due to subsidised food itmes provided by the government to all the tribal families.

- (iv) Cost of essential commodities: All the projects reported an increase in cost of essential commodities. The maximum increase was recorded for oil and *ghee*.
- (v) Cost of live stock: This was reported to be quite variable in the projects studied. The decreased cost of the cows and buffalows was reported from projects which had been under the drought for successive 3 to 4 years and did not have had late rains in 1987. The cost of goat, sheeps and poultry was found high in all the projects indicating that they have been used as a source of non-vegetarian foods.

## Comments

1. The deficit rainfall, decrease in crop yield, increase in prices of cereals and essential commoidties and variable increase in the price of live stock confirmed significant drought condition in the projects studied. It was noticed that there was considerable variation in the degree of drought parameters in different projects.

2. Effect of drought on health and nutritional status:

(i) Nutritional status: An unequivocal evidence for an increase in moderate and servere malnutrition (weight for age criterion) was recorded in the age group of 0-3 and 3-6 years. The degree of nutritional deterioration in different projects was variable. Undernutrition by weight for age criteria was further corroborated by study of mid upper arm circumference and weight for height data. Data are presented in Tables IV, V and VI.

Data on nutritional status collected in the present survey were compared with data collected in previous years annual surveys by ICDS consultants in the same district in similar type of population. It was confirmed that the drought conditions resulted to adverse effect on the nutritional status of children.

The degree of severe and moderately malnourished children varied from project to project. The highest prevalence of severe malnutrition was 20.36 per cent and the lowest was 1.9 per cent. A similar observation was made for moderate malnutrition amongst the children.

(ii) Clinical signs of nutritional deficiency: A considerable variation in the signs of nutritional deficiency was found in the different states. The signs of vitamin A. B-complex, iron deficiency as detected by night blindness, bitots spot, stomatitis and pallor were found higher than the previous studies conducted in nondrought situations in different parts of the country. The prevalence of severe malnutrition i.e., kwashiorkar/marasmus was in the range of 0.23 to 7.65 per cent in different projects. The morbidity record amongst the children with last 15 days showed an increase in the respiratory infection and diarrohea in the current study as compared to the studies conducted in non-drought conditions in ICDS projects.

3. Perception of the health and nutrition problem in drought by Medical Officers and Child Development Officers (CDPO).

 Medical Officer: The Medical Officers of Primary Health Centre of ICDS project were interviewed on a pretested semistructured open ended questionnaire for their perception about the adverse effects of drought on health and nutrition status of mothers and children and augmentation of medical care activities.

Data were available from 10 projects. Medical Officers in half of the PHC's reported an increase in the prevalence of anemia amongst women, diarrhoea and protein energy malnutrition amongst children and increase of undernutrition in lactating mothers. Half of the projects studied reported an increase in supply of medicines, vaccines, vitamin A solution, iron and folic acid, ORS, POL funds and bleaching powder. Three of the 8 projects reported an increase in budget of the PHC. Augmentation of health services inputs varied from project to project.

(ii) C.D.P.O. : The Child Development Project Officer is a non-medical person. CDPO is administrative as well as technical officer responsible for the implementation of the ICDS programme. The CDPOs were interviewed for their perception for adverse effect of drought on health and nutrition of mothers and children and also for augmentation of activities of ICDS for the management of drought. Nearly half of the CDPOs reported an increase in the prevalence of protein-energy malnutrition in under-6 years children and an overall increase in prevalence of undernutrition amongst the pregnant mothers.

Nearly half of CDPOs reported augmentation in the services of ICDS, which included increase in food supply, feeding centres, number of beneficiaries and funds for food supply and POL.

4. Wages of manual labour: The wages

of the manual labourers during drought situations showed a downward trend due to nonavailability of work. However, we found that there was an increase in wages of the manual labour. The possible explanation for this finding is that in majority of the projects the work was available as a drought relief measure.

5. Drought relief activities: The Sarpanch of village where anganwadis were located were interviewed. The major drought relief activities reported by them were as following: (i) increase in supply of drinking water; (ii) fair price shops; and (iii) subsidised seeds. In more than 50 per cent anganwadis areas, the NREP activities were being implemented. The other drought relief activities like fertiliser subsidy, subsidised ration, fodder relief were made available to the 25 to 40 per cent of the anganwadis.

## Conclusion

The special study on the effect of the drought in ICDS led to the following conclusions:-

1. The drought conditions were confirmed. There was considerable variations in the degree of the drought in different projects.

2. There was an increase in the severe and moderate malnutrition in ICDS projects due to drought.

3. There was increase in the morbidity due to diarrohea and respiratory infections.

4. The Medical Officers and CDPOs have proper perception of drought on nutritional status and morbidity.

5. There was augmentation of health and nutrition services, as well as, other welfare services in the drought effected areas which was successful in preventing the significant adverse effects of drought.

## 5. Mothers perception of child development and ICDS

## A. Background and Objectives

One of the objectives of ICDS is to enhance the capability of the mothers to look after the development of child. The package of services delivered at *anganwadis* centre and interaction of *anganwadi* workers with women of the village, particularly, pregnant and lactating women is the principal approach for communicating health and nutrition education to achieve this objective. A study was planned in a sample of ICDS projects in two northern hill states viz., Himachal Pradesh and Jammu & Kashmir to evaluate the knowledge and continued education of mothers on child development and ICDS.

The medical students formed a team for the study. Ten teams each consisted of two students were constituted. The student investigator received training for data collection. For first statge data analysis 135 *anganwadis* were selected from five projects in these two states and each team of the students collected data from 13-14 *anganwadis* by the questionnraie method and direct interaction with pregnant and lactating women. Data were collected on a pre-planned proforma. The student investigators communicated with the Bio-Statistics Cell of the CTC at AIIMS for final analysis of data.

#### Results

Table VII presents the mothers perception of ICDS. As many as 48.7 per cent expressed that *anganwadis* centre provided treatment for minor illnesses. Nearly 1/3rd of the interviewed women stated that the children learned good habits, numbers and poetry at the anganwadis. Other benefits included stimulation to the child, good health to the child and increase in the general knowledge etc.

Table VIII presentes the knowledge of mothers during the pregnancy, 80 per cent or above had the knowledge and practice for utilization of antenatal services.

Table IX presents the views of mothers regarding breast feeding after the delivery. A very high proportion constituting 85 per cent believed in the breast feeding within six hours of the delivery.

Nearly 49.8 per cent mothers gave weaning food to the children in the age group 4-6 months, 30 per cent provided it between 6-9 months and the rest after this period.

Table X and XI present two important aspects of the management of diarrhoea by mothers. Nearly 1/3rd of the mothers believed that the children continued to take normal feeds and normal breast feeding. As many as 78.9 per cent gave normal whole milk, in diarrohoea, to the children and 74 per cent favoured for giving more or normal quantity of liquid drinks. Sixty four per cent had the knowledge of oral rehydration solution (ORS) and 52 per cent knew how to prepare ORS at home.

## B. The Study of Breast Feeding Practices

Study on breast feeding practices was carried out in a total of 5 projects which comprised 2 rural projects in a sample of 561, 2 tribal projects in a sample of 334, and one urban project in a sample of 310

# Table VII : Benefits occurred through Anganwadi services

Benefit derived	Percentage beneficiaries	Benefit derived	Percentage beneficiaries	
Treatment of minor ailments	48.7	Environmental stimulation of children	19.9	
Good habit creation	33.6	Child is healthier	17.5	
Numeracy learning	30.9	Stopped loitering in the street	15.5	
Learns personal grooming	21.8	Others*	11.3	100

Other benefits include development early milestrons; does not fall ill, learns respects and gains general knowledge.

## Table VIII : Care during pregnancy

Care	Percentage mothers
Cleanliness during pregnancy	90.9
Tetanus immunisation	87.1
Iron and folic acid intake for anaemia	86.0
Health checkup (periodic antenatal care)	83.1
Supplementary nutrition receipt from AW	82.5
Delivery by trained person	78.5

After delivery	Percentage mothers
Within 2 hours	52.0
2 - 6 hours	33.1
6 - 12 hours	3.7
After 12 hours	10.3

## Table IX : Breast feeding practice

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Table X :	Feeding practices of	mothers during	diarrhoeal	episodes of children
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Practices	Percentage mothers		
Normal feeding	31.9		
Normal milk	78.9		
Normal breast feeding	28.8		
More or normal water	74.1		

## Table XI : Knowlewdge and skills of preparation of ORS by mothers

ORS	Percentage mothers		
Knowledge of ORS	64.1		
Preparation of ORS	52.8		
Knowledge of ingredient mixture in preparation of ORS	49.5 (41.0)*		

\* have the idea of constituents with the quantitative measures.

# Table XII : Breast feeding (BF) practices in more than 3 years old ICDS projects

Type of project	Sample size	0-1 yr % B.F.	1-2 yr % B.F.	2 yrs + % B.F.
Rural 2	561	19.1	74.5	6.4
Tribal 2	334	16.8	50.6	32.6
Urban 1	310	16.8	72.9	10.6
All total 5	1205	17.8	67.5	14.8 <sup>•</sup>

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## 6. Knowledge, attitude and practices of and anganwadi workers in ICDS

#### Background

Anganwadi worker is the principal functionary of the ICDS located at the village where the programme is being implemented. It was decided to conduct a study to record her knowledge and attitude and find out how best she was discharging her functions by interaction of the investigator team with anganwadi worker, her record and local population. Data were collected primarily by questionnaire method and study of the records and entered on the pre-planned proforma. The same sample of anganwadis was used for this study as was selected for investigating mothers' perception of child development and ICDS.

The study was carried out in 8 projects which covered 134 anganwadis and anganwadi workers.

#### Results

As many as 45.5 per cent of the *anganwadi* workers were local residents of the villages where *anganwadis* were located. The remaining (54.5%) came from a distance which varied from 1 to 30 km. In this group 80.8 per cent were residing within a radius of 5 km and 17.8 per cent within 15 km. It was noted that 71.2 per cent of the *anganwadi* workers who were not resident of the same village could reach to the place of work within half an hour.

A total of 94.8 per cent of anganwadi workers interviewed had received 3 months ICDS formal training. Further, 64.9 per cent were regularly receiving monthly sectorial continued education, 84.3 per cent of the anganwadi workers have been in service for more than 2 years. Weekly home visits were recorded by 82.2 per cent of anganwadi workers, the remaining were also carrying on with this function but the frequency was irregular . 85 per cent of the anganwadi workers were providing on the spot service to 20-40 children at each anganwadi. The remaining had an attendance of 10-20 children. Very high proportion (98 %) of anganwadi workers maintained the nutritional status recording of the children either by weight or by arm circumference. Proper growth charts were recroded by 76.9 per cent of anganwadi workers in this study group.

The anganwadi workers reported that their primary role in immunisation was to help the health teams, motivating the mothers and children and post-immunisation follow up. This was recorded in more than 90 per cent of anganwadi workers. 77 per cent of them kept fairly good record of immunisation. The major difficulties in immunisation as reported by anganwadi workers were noncooperation of mothers and children and non-availability of the health team after all the arrangements for immunisation have been made. Anganwadi workers had good knowledge of management of diarrohoea and prevention of vitamin A deficiency and nutritional anemia. 80-90 per cent of the anganwadi workers replied to the questions related to these subjects. Similary, a high proportion in the range of 81.3 to 95.5 per cent responded with correct answers related to antenatal care, post-natal care and family welfare services. The major complaint of anganwadi workers were less salary (66.5%) and more work (44.8%).

## IV. PUBLICATION OF PAPERS AND PRESENTATIONS BY THE CENTRAL TECHNICAL COMMITTEE AND THE CONSUL-TANTS

The research work carried out on ICDS has been published in national and international journals, state journals, and presented in various scientific meetings. Consultants have published 59 papers in the national and international journals, the Central Cell has published 11 papers in the national and international journals.

The consultants and their students have presented 53 papers at scientific meetings

and 9 papers have been presented by the Central Cell.

A total of 50 papers have been published in state journals by the consultants. Central Technical Committee has published 9 papers in state journals.

The list of publication and papers presented in meetings is listed in Appendix-III and IV.

# Appendices

# LIST OF ICDS CONSULTANTS FROM 1976 ONWARDS

S.NO.	Name and designation	Period of association	State/UT
1.	Dr. K.N. Agarwal Prof. of Paediatrics	1983-86	U.P.
	Institute of Medical Sciences Varanasi.		
2.	Dr. V.K. Agarwal Prof. of Paediatrics Motilal Nehru Medical College Allahabad.	1981-86	U.P.
3.	Dr. Faruk Ahmad Prof. of PSM Assam Medical College Dibrugarh.	1983 to date	Assam
4.	Dr. M. Ahmad Medical Superintendent Government Medical College	1982 to date	J & K
5.	Dr. J. S. Anand Prof. of Paediatrics Shri M.P. Shah Medical College Jamnagar.	1979-89	Gujarat
6.	Dr. G. Anjanlyulu Prof. of PSM Osmania Medical College Hyderabad.	1983 to date	Andhra Pradesh
7.	Dr. P.V. Aswath Prof. of PSM Karnataka Medical College Hubli.	1982 to date	Karnataka
8.	Dr. L. Taka, A.O. Joint Director Directorate of Health Services Kohima.	1986 to date	Nagaland
9.	Dr. M.C. Bachawat Principal, Regional F.W. Training Cer Indore.	1981-82 htre	M.P.
10.	Dr. Indira Bai Prof. of Paediatrics S.V. Medical College Tirupati.	1982-83	Andhra Pradesh

IV			
35.	Dr. I. Ibemtombi Devi Nameicakapam Leikari P.O. Imphal—8795 004.	1977 to date	Manipur
36.	Dr. (Mrs.) A.B. Desai Prof. of Paediatrics BJ Medical College Ahmedabad.	1978-86	Gujarat
37.	Dr. I.U. Dudani Prof. of PSM Jawaharlal Nehru Medical College Ajmer.	1988 to date	Rajasthan
38.	Dr. A.K. Dutta Associate Prof. of PSM Sardar Patel Medical College Bikaner.	19987 to date	Rajasthan
39.	Dr. T.P. Gandhi Surgeon Headquarter's Hospital Vijianagar.	1982 to date	Andhra Pradesh
40.	Dr. Monimoy Ganguly Prof. of PSM RG Kar Medical College Calcutta.	1982-86	West Bengal
41.	Dr. B.K. Garg Asstt. Prof. of Paediatrics Motilal Nehru Medical College Allahabad.	1979-84	Uttar Pradesh
42.	Dr. (Miss) S. Garod Paediatrician Shillong.	1980-85	Meghalay
43.	Dr. D.R. Gaur Reader in PSM Medical College, Rohtak.	1988 to date	Haryana
44.	Dr. H.K. Gaur Prof. of Paediatrics Government Medical College Surat.	1979 to date	Gujarat
45.	Dr. S.D. Gaur Prof. of PSM Institute of Medical Sciences Varanasi.	1987 to date	Uttar Pradesh
46.	Dr. T.R. Gopal Krishna Principal Health & F.W. Training Centre Hubli.	1988 to date	Karnataka

47.	Dr. A.K. Govila Prof. of PSM Gajra Raja Medical College Gwalior.	1987 to date	Madhya Pradesh
48.	Dr. H.N.S. Grewal Project Director , CH Deptt. Christian Medical College Ludhiana.	1982-87	Punjab
49.	Dr. (Mrs.) Anu Gupta Prof. of Paediatrics MAM College, New Delhi.	1982-84	Delhi
50.	Dr. Mukesh Gupta Lecturer Paediatrics Deptt. UMAID Hospital Jodhpur.	1982-86	Rajasthan
51.	Dr. (Mrs.) T.K. Guha Principal Health & F.W. Training Centre Jabalpur.	1981 to date	Madhya Pradesh
52.	Dr. K. Halder Prof. of Biochemistry & Nutrition AIIH & PH Calcutta.	1977-84	West Bengal
53.	Dr. O.R. Hazarika Associate Prof. of PSM Silchar Medical College Silchar.	1985-87	Assam
54.	Dr. D.L. Ingole Prof. of PSM Govt. Medical College Nagpur.	1979-86	Maharashtra
55.	Dr. Arvind Jaiswal Prof. of Paediatrics Nalanda Medical College Patna.	1982	Bihar
56.	Dr. O.N. Jaiswal Prof. of Paediatrics D/66, Doctor's Colony Kankarbagh Patna.	1979-88	Bihar
57.	Dr. (Mrs.) Anjali Jana Addl. Director of Health Services Calcutta.	1982-88	West Bengal

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VI			
58.	Dr. M.G. Javali Paediatrician Civil Hospital Belgaum.	1979-84	Karnataka
59.	Dr. S. Jayam Prof. of Paediatrics Inst. of Child Health & Hospital for C Madras.	1977 to date hildren	Tamil Nadu
60.	Dr. M. Jayaram Prof. of Paediatrics Banglore Medical College Bangalore.	1979-88	Karnataka
61.	Dr. M. Jaypal Selection Grade Asst. Surgeon Govt. Headquarter Hospital Vellore.	1986 to 88	Tamil Nadu
62.	Dr. S.S. Jodda Naga Hospital Kohima.	1976-84	Nagaland
63.	Dr. C.K. Joshi Prof. of PSM Sardar Patel Medical College Bikaner.	1986-87	Rajasthan
64.	Dr. V.K. Karan Associate Prof. of Paediatrics A.N. Magadh Medical College Gaya.	1979 to date	Bihar
65.	Dr. V.N. Karandikar Reader in PSM B.J. Medical College Pune.	1979-85	Maharashtra
66.	Dr. K.K. Kaul Prof. of Paediatrics Govt. Medical College Jabalpur.	1982 to date	M.P.
67.	Mukund Ketkar Prof. of PSM Shyam Shah Medical College Rewa.	1982 to date	M.P.
68.	Dr. Gopal Krishna Prof. of PSM GSVM Medical College Kanpur.	1982 to date	Uttar Pradesh

69.	Dr. M.V. Kulkami Prof. of PSM Govt. Medical College Mysore.	1988 to date	Karnataka
70.	Dr. Birender Kumar Deptt. of PSM Darbhanga Medical College Darbhanga.	1976 to date	Bihar
71.	Dr. Vijay Kumar Prof. of Community Medicine PGIMER, Chandigarh.	1979-85	Chandigarh
72.	Dr. Sunder Lal Prof. of PSM Medical College Rohtak.	1986 to date	Haryana
73.	Dr. V. Lohidas Prof. & Head Deptt. of SPM TD Medical College Alleppey.	1983-87	Kerala
74.	Dr. B.K. Mahajan Prof. of PSM M.G. Institute of Medical Sciences Wardha.	1976-82	Maharashtra
75.	Dr. T. Maha Laxmi Principal Regional FW & H Training Centre Bilaspur.	1986-87	M.P.
76.	Dr. H.B. Mahapatra Associate Prof. of PSM V.S.S. Medical College, Burla Sambalpur.	1983 to date	Orissa
77.	Dr. N.P. Mahapatra Associate Prof. of PSM MKCG Medical College Berhampur Ganjam.	1982 to date	Orissa
78.	Dr. S.P. Mandal Principal Health & FW Training Centre Jalpaiguri.	1988 to date	West Bengal
79.	Dr. S.L. Mandowara Lecturer in Paediatrics R.N.T. Medical College Udaipur.	1980 to date	Rajasthan

VIII			
80.	Dr. G.M. Mathur Prof. of PSM Jawahar Lal Nehru Medical College Ajmer.	1986-88	Rajasthan
81.	Dr. G.P. Mathur Prof. of Paediatrics GSVM Medical College Kanpur.	1979 to date	U.P.
82.	Dr. Y.C. Mathur Paediatrician Nilofer Hospital Hyderabad.	1982	Andhra Pradesh
83.	Dr. N.R. Mehta Prof. of PSM Government Medical College Surat.	1980-89	Gujarat
84.	Dr. S.P. Mehta Prof. of SPM M.A. Medical College New Delhi.	1983 to date	Delhi
85.	Dr. F.R. Meshack Sr. Medical Officer (Nutrition) Medical Directorate Port Blair.	1984 to date	Andaman & Nicobar
86.	Dr. D.M. Meshram Reader in PSM Officer of Health Unit Saoner Nagpur.	1982 to date	Maharashtra
87.	Dr. (Mrs.) P.K. Mishra Prof. of Paediatrics KG's Medical College Lucknow.	1987 to date	U.P.
88.	Dr. (Miss) U.J. Modi Prof. of Paediatrics Medical College Baroda.	1976 to date	Gujarat
89.	Dr. Virendra Mohan Prof. of PSM Medical College Amritsar.	1983 to date	Punjab
90.	Dr. Z.K. Muana Gynaecologist Civil Hospital Aizwal.	1979-87	Mizoram
91.	Dr. K.L. Mukherjee Principal Health & FW Training Centre Jalpaiguri.	1983-86	West Bengal
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92.	Dr. G. Nanjappa Prof. of PSM Government Medical College Bellary.	1984-87	Karnataka
93.	Dr. Anil Narang Additional Prof. of Paediatrics PGIMER, Chandigarh.	1979-81	Chandigarh
94.	Dr. K. Natrajan Paediatrician Selection Grade Govt. Pentland Hospital Vellore.	1982-87	Tamil Nadu
95.	Dr. Tara Natarajan Addl. Prof. of Paediatrics. Madras Medical College Madras.	1984-88	Tamil Nadu
96.	Dr. Maya Natu Prof. of PSM BJ Medical College Pune.	1985 to date	Maharashtra
97.	Dr. Renu B. Patel Prof. of Paediatrics Grant Medical College Bombay.	1979 to date	Maharashtra
98.	Dr. A. C. Patwari Prof. of PSM Gauhati Medical College Gauhati.	1978 to date	Assam
99.	Dr. M.K. Paul Paediatrician District Hospital Ziro, Lower Subansiri District.	1985 to date	Arunachal Pradesh
100.	Dr. C.L. Pegu Sr. Medical Officer District Hospital Along.	1987 to date	Arunachal Pradesh
101.	Dr. Elsie Philips Prof. of Paediatrics Medical College Trivandrum.	1980-89	Kerala

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102.	Dr. Ramesh Prasad Prof. of Paediatrics S.N. Medical College Agra.	1987 to date	U.P.
103.	Dr. K. Raghava Prasad Prof. of PSM Siddhartha Medical College Vijayawada.	1981 to date	Andhra Pradeshh
104.	Dr. R.K. Puri Prof. of Paediatrics JIPMER, Pondicherry.	1979-88	Pondicherry
105.	Dr. K.K. Rai Principal Regional Welfare Training Centre Bilaspur.	19 <mark>83-86</mark>	M.P.
106.	Dr. Baldev Raj Prof. of PSM Motilal Nehru Medical College Allahabad.	1979 to date	U.P.
107.	Dr. T. Rajagopal Reader in Paediatrics Govt. Rajaji Hospital Madurai.	1979 to date	Tamil Nadu
108.	Dr. K. Rajan Associate Prof. of Community Medicine, T.D. Medical College Alleppey.	1987 to date	Kerala
109.	Dr. Manika Raju Prof. of Paediatrics Vani Vilas Children Hospital Bangalore.	1983 to date	Kamataka
110.	Dr. R.V. Raju	1981-84	Andhra Pradesh
111.	Dr. Rama Ram Prof. of PSM NB Medical College Sushrat Nagar Darjeeling.	1983-88	West Bengal
112.	Dr. Suresh Rana Asstt. Prof. of Medicine IG Medical College Shimla.	1986 to date	Himachal Pradesh
113.	Dr. M. Nagaraj Rao Civil Surgeon Children's Specialist Deptt. of Paediatrics Gandhi Hospital Secunderabad	1980 to date	Andhra Pradesh

114.	Dr. T.M.V. Prasad Rao Prof. of PSM Kurnool Medical College Kurnool.	1981 to date	Andhra Pradesh
115.	Dr. T. Rama Rao Prof. of Paediatrics Andhra Medical College Visakhapatnam.	1987-88	Andhra Pradesh
116.	Dr. Y. Sreehari Rao Prof. of PSM S.V. Medical College Tirupati.	1979 to date	Andhra Pradesh
117.	Dr. Manju Rastogi V.Z. Hospital, Town Hall Moradabad.	1978 to date	U.P.
118.	Dr. Rathanligana Civil Hospital Aizwal.	1983 to date	Mizoram
119.	Dr. A. Rauf Prof. of PSM Government Medical College Srinagar.	1981 to date	J & K
120.	Dr. K.J. Reddy Prof. of PSM Kurnool Medical College Kurnool.	1983 to date	Andhra Pradesh
121.	Dr. Venkat Ram Reddy Prof. of Paediatrics Nilofer Hospital Hyderabad.	1983-85	Andhra Pradesh
122.	Dr. Bikash Roy Sr. Paediatrician V.M. Hospital Agartala.	1982 to date	Tripura
123.	Dr. (Mrs.) D. Roy Director of Health Services (MCH) Shillong.	1979 to date	Meghalaya
124.	Dr. Sitesh Roy Deptt. of PSM Calcutta National Medical College Calcutta.	1979 to date	West Bengal
125.	Dr. S.S. Saha Senior Medical Officer District Hospital P.O. Tezu Distt. Lohit.	1981-88	Arunachal Pradesh

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XII			
126.	Dr. M.K. Sainaba Assoc. Prof. of Paediatrics Medical College Calicut.	1981-89	Kerala
127.	Dr. H.V. Sakhrie Jt. Director Directorate of Health Services Kohima.	1986 to date	Nagaland
128.	Dr. Ganga Saran Prof. of Paediatrics Patna Medical College Patna.	1977-80	Bihar
129.	Dr. C.K. Sasidharan Asstt. Prof. of Paediatrics Institute of Maternal and Child Health. Calicut.	1979 to date	Kerala
130.	Dr. P.V. Sathe Prof. of PSM Grant Medical College Bombay.	1982-87	Maharashtra
131.	Dr. R.K. Satpathi Prof. of Paediatrics MKCG Medical College Behrampur, Ganjam.	1983 to date	Orissa
132.	Dr. D.M. Saxena Prof. of Paediatrics Government Medical College Surat.	1989 til date	Gújarat
133.	Dr. P.N. Saxena Prof. & Head Deptt. of Pediatrics KG's Medical College Lucknow.	1980-87	U.P.
134.	Dr. V.B. Saxena Prof. of PSM Pt. J.N. Memorial Medical College Raipur.	1982 to date	M.P.
135.	Dr. S.K. Sen Prof. & Head of Paediatrics V.S.S. Medical College Burla, Sambalpur.	1980-82	Orissa
136.	Dr. Vimlesh Seth Additional Prof. of Paediatrics AIIMS New Delhi.	1976-85	Delhi

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137.	Dr. D.N. Shah Prof. of PSM Medical College Baroda.	1988 to date	Gujarat	
138.	Dr. Usha Shah Prof. of PSM B.J. Medical College Pune.	1979-81	Maharashtra	
139.	Dr. Rajiv Sharan Reader in Paediatrics S.N. Children's Hospital Allahabad.	1980-86	U.P.	
140.	Dr. Daya Sharma Prof. of Paediatrics Kalavati Saran Children's Hospital New Delhi.	1982 to date	Delhi	
141.	Dr. P.N. Sharma Prof. of PSM RNT Medical College Udaipur.	1978-85	Rajasthan	
142.	Dr. S.P. Sharma Paediatrician Distt. Hospital Kathua.	1980 to date	J & K	
143.	Dr. Usha Sharma Associate Prof. of Paediatrics SMS Medical College Jaipur.	1984 to date	Rajasthan	
144.	Dr. B.K. Shee Assoc. Prof. of PSM Rural Health Centre Jagat Singhapur Cuttack.	1982 to date	Orisa	
145.	Dr. C. Shivraman Prof. of PSM Government Medical College Bellary.	1987 to date	Karnataka	
146.	Dr. C.M.S. Siddhu Prof. of PSM K.G's. Medical College Lucknow.	1975-77	U.P.	
147.	Dr. A.L. Singh Prof. of PSM Bhagalpur Medical College Bhagalpur.	1985-86	Bihar	

XIV			
148.	Dr. E.Y. Singh Asstt. Prof. of PSM Medical College Imphal.	1981 to date	Manipur
149.	Dr. Harjit Singh Associate Prof. of Paediatrics Medical College Rohtak.	1982-84	Haryana
150.	Dr. R.N. Singh Prof. of Paediatrics Dr. S.N. Medical College Jodhpur.	1978 to date	Rajasthan
151.	Dr. Surinder Singh Prof. of PSM GGS Medical College Faridkot.	1985 to date	Punjab
152.	Dr. Y.D. Singh Reader, Deptt. of Paediatrics BRD Medical College Gorakhpur.	1988 to date	U.P.
153.	Dr. B.N. Sinha Assoc. Prof. of Nutrition & Dietetics, AIIH & PH Calcutta.	1982 to date	West Bengal
154.	Dr. R.K.P. Sinha Prof. of Paediatrics Naland Medical College Patna.	1988 to date	Bihar
155.	Dr. R.P. Sinha Prof. of Paediatrics Rajendra Medical College Ranchi.	1989-87	Bihar
156	Dr. S.N. Sinha Prof. of PSM JN Medical College Aligarh Muslim University Aligarh.	1984 to date	U.P.
157.	Dr. Subhash C. Sood Prof. of Paediatrics Medical College Rohtak.	1979-81	Haryana
158.	Dr. V.P. Sood Prof. of PSM Medical College Rohtak	1982-88	Haryana

159.	Dr. D.K. Srinivasan Prof. of PSM JIPMER, Pondicherry.	1988 to date	Pondicherry
160.	Dr. B.C. Srivastav Prof. of PSM KG's Medical College Lucknow.	1979-85	U.P.
161.	Dr. M.V.G. Subramaniyam Prof. of Paediatrics S.V. Medical College Tirupati.	1984 to date	Andhra Pradesh
162.	Dr. P.K. Suneja Paediatrician Hindu Rao Hospital Delhi.	1982-86	Delhi
163.	Dr. S.P. Suri Prof. of PSM Government Medical College Jammu.	1981 to date	J & K
164.	Dr. Ramesh Thakur Paediatrician, District Hospital Mandi.	1980 to date	H.P.
165.	Dr. Kurian Thomas Prof. of Paediatrics Medical College Calicut.	1981 to date	Kerala
166.	Dr. A.D. Tiwari Reader in Paediatrics, Medical College Rohtak.	1980 to date	Haryana
167.	Dr. V.N.S. Tomar Prof. of PSM SMS Medical College Jaipur.	1980 to date	Rajasthan
168.	Dr. (Mrs.) S. Upadhyaya Prof. of PSM MGM Medical College Indore.	1988 to date	Madhya Pradesh
169.	Dr. K.K. Vadhera Prof. of PSM Christian Medical College Ludhiana.	1987 to date	Punjab
170	Dr. S.N. Vani Prof. of Paediatrics BJ Medical College Ahmedabad.	1979 to date	Gujarat

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171.	Dr. Y.L. Vasudeva Prof. of PSM Medical College Rothak.	1979-83	Haryana
172.	Dr. M.K. Vasundhra Prof. of PSM Bangalore Medical College Bangalore.	1980 to date	Karnataka
173.	Dr. B.N.S. Walia Prof. of Paediatircs PGIMER, Chandigarh.	1976-84	Chandigarh
174.	Dr. S.U. Warerkar Prof. of PSM BJ Medical College Pune.	1979 to date	Maharashtra
175.	Dr. D.K. Yadav Asstt. Prof. of PSM IGIMS, Sheikhpura Patna.	1985 to date	Bihar
176.	Dr. N.D. Yajnik Prof. Of Obtet. & Gyn. BJ Medical College Ahmedabad.	1980 to date	Gujarat
177.	Dr. M. Zaheer Prof. of PSM JN Medical College Aligarh Muslim University Aligarh.	1977 to date	U.P.

Appendix II

### List of MD Theses

Year	Title	Name of Consultant & Institution
1978	Job awareness and performance of anganwadi workers and ANMs and impact of ICDS on health status of children.	Dr. R.N. Singh, Dr. S.N. Medical College, Jodpur, Rajasthan.
1978	An epidemiological survey to assess the health and nutritional status of children 0-6 years in rural community of Kathura Block District Rohtak.	Dr. Y.L. Vasudeva, Medical College, Rohtak, Haryana.
1978	An epidemiological study of protein energy malnutrition in the children aged below 6 years of a rural population of Uttar Pradesh.	Dr. B.C. Srivastava, K.G.'s Medical College, Lucknow, U.P.
1979	Morbidity study in pre-school children (3-6) years of age (selected group) attending Anganwadis in Chiri Community Develop- ment Area, District Rohtak, Haryana State.	Dr. Y.L. Vasudeva, Medical College, Rohtak, Haryana.
1979	Study of dietary practices, attitude and knowledge of pregnancy/lactating/mothers and early childhood feeding/rearing as a basis for sound nutrition education programme.	Dr. Y.L. Vasudeva, Medical College, Rohtak, Haryana.
1979	A study of ICDS in Vengara (Malappuram District).	Dr. K.C. Rajagopalan, Institute of Child Health, Calicut, Kerala.
1980	Assessment of nutritional status of pregnant mothers in urban slums of Nagpur City covered by ICDS Scheme.	Dr. D.L. Ingole, Govt. Medical College, Nagpur, Maharashtra.
1980	Impact of ICDS scheme on health status of pre-school children and health know- ledge of anganwadi workers in Garhi block, Rajasthan.	Dr. B. Bhandari, R.N.T. Medical College, Udai- pur, Rajasthan.
1980	A study of ICDS Scheme in 'Calicut urban area'.	Dr. K.C. Rajagopalan, Institute of Maternal & Child Health, Calicut, Kerala.
1980	A study of child rearing practices under six years of age in one of the tribal areas of Rajasthan (Pindwara Block of Sirohi District).	Dr. R.N. Singh, Dr. S.N. Medical College, Jodhpur, Rajasthan.
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,1983	Extent of physically handicapped children (0-6 years) in selected rural community of Kathura Block and their medico-social problems.	Dr Ro
1983	Comparative study of infant and early childhood mortality in rural selected blocks of Beri and Kalanaur.	Dr Ro
1983	Mortality patterns in infants and children below six years in urban slums of Gorakhpur City under ICDS scheme.	Dı Go
1983	Monitoring of PEM (Grade-III & IV of 3 to 6 years old children) in slums of Baroda Anganwadi over a period of 6 months.	Di S.
1983	Some observations on vital statistics in a captive population of urban slum of Lucknow.	Di K.
1984	Study of impact of six years exposure to ICDS (Integrated Child Development Services) Scheme on growth, development and health status of target children in Dalmau project area (Uttar Pradesh).	D
1984	Surveillance of severely malnourished (Grades-III & IV) under five children in urban slums of Nahari-Ka-Naka (Jaipur).	D Ja
1984	Disability in ICDS.	D G
1984	A study of community reaction to the scheme of Integrated Child Development Services and its package of services.	D H
1984	Study of problems encountered by health personnel (Front line workers and middle level supervisors) in delivery of health services in ICDS project area.	D R
1984	Health status of children (0-6 years) with special reference to rearing practices and immunisation status against EPI group of diseases in Deeg rural ICDS block.	D Ja
1984	Monitoring of servere malnutrition (Grades-III & IV) in Integrated Child Development Services (ICDS) scheme (A study of 150 cases with 8 months. follow-up).	D A

Dr. Y.L. Vasudeva, Medical College, Rohtak, Haryana.

Dr. Y.L. Vasudeva, Medical College, Rohtak, Haryana.

Dr. G.P. Mathur, B.R. D. Medical Cotlege, Gorakhpur, U.P.

Dr. U.J. Modi, Medical College and S.S.C. Hospital, Vadodra, Gujarat.

Dr.S. Thakur and Dr.P.N. Saxena, K.G's. Medical College, Lucknow, U.P.

Dr. B.C. Srivastava, K.G.'s Medical College, Lucknow, U.P.

Dr. V.N.S. Tomar, S.M.S. Medical College, Jaipur, Rajasthan.

Dr. G.P. Mathur, B.R.D. Medical College, Gorakhpur, U.P.

Dr. Sunder Lal, Medical College, Rohtak, Haryana.

Dr. Vidya Prakash, Medical College, Rohtak, Haryana.

Dr. V.N.S. Tomar, S.M.S. Medical College, Jaipur, Rajasthan.

Dr.S.N. Vani, B.J. Medical College, Ahmedabad, Gujarat.

1984	Knowledge, beliefs and other aspects about measles and impact of measles vaccine in ICDS and non-ICDS areas.	Dr. S.N. Va Ahmedabad
1984	A study of the health and nutritional status of children, 0 to 6 years' age group, in the tribal block of Tokapal, Bastar District, Madhya Pradesh (India).	Dr. V.B. Sa Raipur, Ma
1984	A study on impact of ICDS scheme on health and nutritional status of children (1 to 5 years of age) of an urban slum of Calcutta.	Dr. B.N. Si & Public H
1984	Effect of mass deworming on children aged 2 to 5 years on nutritional and health status.	Dr. K.G. Ka Hosital for Tamil Nadu
1985	Incidence of sicknesses in infants as determined by anganwadi workers in ICDS block Kathura.	Dr. Vidya F Rohtak, Ha
1985	A study of abilities of primary health care workers in using simple anthropometric measurements for assessment of nutritional status of pre-school children (3-6 years) in block Kathura (Erstwhile).	Dr. Sunder Haryana.
1985	Assessment of nutiritional status of 0-6 years children in ICDS block Beri, district Rohtak.	Dr. Vidya F Rohtak, Ha
1985	A study of morbidity pattern in pre-school children (1-3 years) as determined by anganwadi workers in Erstwhile block Kathura.	Dr. Vidya F Rohtak, Ha
1985	A prospective annual study of births and deaths in a defined urban slum population.	Dr. K.K. Ka Jabalpur, M
1985	An assessment of functioning of 96 anganwadis in urban slum ICDS project of Amritsar alongwith study of Knowledge, attitude and practices of the functionaries.	Dr. V. Mo Punjab.
1985	A clinico-epidemiological study of vitamin-A deficiency in pre- school children in ICDS urban project, Gorakhpur.	Dr. G.P. M Gorakhpur,
1985	A follow-up study of pre-school children of Grades-III & IV malnutrition in ICDS Urban project Dhar (MP).	Dr. M. Ketk Indore, Mac

Dr. S.N. Vani, B.J. Medical College, Ahmedabad, Gujarat.

Dr. V.B. Saxena, J.N.M. Medical College, Raipur, Madhya Pradesh.

Dr. B.N. Sinha, All-India Institute of Hygiene & Public Health, Calcutta, West Bengal.

Dr. K.G. Kamala, Institute of Child Health and Hosital for Children, Egmore, Madras, Tamil Nadu.

States States

Dr. Vidya Prakash Sood, Medical College, Rohtak, Haryana.

Dr. Sunder Lal, Medical College, Rohtak, Haryana.

Dr. Vidya Prakash, Medical College, Rohtak, Haryana.

Dr. Vidya Prakash, Medical College, Rohtak, Haryana.

Dr. K.K. Kaul, Govt. Medical College, Jabalpur, Madhya Pradesh.

Dr. V. Mohan, Medical College, Amritsar, Punjab.

Dr. G.P. Mathur, B.R.D. Medical College, Gorakhpur, U.P.

Dr. M. Ketkar, M.G.M. Medical College, Indore, Madhya Pradesh.

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1987	A study of adequacy, utilization and impact of health inputs provided to anganwadi workers in Integrated Child Development Services.
1987	Feeding and weaning practices in infancy & childhood.
1987	Study of health status of beneficiaries and health care provided under ICDS in slums of Surat City, Gujarat.
1987	Study of drug exposure in infants and children below six years and in pregnant and lactating mothers in ICDS urban projects, Gorakhpur.
1987	A longitudinal study of morbidity pattern in pre-school children (0-6 years) of an urban slum covered by an ICDS block.
1988	A study of morbidity and mortality in 0-5 years age group with special reference to child rearing practices in rural ICDS.
1988	Study of better domicilliary management of respiratory diseases in ICDS urban project Grokhpur.
1988	A clinical study of morbidity and mortality pattern of children under five years of age in slum area of Jodhpur(Western Rajasthan).
1988	A clinical study of birth and mortality pattern of children under five years of age in rural area of Western Rajasthan Jodhpur.
1988	Growth monitroing of children (0-3 years) by village level workers in Kathura block.
1988	Immunisation coverage evaluation under universal immunisation programme in ICDS and non-ICDS areas undertaken by Medical College, Rohtak.
1988	A study of weaning practices and subsequent growth of infants exclusively breast fed for first six months of life.
1988	Impact of ICDS scheme on health and nutritional status of rural children.
1988	Health, nutritional and immunisation profile of pre-school children in urban ICDS block (Jamnagar) - A study of 885 children.

Dr. P.V. Raval, Saurashtra University, Gujarat.

Dr. N.R. Mehta, Govt. Medical College, Surat, Gujarat.

Dr. G.P. Mathur, B.R.D. Medical College, Gorakhpur, U.P.

Dr. S.N. Vani, B.J. Medical College, Ahmedabad, Gujarat.

Dr. V.N.S. Tomar, S.M.S. Medical College, Jaipur, Rajasthan.

Dr. G.P. Mathur, G.S.V.M. Medical College, Kanpur, U.P.

Dr. R.N. Singh, Dr. S.N. Medical College, Jodhpur, Rajasthan

Dr. R.N. Singh, Dr. S.N. Medical College, Jodpur, Rajasthan.

Dr. Sunder Lal, Medical College, Rohtak, Haryana.

Dr. V.P. Sood, Medical College, Rohtak, Haryana.

Dr. Y.D. Singh, B.R.D. Medical College, Gorakhpur, U.P.

Dr. J.S. Anand, M.P. Shah Medical College, Jamnagar, Gujarat

Dr. J.S. Anand, M.P. Shah Medical College, Jamnagar, Gujarat.

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- 1988 A study of weaning practices and subsequent growth of infants exclusively breast fed for first six months of life.
- 1988 A study of child rearing practices in ICDS blocks of Jaipur slums.
- 1988 Health and nutritional status of children aged 0-6 years, follow-up study for one year during January-December, 1987, in Bangalore under urban ICDS project: Its impact on the pattern of birth and deaths in the area.
- 1988 Evaluation of knowledge, attitude and practices of mothers on diarrhoeal disorders and sugar and salt solution.
- 1988 Evaluation of Universal Immunisation Programme in ICDS area.
- 1989 A study of nutritional status of the children below six years of age in drought affected ICDS project area Degana, District Nagaur.
- 1989 An evaluation study of Integrated Child Dr. G.M. Mathur, a Development Services(ICDS) scheme at ICDS Ajmer, Rajasthan. block Degana district Nagaur (Rajasthan).

Dr. G.P. Mathur, B.R.D. Medical College, Gorakhpur, U.P.

Dr. Usha Sharma, S.M.S. Medical College, Jaipur, Rajasthan.

Dr. M. Jayaram, K.C. General Hospital, Malleswaram, Bangalore, Karnataka.

Dr. K.G. Kamala, Institute of Child Health and Hospital for Children, Egmore, Madras, Tamil Nadu.

Dr. K.G. Kamala, Institute of Child Health and Hospital for Children, Egmore, Madras, Tamil Nadu.

Dr. G.M. Mathur, J.L.N. Medical College, Ajmer, Rajasthan.

Dr. G.M. Mathur, J.L.N. Medical College, Ajmer, Rajasthan.

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- 2. Walia B.N.S. Evaluation of knowledge and competence of Anganwadi workers as agents for health care in rural population. *Indian Paedtr* 1978, 15: 797-801.
- 3. Chopdar A. and Samal N.C. Nutritional status of preschool children at Subdega Tribal ICDS project (Orissa). Indian Paedtr 1979, 46: 87-91.
- 4. Chopdar A. ICDS A new approach to MCH services its activities in Orissa. Indian J Paedtr 1979, 46: 53-7.
- 5. Indira Bai K., Raghavaprasad K., Srinath V., Kumar R. and Reddy C.O. Nutritional and anthropometric profile of Primary school children in rural Andhra Pradesh (Kambadur ICDS Block). Indian Paedtr 1979, 26: 1085-90.
- 6. Lal S. Child bangle for screening of severely malnourished children. Indian J Prev Soc Med 1979, 10: 165-7.
- 7. Seth V., Sundaram K.R., Ghai O.P. and Gupta M. Profile of morbidity and nutrition status and their effect on the growth potentials in preschool children in Delhi, India. *Trop Paedtr Environ Child Health*. 1979, 23-29.
- 8. Seth V., Sundaram K.R. and Gupta M. Growth reference standards for developing countries (determination of criteria for India). J Trop Paedtr Environ Child Health 1979, 37-41.
- 9. Lal S. Better Primary Health Care utilization through ICDS scheme in Haryana. Indian J Paedtr 1980, 47: 293-6.
- 10. Sundaram K.R., Seth V. and Gupta M. Law-like relationship between height and weight of infants and preschool children. Indian J Med Res 1980, 71: 263-7.
- 11. Udani R.H. Evaluation of knowledge and efficiency of Anganwadi workers. Indian J Paedtr 1980, 47: 289-92.
- 12. Bhandari B. and Mandowara S.L. Nutritional and immunisation status of children in an ICDS block. Indian Paedtr 1981, 18: 187-91.
- 13. Bhandari B., Chhaparwal R. and Mandowara S.L. Outcome of children with severe grades of protein energy malnutirion in an ICDS block. *Indian J Paedtr* 1981, 49: 289-92.
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- 15. Lal S. At risk factors in a rural area. Indian J Paedtr 1981, 48: 605-8.
- 16. Lal S. and Vasudeva Y.L. Anganwadi worker as PHC worker for vulnerable group in rural ICDS project area. Indian J Comm Med 1982, 7: 19-24.

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- 18. Patel R.B., Udani R.H. and Khanna S.A. Pediatric dermatoses and eradication in slums. Indian J. Paedtr 1982, 49: 135-139.
- 19. Patel R.B. and Udani R.H. Impact of ICDS on preschoolers of urban slums. Indian J Paedtr 1982, 49: 215-8.
- 20 Rao P.S.S., Prasad K.R. and Indira Bai K. A study of leprosy among urban and rural school children of Andhra Pradesh. *Leprosy India* 1982, 54: 100-9.
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- 42. Lal S. and Goomer R. Identification of simple indicators of nutrition surveillance for Primary Health Care workers in field situations. *Indian J Comm Med* 1986, 11: 143-9.
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- 3. Lal S. and Vasudeva Y.L. Emerging referral system and pattern of medical and health care at ICDS block Kathura at different levels of Primary Health Centre with special reference to MCH services in relation to AW and sub-centres. *Haryana Children News Bulletin Dec.* 1979, 4 & 5:
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Appendix-III

## TABLE 1. DISTRIBUTION OF ICDS PROJECTS AND CONSULTANTS FROM 1976 TO MARCH 1989

Year	Numb	per of
	Projects	Consultants
1976-77	33	27
1977-78	45	27
1978-79	116	28
1979-80	179	104
1980-81	246	98
1981-82	365	98
1982-83	722	103
1983-84	929	104
1984-85	1117	113
1985-86	1318	115
1986-87	1612	109
1987-88	1738	99
1988-89	1952	103

### TABLE 2. ANNUAL SURVEYS BY CONSULTANTS : FROM 1976-77 TO1987-88

Year of	Annu	ual survey
survey	No. alloted	No. Surveyed
1976-1977	29	27(93.1)
1977-1978	27	26(96.3)
1978-1979	26	16(61.5)
1979-1980	89	60(67.4)*
1980-1981	83	56(67.5)*
1981-1982	60	56(93.3)
1982-1983	72	65(90.3)
1983-1984	76	72(94.7)
1984-1985	92	87(94.6)
1985-1986	64	62(96.9)
1986-1987	22	20(90.9)
1987-1988	84	80(95.2)

Figures in parentheses are percentages

\* Involvement of district level health staff.

Year		Number of MD Theses	
1978		3	
1979		3	
1980		4	
1981		11	
1982		8	
1983		11	
1984		11	
1985		9	
1986		16	
1987		15	
1988		15	
1989	(March)	2	
Tota	1:	108	

#### TABLE 3. DISTRIBUTION OF M.D. THESES SINCE 1976 TO MARCH, 1989 ON ICDS SUBJECTS

	1 m			
TABLE 4	ANTENATAL CARE	AND TETANUS	TOXOID I	<b>IMMUNISATION IN</b>
	MORE THAN 3 YEA	RS OLD ICDS P	ROJECTS	

		Antenatal check up by trained personnel		Tetanus toxoid (2 doses)			
Type of project	No. of projects	Sample size	Percentage covered	Sample size	Percentage received		
Rural + Tribal	33	1766	47.2	919	37.6		
Urban	10	648	60.6	341	49.8		
All	43	2414	50.8	1260	40.9		

#### XLIV

## TABLE 10. DELIVERY OF SERVICES IN ICDS (EXPERIMENTAL GROUP) AND NON-ICDS POPULATION (CONTROL GROUP)

Type of	Home	delivery	-	Delivery by trained personne d Number covered	
project	Sample size	Number c	overed		
ICDS :				1 K	
Rural	1592	1532	(96.2)	1260	(79.1)
Urban	352	322	(91.5)	224	(63.6)
Total	1944	1854	(95.4)	1484	(76.3)
Non-ICDS :					
Rural	942	882	(93.6)	509	(54.0)
Urban	355	335	(94.4)	132	(37.2)
Total	1297	1217	(93.8)	641	(49.4)

Figures is parentheses are percentages

#### TABLE 11. COVERAGE OF POSTNATAL SERVICES TO LACTATING MOTHERS IN CONTROL (BASELINE) AND EXPERIMENTAL (OPERATIONAL ICDS) GROUPS

Services	Control population	> 3 years old projects
Health check-up		
Trained personnel	29.9	29.3
Total receipt	48.2	49.7
Nutrition and health education	27.6	44.6
Family welfare advice	30.0	43.6
Supplementary nutrition		
Eligible receipt	15.4	29.4
Total receipt	12.9	32.3
No. of lactating women	1938	3100
No. of projects	28	44

Services	More than 3 years old ICDS project			5	
	Rural	Tribal	Urban	11.5	
Health check-up:	and and a second second		15.0		
Trained personnel	23.2	20.6	47.0		
Total receipt	52.5	28.8	57.2		
Nutrition and health education	43.3	29.9	56.2		
Family welfare advice	40.8	32.3	56.3		
Supplementary nutrition:			a marine for		
Eligible received	30.4	33.0	24.8		
Total received	32.2	33.2	31.5		
No. of lactating women surveyed	1707	548	851		
No. of projects	24	10	10		

#### TABLE 12. POSTNATAL SERVICES TO LACTATING MOTHERS IN RURAL, TRIBAL AND URBAN ICDS PROJECTS

#### TABLE 13.POSTNATAL SERVICES TO LACTATING MOTHERS IN CONTROL POPULATION (BASELINE) IN 1976 AND EXPERIMENTAL (FOLLOW-UP) POPULATION

Services	Control population 1976	ICDS population 1985	
Health check-up:			
Trained personnel	N.R.	43.3	
Total receipt	10.8	53.2	
Nutrition and health education	0.5	56.4	
Family welfare advice	0.3	55.9	
Supplementary nutrition:			
Eligible receipt	N.R.	41.5	
Total receipt	14.2	35.6	
No of lactating women	6091	805	
No. of projects	27	13	

#### XLVI

# TABLE 14. IMMUNISATION COVERAGE IN 0-<6 YEARS AGE CHILDREN IN<br/>MORE THAN 3 YEARS OLD ICDS PROJECTS AND IN CONTROL<br/>GROUP WITHOUT ICDS SERVICES

			(Data are	e percenta	ge values)		
	Control	ontrol > 3 years of		ld projects			
		Rural	Tribal	Urban	All		
BCG	22.6	38.7	32.4	56.8	42.9		
DPT (3 doses)	22.6	39.1	39.4	59.1	45.0		
Polio (3 doses)	<mark>23</mark> .1	_		_	46.0		
TT (pregnant women) (2 doses)	24.5	40.0	29.3	51.4	41.0		
Children surveyed	6,751	17,567	5,628	9,565	32,760		
Number of projects	28	24	9	10	43		
Pregnant women surveyed	1,464	1,293	473	648	2,414		

# TABLE 15. IMMUNISATION COVERAGE IN 0 - 2 YEARS AGE CHILDREN IN<br/>MORE THAN 3 YEARS OLD PROJECTS AND CONTROL<br/>POPULATION IN 1985

			(Data ar	e percentage	e values)
	Control		> 3 y	ears old proj	iects
		Rural	Tribal	Urban	All
BCG	17.3	29.6	20.6	43.5	32.0
DPT (3 doses)	13.7	22.9	27.3	36.4	27.7
Polio (3 doses)	14.8	22.6	24.4	41.7	28.5
Children surveyed	66,751	5,422	1,946	3,059	10,427
Number of projects	28	24	9	10	43

# TABLE 16.IMMUNISATION STATUS IN CHILDREN 0-6 YEARS AND PREG-<br/>NANT WOMEN IN 1976 BASELINE AND 8 YEARS OPERATIONAL<br/>ICDS PROJECTS IN 1985

	Baseline 1976	8 years of ICDS 1985		
BCG	21.0	50.5		
DPT (3 doses)	4.9	50.2		
Polio (3 doses)	NR	51.2		
TT (2 doses; pregnant women)	6.0	32.1		
Sample size:				
(a) Preschool	27,726	9,867		
(b) Pregnant women	1,210	654		

## TABLE 17. IMMUNISATION STATUS IN CHILDREN 0 - 6 YEARS IN MORE THAN 3 YEARS OLD ICDS PROJECTS

Type of project	No. of projects	BCG	DPT	Polio
Rural	12	22732 (75.5)	23801 (67.4)	23587 (64.7)
Tribal	3	985 (30.8)		
Urban	16	8452 (59.6)	8657 (59.9)	8657 (62.3)
Total	31	32169 (69.9)	32458 (65.4)	32244 (64.0)

Figures in parentheses are percentages

## TABLE 18. IMMUNISATION STATUS IN CHILDREN 0 - 3 YEARS IN MORE THAN 3 YEARS OLD ICDS PROJECTS

Type of project	No. of projects	BCG	DPT	Polio
Rural	5	1811 (46.0)	2238 (50.7)	2238 (56.3)
Tribal	4	641 (40.6)	433 (27.9)	
Urban	4	442 (80.3)	442 (70.4)	442 (69.0)
Total	13	2894 (50.0)	3113 (50.3)	2680 (58.4)

Figures in parentheses are percentages

#### XLVIII

		1	Non-ICI	DS (Cor	ntrol)		3-5 ye	ars old I	CDS	
	Sample size	BCG	DPT 3 doses	Polio 3 doses	Mea- sles	Sample size	BCG	DPT 3 doses	Polio 3 doses	Mea- sles
Andhra										
Pradesh	875	20.1	41.2	41.7	8.3	599	24.9	53.1	52.1	10.2
Karnataka	81	3.7	17.3	17.3	0.0	536	75.2	68.1	69.8	36.4
Kerala	115	40.9	41.7	32.2	2.6	428	62.8	63.5	63.5	17.1
Maharashtra	145	49.0	46.2	46.9	20.0	382	41.4	55.2	53.4	11.8
Orissa	171	10.5	0.0	0.0	13.4	536	43.5	45.1	45.1	32.3
Punjab	150	39.3	64.7	64.7	18.7	292	43.1	51.7	52.0	18.8
Rajasthan	104	5.8	17.3	17.3	2.9	341	2.0	28.4	31.1	3.2
Tamil Nadu	154	90.2	87.7	87.7	38.3	612	65.8	78.8	78.4	42.2
Uttar Prades	h 221	9.9	14.0	14.9	2.7	1025	32.7	26.5	22.5	6.0
West Bengal	201	3.0	14.4	8.0	0.0	594	32.0	36.5	36.2	19.7

### TABLE 19. STATEWISE PERCENTAGE COVERAGE OF 12+ TO 24 MONTHSCHILDREN BY IMMUNISATION DURING 1987-88

### TABLE 20. PERCENTAGE COVERAGE OF 12+ TO 24 MONTHS CHILDREN BYBCG AND MEASLES VACCINATION DURING 1987-88

Marine Company	Sample size		No	Non-ICDS		3-5 years of ICDS	
Location	Non-ICDS	3-5 yr of ICDS	BCG	Measles	BCG	Measles	
Rural	1241	4831	30.4	10.4	46.3	17.4	
Tribal	651	1819	13.6	4.9	40.2	18.8	
Urban	126	1452	7.1	7.1	54.4	32.7	
All	2018	8102	23.8	0.4	46.4	20.5	

TABLE 21.	PERCENTAGE COVERAGE OF 12+ TO 24 MONTHS CHILDREN BY
	DPT AND POLIO (3 DOSES) VACCINATION DURING 1987-88

and the second	Sample size		Non-ICDS		3-5 years of ICDS	
Location	Non-ICDS	3-5 yr of ICDS	DPT (3 doses)	Polio (3 doses)	DPT (3 doses)	Polio (3 doses)
Rural	1241	4831	39.1	35.7	47.9	46.4
Tribal	651	<mark>18</mark> 19	17.0	17.3	42.7	38.1
Urban	126	1452	0.8	1.6	69.2	69.6
All	2018	8102	29.3	27.4	50.6	48.8

 TABLE 22. NUTRITIONAL SERVICES IN CONTROL AND MORE THAN THREE YEARS OLD ICDS PROJECTS

		(Data are percentage values)				
Nutritional	Control	Experimental group				
services	group	Rural	Tribal	Urban	All	
Vitamin A	19.7	32.9	27.8	50.1	37.1	
Iron and folic acid	7.2	19.5	19.8	29.6	22.5	
Supplementary food Sample size:	23.6	39.8	41.9	47.3	42.3	
Preschool children	20605	17567 (24)	5628 (9)	9565 (10)	32760 (43)	

Figures in parentheses indicate the number of projects evaluated

AND 19 PROJEC	85 AND EXPERIME	ENTAL GROUP OF 8	3 YEARS OLD ICDS
		(Data are percentage	e values)
Nutritional services	Control population 1976	8 years after ICDS 1985	Control population 1985
Vitamin A	10.3	39.2	19.7
Iron and folic acid	N.R.	25.1	7.2
Supplementary nutrition	n 25.2	39.2	23.6
Sample size: Preschool children	27726 (23)	9867 (13)	20605 (28)

## TABLE 23. NUTRITIONAL SERVICES IN CONTROL POPULATION IN 1976

Figures in parentheses indicate the number of projects from where the sample was obtained.

### TABLE 24. COVERAGE OF PRESCHOOL CHILDREN (0-6 YEARS) BY SUPPLE-MENTARY NUTRITION IN ICDS PROJECTS OPERATIONAL FOR **MORE THAN 3 YEARS**

Type of project	Supplementary nutrition received						
	No. of projects	Sample size	No.				
Rural	2	2884	1151(39.9)				
Tribal	3	1811	830(45.8)				
Urban	3	888	442(49.8)				
Total	8	5573	2423(43.4)				

Figures in parentheses are percentages

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# TABLE 25.COVERAGE OF PRESCHOOL CHILDREN (0-6 YEARS) BY IRON &<br/>FOLIC ACID AND VITAMIN A ADMINISTRATION IN ICDS PROJ-<br/>ECTS OPERATIONAL FOR MORE THAN 3 YEARS

	Iron and fo	lic acid received	Vitamin A received		
No. of projects	Sample size	No.	No. of projects	Sample size	No.
1	400	164(41.0)	2	2884	2235(77.5)
1	352	201(57.1)	2	1254	828(66.0)
2	752	365(4 <mark>8</mark> .5)	4	4138	3063(74.0)
	No. of projects 1 1 2	Iron and foNo. of projectsSample size1400 3522752	Iron and folic acid receivedNo. of projectsSample sizeNo.1400164(41.0)1352201(57.1)2752365(48.5)	Iron and folic acid receivedVir No. of projectsNo. of projectsSample 	Iron and folic acid receivedVitamin A receivedNo. of projectsSample sizeNo. projectsNo. of sizeSample projects1400164(41.0)228841352201(57.1)212542752365(48.5)44138

Figures in parentheses are percentages

# TABLE 26. COMPARATIVE STUDY OF IRON AND FOLIC ACID AND VITAMIN<br/>A COVERAGE FOR PRESCHOOL CHILDREN IN ICDS AND NON-<br/>ICDS POPULATION

	(Data are percentage values)						
Type of project	Sample size	Iron and folic acid received	Vitamin A received				
ICDS							
Rural	400	41.0	76.3				
Urban	352	57.1	61.1				
Total	752	48.5	69.1				
Non-ICDS							
Rural	357	10.4	17.9				
Urban	355	28.7	31.5				
Total	712	19.5	24.7				

## TABLE 27. LONGITUDINAL STUDY OF NUTRITIONAL STATUS OF PRE-SCHOOL CHILDREN (1975 TO 1985)

	(Data are percentage values)					
Nutritional status	Baseline (1976)	8 years old ICDS projects (1985)				
Normal and grade I	47.2	72.6				
Grade II	27.0	19.8				
Grades III and IV	19.1	6.3				
Not recorded	6.7	1.3				
Sample size	23	13				

#### TABLE 28. NUTRITIONAL STATUS OF PRESCHOOL CHILDREN IN CONTROL AND ICDS POPULATION

		(Data are percentage values)						
Nutritional	Control	Experi	Experimental group (> 3 years old projects)					
status r	group	Rural	Tribal	Urban	All			
Normal and grade-I	69.5	75.0	82.8	65.9	73.7			
Grade II	19.7	16.1	12.1	25.1	18.1			
Grades III								
and IV	8.4	6.6	3.9	7.5	6.4			
Not recorded	2.4	2.3	1.2	1.4	1.8			
Sample size	20605 (28)	17567 (24)	5628 (9)	)565 (10)	32760 (43)			

Figures in parentheses represent number of projects evaluated

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# TABLE 29. NUTRITIONAL STATUS OF PRESCHOOL CHILDREN IN 1976,1979 AND 1985 EVALUATION STUDIES

	(Data are percentage values)					
Nutritional status		Control				
	1976	,1979	1985			
Normal and grade-I	47.2	56.2	69.5			
Grade-II	27.0	28.2	19.7			
Grades-III and IV	19.1	15.1	8.4			
Not recorded	6.7	0.5	2.4			
Sample size	27726	27487	20605 (28)			

Figure in parentheses represents number of projects evaluated

# TABLE 30.NUTRITIONAL STATUS OF 0-6 YEARS CHILDREN IN MORE THAN<br/>3 YEARS OLD ICDS PROJECTS

			(Data are percentage values)				
Projec Type	ct No.	Sample size	Normal	Grade-I	Grade-II	Grades III and IV	
Rural	19	31712	34.8	33.1	24.8	7.4	
Tribal	4	3711	29.5	27.6	25.5	17.3	
Urban	23	26302	32.3	32.6	25.3	9.8	
Total	46	61725	33.4	32.5	25.1	9.1	

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## TABLE 31. NUTRITIONAL STATUS OF 0-3 YEARS IN MORE THAN 3 YEARS OLD ICDS PROJECTS

				(D	(Data are percentage values)		
Projects		Sample size	Normal	Grade-I	Grade-II	Grades III and IV	
Туре	No.						
Rural	11	3866	29.4	26.6	25.9	18.0	
Tribal	4	1700	29.1	24.2	24.7	22.0	
Urban	6	4575	29.8	33.1	27.7	9.4	
Total	21	10141	29.5	29.1	26.5	14.8	
Rural + Tribal	15	5560	29.3	25.9	25.6	19.2	
E.C.							

### TABLE 32. NUTRITIONAL STATUS OF 0-6 YEARS CHILDREN: A COMPARA-TIVE STUDY OF ICDS Vs. NON-ICDS GROUPS

				(Data are	percentage values)	
No.	Sample size	Normal	Grade-I	Grade II	Grades III and IV	
4	1741	48.3	28.5	17.2	6.0	
8	3239	36.7	31.6	25.0	6.7	
12	4980	40.8	30.5	22.3	6.5	
4	1610	40.6	29.1	21.3	9.0	
8	2610	32.2	28.8	26.8	12.2	
12	4220	35.4	28.9	24.7	11.0	
	No. 4 8 12 4 8 12 12	No.       Sample size         4       1741         8       3239         12       4980         4       1610         8       2610         12       4220	Sample size         Normal size           4         1741         48.3           3         3239         36.7           12         4980         40.8           4         1610         40.6           8         2610         32.2           12         4220         35.4	No.Sample sizeNormal NormalGrade-I4174148.328.58323936.731.612498040.830.54161040.629.18261032.228.812422035.428.9	Sample sizeNormal Srade-IGrade-I Grade IIGrade II4174148.328.517.28323936.731.625.012498040.830.522.34161040.629.121.38261032.228.826.812422035.428.924.7	

## TABLE 33. NUTRITIONAL STATUS OF 0-3 YEARS CHILDREN : A COMPARA-<br/>TIVE STUDY OF ICDS Vs. NON-ICDS GROUPS

		11170	(Data are percentage values)			
Projects type $(n = 2)$	Sample	Normal	Grade-I	Grade-II	Grades III and IV	
ICDS rural	545	42.2	27.2	19.1	11.5	
Non-ICDS rural	549	37.9	23.7	26.4	12.1	

TABLE 34.STUDY OF VITAMIN B-COMPLEX, VITAMIN A DEFICIENCY AND<br/>NUTRITIONAL ANAEMIA IN MORE THAN 3 YEARS OLD ICDS<br/>PROJECTS

Project	B-complex	k deficiency	Vit. A	deficiency	Anaemia	
	Sample	Number	Sample	Number	Sample	Number
Rural	6054	232(3.8)	73 <mark>84</mark>	547 (7.4)	5863	2134(36.4)
Tribal	3301	51(1.5)	2301	317(13.8)	1120	205(18.3)
Urban	5147	203(3.9)	10371	1224(11.8)	5475	874(16.0)
All	14502	486(3.4)	20056	2088(10.4)	124 <mark>58</mark>	3213(25.8)
Rural+ Tribal	9355	283(3.0)	9685	864 (8.9)	6983	2339(33.5)

Figures in parentheses are percentages

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# TABLE 35. COMPARATIVE STUDY OF VITAMIN B-COMPLEX AND VITAMIN ADEFICIENCY AND NUTRITIONAL ANAEMIA IN ICDS AND NON-<br/>ICDS PROJECTS IN PRESCHOOL CHILDREN 0-6 YEARS

Project No. of		B-complex deficiency		A deficiency	Anaemia	
projects	Sample	Number	Sample	Number	Sample	Number
2	614	31 (5.0)	614	5 (0.8)	243	32(13.2)
7	1057	61 (5.8)	2239	183 (8.2)	500	17 (3.4)
9	1671	92 (5.5)	2853	188 (6.6)	743	49 (6.6)
2	571	35 (6.1)	571	33 (5.8)	154	42(27.3)
7	1057	195(18.4)	1630	347(21.3)	500	34 (6.8)
9	1628	230(14.1)	2201	380(17.3)	654	76(11.6)
	No. of projects 2 7 9 2 7 9	No. of         B-comple           projects         Sample           2         614           7         1057           9         1671           2         571           7         1057           9         1671	No. of projects         B-complex deficiency of sample         Number           2         614         31 (5.0)           7         1057         61 (5.8)           9         1671         92 (5.5)           2         571         35 (6.1)           7         1057         195(18.4)           9         1628         230(14.1)	No. of projects         B-complex deficiency Vitamin         Vitamin           2         614         31 (5.0)         614           7         1057         61 (5.8)         2239           9         1671         92 (5.5)         2853           2         571         35 (6.1)         571           7         1057         195(18.4)         1630           9         1628         230(14.1)         2201	No. of projects         B-complex deficiency Sample         Vitamin A deficiency Sample         Vitamin A deficiency Sample           2         614         31 (5.0)         614         5 (0.8)           7         1057         61 (5.8)         2239         183 (8.2)           9         1671         92 (5.5)         2853         188 (6.6)           2         571         35 (6.1)         571         33 (5.8)           7         1057         195(18.4)         1630         347(21.3)           9         1628         230(14.1)         2201         380(17.3)	No. of projectsB-complex deficiency NumberVitamin A deficiency SampleAnd Number2 $614$ $31$ (5.0) $614$ $5$ (0.8) $243$ 7 $1057$ $61$ (5.8) $2239$ $183$ (8.2) $500$ 9 $1671$ $92$ (5.5) $2853$ $188$ (6.6) $743$ 2 $571$ $35$ (6.1) $571$ $33$ (5.8) $154$ 7 $1057$ $195(18.4)$ $1630$ $347(21.3)$ $500$ 9 $1628$ $230(14.1)$ $2201$ $380(17.3)$ $654$

Figures in parentheses are percentages

#### TABLE 36. PERCENTAGE PREVALENCE OF SEVERELY MALNOURISHED CHIL-DREN ACCORDING TO AGE AND SEX DURING 1979-1981 AND 1982-83

Location	Sample size	Ag	ze, years	Se	x	
of sample		< 3	3 - <6	Male	Female	
Study perio	od: 1979- <mark>8</mark> 1					
Rural	2395	75.3*	.24.7	38.0	62.0*	
Tribal	967	63.2*	36.8	46.7	53.3*	
Urban	930	57.6*	42.4	41.4	58.6*	
All	4292	68.7*	31.3	40.7	59.3*	
Study period	od: 1982-83					
Rural	561	63.1	36.9	42.2	57.8	
Tribal	253	61.3	38.7	41.1	58.9	
Urban	830	56.6	43.4	39.5	60.5	
All	1644	59.5	40.5	40.7	59.3	1

\* Prevalence of severe malnutrition was significantly higher (P < 0.001) in lower age group (0- < 3 yr) of preschool children and for females, irrespective of the location of sample.

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# TABLE 37. MORTALITY FROM NUTRITIONAL DEFICIENCY AS THE UNDER-<br/>LYING CAUSE DURING 1979-81 AND 1982-83

	(Data are percentage of	children died during the c	ourse of study
Location		Age group, years	and the second
	< 3	3 -< 6	0 - < 6
Study period: 1979-81			
Rural	5.8	1.9	4.9
Tribal	1.0	0.8	0.9
Urban	0.4	1.0	0.6
All	3.8	1.4	3.0
Study period: 1982-83	3		
Rural	1.6	0.0	1.1
Tribal	0.6	1.0	0.8
Urban	1.9	0.6	1.3
All	1.6	0.5	1.2

(Data are percentage of children died during the course of study)

### TABLE 38. TREATMENT OF ASSOCIATED ILLNESSES IN SEVERE MALNUTRI-TION

	Illness-wise percentage distribution of c				
Treatment received	Diarrhoea	Respiratory infection	Fever	Others	
At the Anganwadi	83.8	82.8	84.4	88.4	
Referred to PHC	16.7	17.2	15.6	11.6	
By MO at PHC	8.2	8.9	8.1	8.0	

#### LVIII

	Outcome, in percent				
Location	Improved	No change	Deteriorated		
Rural	83.4	5.5	4.2		
Tribal	82.9	9.5	3.7		
Urban	91.3	4.7	2.2		
All	85.0	6.3	3.6		

#### TABLE 39. PROGNOSIS OF SEVERELY MALNOURISHED CHILDREN

## TABLE 40. CHILDREN SUFFERING FROM SPECIFIC MORBIDITY IN A WEEK

Type of project	Diarrhoea	Resp. inf.	Pyoderma	Fever	Eye infection
Rural	5786 (10.2)	5786 (15.3)	4813 (4.9)	4922 (8.7)	5063 (7.1)
Tribal	1120 (12.7)	1120 (11.2)	1120 (29.6)	1120 (2.1)	
Urban	1959 (9.0)	1754 (19.4)	1959 (7.3)	1959 (13.9)	1254 (3.1)
Total	8865 (10.3)	8660 (15.6)	7892 (9.0)	8001 (9.0)	6317 (6.3)

Figures in parentheses are percentages

#### TABLE 41. NUMBER OF EPISODES PER CHILD PER YEAR IN ICDS POPULA-TION

Type of project	Diarrhoea		Resp. inf.	Pyoderma		Fever		Eye infection	
	Sample size	Epis. p.yr.	Episodes per year	Sampl size	e Epis. p.yr.	Sample size	Epis. p.yr.	Sample size	Epis. p.yr.
Rural	643	1.2	2.4	N.R.	N.R.	643	2.1	643	0.7
Tribal	155	1.3	1.3	N.R.	N.R.	155	1.4	N.R.	N.R.
Urban	1065	0.8	0.9	1065	0.4	229	1.0	865	0.1
Total	1863	1.0	1.5	1065	0.4	1027	1.7	1508	0.4
							a state of the second secon		

NR: Not Reported

## TABLE 42. PERCENTAGE OF CHILDREN SUFFERING FROM SPECIFIC MOR-BIDITY IN A WEEK

Type of population	Sample size	Diarrhoea	Sample size	Resp. inf.
ICDS	3299	409(12.4)	3094	596(19.3)
Non-ICDS	2569	503(19.6)	2367	665(28.1)

Figures in parentheses are percentages

TABLE 43. PERCENTAGE OF CHILDREN SUFFERING FROM SPECIFIC MOR-BIDITY IN A WEEK

Type of	Sample	Pyoderma	Sample size	Fever	Sample size	Eye inf.
ICDS	2540	172 (6.8)	2649	319(12.0)	2085	75(3.6)
Non-ICDS	1769	332(18.8)	1912	379(19.8)	1367	84(6.1)

Figures in parentheses are percentages

## TABLE 44. STUDY SAMPLE OF INFANTS FOR THE MORBIDITY STUDY

Location of sample	No. of ICDS	Number of infants studied		
	projects	Male	Female	All
Rural	6	2024 (52.1)	1858 (47.9)	3882
Urban	3	755 (51.4)	713 (48.6)	1468
Combined	9	2779 (51.9)	2571 (48.1)	5350

Figures in parentheses are percentages

### LX

Location of sample	Week	Weeks of follow up/infant		
	Male	Female	All	
Rural	23.1	22.8	22.9	
Urban	23.5	23.0	23.3	
Combined	23.2	22.9	23.0	
				Sec. III.

## TABLE 45. AVERAGE NUMBER OF WEEKS OF FOLLOW-UP

TABLE 46. PERCENTAGE INCIDENCE\* OF VARIOUS ILLNESSES AMONG IN-FANTS

the state of the second se		Location of samp	le
Illness suffered	Rural	Urban	Combined
Diarrhoea	64.4	47.2	59.7
Cough	53.1	68.1	57.2
Fever without rash	62.8	34.1	54.9
Sore eyes	42.1	37	31.6
Skin boils	15.2	7.2	13.0
Fever with rash	10.6	3.1	8.5
Ear discharge	7.3	2.6	6.0
Scabies	3.9	5.2	4.2
Cuts, wounds and accidents	2.0	5.4	3.0
Tetanus	0.3	0.1	0.2
Paralysis of limbs	0.1	0.2	0.2
Others	13.5	26.5	17.1

\* Estimated incidence rate is based on an average follow up 6 months period.

Underlying cause of death		Location of sam	ple
	Rural	Urban	Combined
Fever Diarrhoea	72 (33.5) 43 (20.0)	6 (23.1) 6 (23.1)	78 (32.4) 49 (20.3)
Prematurity and/or low birth weight Tetanus Respiratory infection Birth injuries Others Total infant deaths	28 (13.0) 19 (8.8) 15 (7.0) 8 (3.7) 30 (14.0) 215 (100.0)	$5 (19.2) \\0 (0.0) \\3 (11.5) \\0 (0.0) \\6 (23.1) \\26 (100.0)$	33 (13.7) (19 (7.9) 18 (7.5) 8 (3.3) 36 (14.9) 241 (100.0)

## TABLE 47. PERCENTAGE INFANT DEATHS BY UNDERLYING CAUSE

Figures in parentheses are percentages

TABLE 48.ESTIMATED NUMBER OF EPISODES OF VARIOUS ILLNESS PER

THOUSAND	SICK	INFANTS	·	

Illness sufferred	Illness episodes				
and the	Rural	Urban	Combined		
Cough	5.0 (3.1)	8.2 (5.7)	5.9 (3.8)		
Diarrhoea	5.5 (3.9)	5.3 (3.0)	5.4 (3.7)		
Fever without rash	4.9 (3.5)	4.9 (1.9)	4.9 (3.1)		
Sore eves	3.9 (2.0)	2.0 (0.09)	3.8 (1.5)		
Cuts, wounds and accidents	2.4 (0.05)	4.4 (0.3)	3.4 (0.1)		
Fever with rash	3.2 (0.4)	2.3 (0.09)	3.1 (0.3)		
Skin boils	2.9 (0.6)	3.8 (0.3)	3.0 (0.5)		
Scables	2.4 (0.1)	3.9 (0.3)	2.9 (0.2)		
Far discharge	2.8 (0.3)	3.0 (0.09)	2.8 (0.2)		
Tetanus	2.7 (0.006)	1.4 (0.001)	2.5 (0.005)		
Paralusis of limbs	1.1 (0.002)	1.3 (0.005)	1.2 (0.003)		
Others	2.7 (0.5)	6.1 (2.2)	4.2 (0.9)		

Figures in parentheses indicate the rate of episodes in reference to 1000 infant population.

#### LXII

	Estimated sodes* d	number of epi- uring infancy	Estimated number of sickness +ve weeks** per infant/annum
Location of Sample	General population (all infants)	Affected population (sick infants)	
Rural	14.3	47.9 •	15.5
Urban	14.0	52.0 •	13.8
Combined	14.3	49.2 •	15.1

## TABLE 49. ESTIMATED SICKNESS LOAD PER INFANT PER ANNUM

Episodes of all illness.

Simultaneous occurrence of three to five illnesses has been a common feature in infants fallen sick.

Absolute number of sickness positive weeks experienced by individual sick infant • is predicted to be significantly higher than the average for the combined group.

## TABLE 50. PERCENTAGE OF INFANTS BY FREQUENCY OF EPISODES\*

		(Data are percentag	ge values)		
	Location of sample				
Frequency of episodes	Rural	Urban	Combined		
None	8.5	8.5	3.1		
1	7.2	5.3	2.4		
2	14.4	10.3	4.8		
3	20.0	10.5	6.3		
4	11.2	7.4	3.7		
5	8.3	12.0	3.3		
6	7.1	7.8	2.6		
6+	23.3	38.2	9.8		
Infants studied	1897	702	2599		

Episodes of an illness suffered during a continuous follow-up period of 6 months.

## TABLE 51. SEASONWISE AVERAGE MONTHLY INCIDENCE OF ILLNESS

	Average monthly incidence of illness					
Morbidity condition	Jan-Mar	Apr-June	July-Sept	Oct-Dec		
Diarrhoea	17.6	33.9	26.4	19.4		
Cough	26.8	19.2	18.6	25.1		
Fever without rash	18.2	25.0	22.8	20.8		
Sore eves	3.8	15.1	12.8	7.3		
Skin boils	1.3	4.0	5.1	2.1		
Fever with rash	2.2	2.6	1.6	2.0		
Ear discharge	1.4	2.3	1.9	1.3		
Scables	0.6	1.4	0.9	0.8		
Cut, wounds and accidents	0.7	0.8	0.6	0.5		
Tetanus	0.0	0.07	0.03	0.02		
Paralysis in limbs	0.05	0.01	0.02	0.01		
Others	4.4	5.8	5.9	4.6		

(Data are percentage values)

## TABLE 52. DISTRIBUTION OF MORBIDITY OF CHILDREN BY SEX AND LO-CATION

Location of sample	No. of ICDS	Children ( $1 - < 3$ years) studied			
	projects	Male	Female	All	
Rural	6	1803 (54.0)	1536 (46.0)	3339	
Urban	3	656 (51.7)	613 (48.3)	1269	
Combined	9	2459 (53.4)	2149 (46.6)	4608	

Figures in parentheses are percentages

#### LXIV

#### TABLE 53. AVERAGE NUMBER OF WEEKS FOLLOW-UP PER CHILD ACCORD-ING TO SEX AND LOCATION

Location of sample	Weeks	hild	
	Male	Female	Combined
Rural	28.5	29.9	29.2
Urban	28.7	30.0	29.3
Combined	28.6	30.0	29.2

TABLE 54. PERCENTAGE INCIDENCE\* OF VARIOUS ILLNESSES AMONG<br/>CHILDREN (1- < 3 YRS)</th>

Illness suffered	I	Location of sam	ole	
	Rural	Urban	Combined	
Diarrhoea	59.9	45.7	56.0	
Cough	66.2	53.3	62.7	
Fever without rash	70.1	51.5	65.0	
Sore eyes	35.4	5.7	27.2	
Skin boils	28.6	10.6	23.7	
Fever with rash	14.6	10.6	13.5	
Ear discharge	12.0 -	2.7	9.4	
Scabies	8.6	3.6	7.2	
Cuts, wounds and accidents	6.9	6.6	6.8	
Tetanus	0.1	0.1	0.1	
Paralysis of limbs	0.4	0.1	0.3	
Others	16.0	24.3	18.3	

\* Estimated incidence rate is based on an average follow up of 6 months' period.

Location of sample	Estimated n sodes*/ch	umber of epi- hild/annum	Estimated number of sickness +ve weeks**/child/annum
	General population (all children)	Affected population (sick children)	
Rural	14.4	45.7+	16.4
Urban	8.9	40.8+	11.3
Combined	12.8	44.7*	14.9

## TABLE 55. ESTIMATED SICKNESS LOAD PER CHILD PER ANNUM.

\* Episodes of all illnesses.

\*\* Simultaneous occurrence of 3 to 5 illnesses has ben a common feature in children fallen sick.

Absolute number of sickness positive weeks experienced by individual sick child is predicted to be significantly higher than the average for the combined group.

TABLE 56.	ESTIMATED	NUMBER OF	FEPISODES O	F VARIOUS ILLN	ESSES PER
	CHILD				

Illness	Ru	Rural		Urban		Combined	
1 Martin	Sick	All	Sick	All	Sick	All	
Cough	5.1	3.7	5.0	2.8	5.1	3.4	
Diarrhoea	4.8	3.2	3.8	2.1	4.6	2.9	
Fever without rash	4.9	3.7	2.9	1.4	4.5	3.0	
Sore eyes	2.3	1.2	1.5	0.1	3.0	0.9	
Cuts, wounds and							
accidents	2.5	0.2	3.0	0.2	2.6	0.2	
Fever with rash	2.5	0.4	2.1	0.2	2.2	0.4	
Skin boils	2.5	0.8	2.2	0.3	2.5	0.7	
Scabies	2.5	0.3	3.1	0.1	2.6	0.2	
Ear discharge	2.3	0.3	3.6	0.1	2.4	0.3	
Tetanus	1.5	0.002	1.0	0.001	1.3	0.002	
Paralysis of limbs	1.4	0.006	1.0	1.001	1.4	0.005	
Others	2.6	0.5	1.4	1.5	3.5	0.8	

### TABLE 57 . PERCENTAGE OF CHILDREN BY FREQUENCY OF EPISODES\*

		Data are percentage value	les)
Frequency of episodes		Location of sample	
	Rural	Urban	Combined
None	9.2	11.6	9.9
1	7.3	5.5	6.8
2	11.8	10.8	11.5
3	14.4	7.5	12.3
4	12.1	12.1	12.1
5	11.2	8.2	10.3
6	9.0	12.2	9.9
6+	25.0	32.1	- 27.2
Children studied	2291	993	3284

Episodes of all illnesses suffered during a period of 6 months continuous follow up.

#### TABLE 58 . SEASONWISE AVERAGE MONTHLY INCIDENCE OF ILLNESS

	(Data are percentage values)					
Morbidity condition	Average monthly incidence rate					
	Jan-March	April-June	July-Sept.	OctDec.		
Diarrohoea	14.2	22.6	22.1	18.0		
Cough	23.7	15.6	19.5	27.6		
Fever without rash	19.1	20.5	19.0	25.0		
Sore eyes	4.3	8.4	9.0	4.3		
Skin boils	23.3	5.1	8.7	4.1		
Fever with rash	3.2	3.5	2.7	1.8		
Ear discharge	1.6	2.6	2.8	1.7		
Scabies	0.8	1.7	2.0	1.2		
Cuts, wounds and accidents	1.1	1.1	1.5	1.1		
Tetanus	0.01	0.03	0.0	0.001		
Paralysis of limbs	0.01	0.08	0.08	0.01		
Others	6.0	3.7	5.0	5.9		

### TABLE 59 . INFANT AND EARLY CHILDHOOD MORTALITY STUDIES BY CONSULTANTS

Year of study	IM	IR study
	No. allotted	No. completed
1982-83	48	38 (79.2)
1983-84	32	26 (81.2)
1985-86	28	21 (75.0)
1986-87	33	27 (81.8)
1987-88	113	98 (86.7)

Figures in parentheses are percentage

#### TABLE 60SAMPLE SIZE FOR THE IMR STUDY IN 1982-83

Location of the sample		1. 6. 1	Sample size
		No. of AWs	Population covered
Rural	* 14	84	93,1455
Tribal		53	43,589
Rural + Tribal		137	1,36,734
Urban slums		90	93,497
Total	2	227	2,30,231
No. of the local division of the local divis	A REAL PROPERTY OF THE OWNER OWNE		

## TABLE 61. INFANT MORTALITY RATES ACCORDING TO THE SEX AND LOCATION OF THE PROJECTS

Location	Infant mortality rate				
	Male	Female	Total		
Rural	88.4	86.4	87.5		
Tribal	98.7	87.8	93.5		
Rural + Tribal	91.9	86.8	89.5		
Urban slum	88.9	61.2	80.2		
Total	90.8	77.4	85.9		

## TABLE 62 : CAUSE SPECIFIC INFANT DEATH RATES IN ICDS PROJECTS

			(Per thous	sand live births)		
Location of the		a the state	Caus	e of death		House Alt
sample	Diarrohoea	Respiratory	Tetanus	Accidents , injuries and burns	Fever	Others**
Rural	12.8	12.4	0.9	1.8	12.8	46.8
Tribal	12.1	29.4	3.4	1.8	8.7	28.6
Rural + Tribal	12.6	18.2	1.8	1.8	11.4	40.4
Urban slum*	12.3	13.3	2.4	1.5	9.9	37.0
Total	12.5	16.4	2.1	1.7	10.8	39.1

Cause specific infant deaths were not available for one urban slum project (6 anganwadis)
 Includes prematurity, low birth weight and convulsions.

### TABLE 63 : SEX SPECIFIC DEATH RATES (0-4 YRS) IN ICDS PROJECTS AS COM-PARED TO SRS ESTIMATE OF 1982-83.

· · · · · · · · ·			(Per 1000 '0-4 yrs' population)			
		- Le s	Death rat	es (0-4 years)		
Location	Male		Female		Total	
	ICDS	SRS	ICDS	SRS	ICDS	SRS
Rural + Tribal Urban slum	21.4 21.3	42.2 21.2	22.4 15.8	45.7 20.5	21.9 18.7	43.9 20.9
Total	21.3	37.9	19.8	40.5	20.6	39.1

# TABLE 64 .NEONATAL MORTALITY RATES ACCORDING TO THE SEX AND LOCA-<br/>TION OF THE ICDS PROJECTS COMPARED WITH NATIONAL SRS<br/>ESTIMATE OF 1982-83

production of the second se			(Per 100	0 live births)		
and a second	19	an an an an an Alban Alban	Neonatal r	nortality rates	AN THE CONSIDERED TO A THE CONSTRUCTION OF	2 87.42
Location	Male		Female		Total	
	ICDS	SRS	ICDS	SRS	ICDS	SRS
Rural + Tribal Urban slum	57.5 53.0	NA NA	44.1 36.1	NA NA	51.2, 46.3	72.9 38.8
Total	55.8	NA	41.1	NA	49.3	66.7

### TABLE 65. CAUSE SPECIFIC NEONATAL DEATH RATES IN ICDS PROJECTS STUD-IED IN 1982-83

1301 ou	Late 12		A. S. S. A.	Per 1000 liv	e births)		÷
Location of	(and the second second			Cause of de	ath		
the sample	Diarrohoea	Res- piratory infection	Tetanus	Accidents injuries & burns	Fever	Others*	More than one illnesses
Rural + Tribal	2.7	9.3	1.2	0.9	2.4	32.9	1.9
Urban slum	2.5	7.8	2.0	1.5	2.0	29.5	NIL
Total	2.6	8.8	1.5	1.1	2.2	31.7	1.1

\* Includes prematurity, low birth weight and convulsions.

# TABLE 66 . SEX SPECIFIC DEATH RATES IN AGE GROUP 0-3 AND 0-6 YEARS IN ICDS PROJECTS

Location	D	eath rate (0-3 y	rs)	D	Death rate (0-6 yrs)	
	Male	Female	Total	Male	Female	Total
Rural + Tribal Urban slums	32.1 31.5	33.0 23.3	32.6 27.5	18.7 17.2	19.5 12.9	19.1 15.1
Total	31.9	29.2	30.6	18.1	16.8	17.5

TABLE 67 .IMR IN 8 STATES IN ICDS POPULATION (1987) AS COMPARED TO SRS<br/>ESTIMATES (1985)

S. No.	State		IMR-ICDS (1987)	IMR-SRS estimate 1985
	Andhra Pradesh		72.8	79.0
2	Guiarat	1.54	88.5	97.0
2.	Kerala	100	24.9	26.0
4	Maharashtra		75.6	66.0
<del>7</del> . 5	Orissa	· . · · · · · · ·	125.8	126.0
6	Rajasthan		114.2	103.0
0. 7	IIP		119.4	126.0
8.	West Bengal		60.2	72.0 -

#### TABLE 68. MORTALITY RATE OF 0-5 YEARS AGE CHILDREN IN 1987 AS COM-PARED TO SRS ESTIMATES OF (1985)

S. No.	State	ICDS rate 1987	SRS estimate 1985
1.	Andhra Pradesh	20.0	29.0
2.	Gujarat	26.4	37.3
3.	Kerala	6.7	10.3
4.	Maharashtra	18.9	23.3
5.	Orissa	41.9	46.2
6.	Rajasthan	33.0	45.5
7.	Uttar Pradesh	31.9	54.0
8.	West Bengal	15.0	27.3

## TABLE 69 . CAUSE SPECIFIC MORTALITY RATE IN RURAL, URBAN, BOTH AND ALL THE STATES COMBINED SAMPLE AMONGST 0-5 YEARS AGE GROUP

S. No.	Cause	% mortality rate
1.	Cause	14.6
2.	Acute respiratory infection	18.5
3.	Tetanus	6.1
4.	Prematurity	13.9
5.	Fever	14.7
6.	Others	29.8
	Accidents	2.3

#### \_\_\_\_\_

## TABLE 70 .NEONATAL MORTALITY RATE (NNMR) IN ICDS GROUP (1987) AS<br/>COMPARED WITH SRS ESTIMATES (1985)

S. No.	State	0. 200	ICDS NNMR (1987)	SRS estimate for NNMR (1985)
1.	Andhra Pradesh	2.2.7	47.1	56.8
2.	Gujarat	5.8.5	49.7	66.0
3.	Kerala	1 2 4	18.0	22.1
4.	Maharashtra	1. 10	45.3	45.1
5.	Orissa	Sect	68.9	88.9
6.	Rajasthan		72.3	65.0
7.	U.P.	- p. 1. /	72.7	87.3
8.	West Bengal	24 Mar - 14	36.8	43.2

#### TABLE 71 . LIVE BIRTHS AND BIRTH RATES IN ICDS AND NON-ICDS POPULATION

	ICD	S	Non-ICDS			
	Number of Live births	Birth rate	Number of live births	Birth rate		
Rural	1746	26.3	1894	29.5		
Urban	1237	27.4	1023	27.9		
The second secon			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			

TABLE 72 . MORTALITY RATE IN ICDS AND NON-ICDS POPULATION

	Location	Number of	Ir	Infant Mortality Rate							
Locatio	n	registered	Male	Female	Total						
Devel	ICDS	1746	75.6	57.9	67.0						
Rurai	Non-ICDS	1849	88.4	82.4	85.5						
	ICDS	1237	67.1	94.0	80.0						
Urban	Non-ICDS	1023	94.4	79.4	87.0						
			. · · · · · · · · · · · · · · · · · · ·	an star							

.

## TABLE 73. CAUSE SPECIFIC DEATH RATES IN ICDS AND NON-ICDS INFANT POPULATION

Locatio	on	Diarrhoea	ARI	Tetanus	Prematurity
	ICDS	8.0	15.5	4.6	10.9
Rural	Non-ICDS	17.4	11.1	12.1	12.1
1	ICDS	10.5	33.1	0.0	16.2
Urban	Non-ICDS	16.6	17.6	10.7	6.8

## SERVICES TO ANTENATAL MOTHERS

- Andrewski	antanga sa sanganga T	ANTEN	TAL CHECK UP		T.T IN	MUNIZATION		PLAC	e of deliver	Y	DELIVERY CONDUCTED BY TRAINED PERSONNEL			
TH. NO	TYPE	SAMPLE SIZE	RECE NUMBER	IVED %	SAMPLE SIZE	REC NUMBER	CEIVED %	SAMPLE/ SIZE	AT H	OME %	SAMPLE SIZE	TRAINED PER	RSONNEL. %	
32 R	ICDS	386	173	44.8	386	149	38.6	386	371	96.1	386	129	33.4	
90 R	ICDS		1		30	14	46.7			9				
121 R	ICDS	117	65	55.6	- 1	ant 4	-							
35 R	ICDS	305	121	39.7	305	121	39.7	305	302	99.0	305	151	49.5	
26 R	ICDS	326	155	47.5	326	155	47.5	326	315	96.6	326	48	14.7	
56 R	ICDS	312	300	96.2	-					8_	-			
66 R	ICDS	400	245	61.3	· · ·	-		400	385	96.3	400	229	57.3	
53 R	ICDS				1192	936	78.5	1192	1147	96.2	1192	1031	86.5	
123 R	ICDS				110	45	45.0						1	
21 R	ICDS	240	71	29.6	240	63	26.3	240	. 211	87.9	240	59	24.6	
124 U	ICDS	149	49	32.9	149	- 31	20.3	149	91	61.1	149	94	63.1	
95 U	ICDS	50	26	52.0	50	25	50.0	5			k			
94 U	ICDS	352	230	65.3	352	200	56.8	352	322	91.5	352	224	63.6	
136 U	ICDS	-	-	-			i IN	200	24	12.0	-			
-si opethi	RURAL	2086	1130	54.2	2579	1483	57.5	2849	2731	95.9	2849	1647	57.8	
	TOTAL	2637	305 1435	55.4 54.4	3130	1739	46.5 55.6	701 3550	437 3168	62.3 89.2	501 3350	318	63.5 58.7	
				311			1.1.1	and the second				- Brand and		

		ANTI	ENATAL CHI	ECK UP	Т.Т	. IMMUNIZA	TION	P	LACE OF D	DELIVE	RY		DELIVE	RY CONDUC	CTED
TH NO	TYDE							_					BY TRA	AINED PERSO	ONNEL
In. NO.	TIFE	SAMPLE SIZE	RECE	IVED %	SAMPLE	RECEIV NUMBER	ED %	SAMPLE	E <u>AT HO</u> NUMBER	DME %	AT HOSTP NUMBER	MITAL %	SAMPL SIZE	E NUMBER	%
53	R	5			1192	936	78.5	1192	1147	96.2	45	3.8	1192	1031	86.5
56	R	312	300	96.2	-	-				-	<u> </u>	77			
66	R	400	245	61.3	-	_		400	385	96.3	15	3.8	400	229	57.3
90	R		-		30	14	46.7	<u> </u>	· · -	-	· <u> </u>		-		
123	R		· · · · ·	_	100	45	45.0	—	- 1. <del></del> 1	-		-			
95	U	50	26	52.0	50	25	50.0	· -		-	-	1			8-18-7-
94	U	352	230	65.3	352	200	56.8	352	322	91.5	30	8.5	352	224	63.6
ICDS	RURAL	712	545	76.5	1322	995	75.3	1592	1532	96.2	60	3.8	1592	1260	79.1
	URBAN	402	256	63.7	402	225	56.0	352	322	91.5	30	8.5	352	224	63.6
	TOTAL	1114	801	71.9	1724	1220	70.8	1944	1854	95.4	90	4.6	1944	1484	76.3
53	R		122	_	585	223	38.1	585	534	91.3	51	8.7	585	411	70.3
56	R	308	264	85.7	- 1		-			-		-	<u></u>	e	- 751
66	R	357	71	19.9	-			357	348	97.5	5 9	2.5	357	98	27.5
90	R	·		—	100	79	79.0	-	_	-		• -		. —	-
123	R	_		_	65	21	32.3	-	·			-	-	×	-
95	U	11	3	27.3	11	8	72.7			-			e —		
94	U	355	77	21.7	355	160	45.1	355	335	94.4	20	5.6	355	132	37.2
NICDS	RURAL	. 665	335	50.4	750	323	43.1	942	882	93.6	60	6.4	942	509	54.0
	URBAN	366 1031	80 415	21.9 40.3	366 1116	168 491	45.9	1297	1217	93.8	8 80	6.2	1297	641	49.4

## COMPARATIVE DATA OF SERVICES FOR ANTENATAL MOTHERS IN ICDS & NON ICDS GROUPS

				BCG			DPT		POLIO			
			SAMPLE	REC	EIVED	SAMPLE	RECEI	/ED	SAMPLE	REC	EIVED	
TH. NO.	TYPE		SIZE	NUMBER	%	SIZE	NUMBER	%	SIZE	NUMBER	%	
66	R		400	56	14.0	400	183	45.8	400	217	543	
35	R				1997 <u></u> - 1997	1069	58	5.4	1069	67	63	
31	R		469.	207	44.1	469	181	38.6	469	210	167	
103	R		830	119	14.3	830	118	14.2	830	6	40.7	
20	R		853	189	22.1	853	87	10.2	853	97	10.7	
123	Ŕ		300	154	51.3	300	174	58.0	300	125	10.2	
121	R		2204	1459	66.2	2204	298	13.5	2204	260	41.0	
99	R		181	140	77.3	181	133	73.5	191	122	12.2	
21	R		340	28	82	340	07	28 5	240	155	/3.5	
52	R		16309	14761	90.5	16309	1//08	20.5	16200	108	31.8	
19	R		214	43	20.1	214	110	55.6	10309	14024	86.0	
55	R		632	4	0.6	632	103	16.3	(20			
71A	Т		410	114	27.8	002	105	10.5	032	1	0.2	
28	Т		155	83	535							
71	Ť		420	106	25.2							
106	Ü		597	254	125	507	000	27.0	5.07	_		
116	ŭ		500	204	50.2	597	222	37.2	597	239	40.0	
118	ŭ		500	178	35.6	500	400	80.0	500	259	51.8	
82	ŭ		285	295	100.0	500	395	79.0	500	398	79.6	
119	ŭ		205	205	100.0	285	2/4	96.1	285	271	95.1	
95	ŭ		1021	611	50.0	205	15	7	205	53	25.9	
12	U		1021	011	59.8	1021	111	76.1	1021	815	79.8	
6	Ŭ		200	0/0	85.6	1026	851	82.9	1026	922	89.9	
22	U U		200	147	13.5	200	136	68.0	200	127	63.5	
124	U		105	80	76.2	105	37	35.2	105	40	38.1	
04	U		867	3/5	43.2	867	328	37.8	867	452	52.1	
105	U		335	64	19.1	335	194	57.9	335	197	58.8	
125	U		125	85	68.0	125	106	84.8	125	106	84.8	
105	U		885	331	37.4	885	373	42.1	885	373	42.1	
8A	U		857	695	81.1	857	568	66.3	857	584	68.1	
14	0		605	473	78.2	605	389	64.3	605	396	65.5	
129	U		544	287	52.8	544	123	22.6	544	158	29.0	
	TOTAL	31	32169	22501	69.9	32458	21236	65.4	32244	20645	64.0	
	RURAL	12	22732	17159	75.5	23801	16048	67.4	23587	15255	64 7	
	TRIBAL	3	985	303	30.8					10200	04.7	
2-11-2-2	URBAN	16	8452	5039	59.6	8657	5188	59.9	8657	5390	623	

## IMMUNIZATION STATUS IN CHILDREN (0-6 YRs)

3 LXVIII

			1.9.19	BCG		a.		DPT			POLIO	
TH. NO.	TYPE		SAMPLE SIZE	RECE NUMBER	EIVED %		SAMPLE SIZE	RECEIV NUMBER	YED %	SAMPLE SIZE	RECEI NUMBER	WED %
31	R		251	87	34.7		251	69	27.5	251	92	36.7
57	R		754	696	92.3	4	754	664	88.1	754	661	87.7
29	R		595	27	4.5		595	35	5.9	595	71	11.9
49	R		-				427	281	65.8	427	340	79.6
21	R		211	23	10.9		211	85	40.3	211	96	45.5
30	Т		164	63	38.4		164	14	8.5			
28	Т		113	56	49.6		113	53	46.9			·
30A	Т		156	92	59.0		156	54	34.6		· · ·	
71	Т		208	49	23.6			-	-		-	-
67	U		45	17	37.8		45	30	66.7	45	30 '	66.7
82	U		186	176	94.6		186	166	89.2	186	163	87.6
6	U		135	99	73.3		135	92	68.1	135	85	63.0
22	U		76	63	82.9		76	23	30.3	76	27	35.5
	TOTAL	13	2894	1448	50.0		3113	1566	50.3	2680	1565	58.4
	RURAL	5	1811	833	46.0		2238	1134	50.7	2238	1260	56.3
	TRIBAL	4	641	260	40.6		433	121	27.9	-	· ·	-
	URBAN	4	442	355	80.3	, 1 ,	442	311	70.4	442	305	69.0

## IMMUNIZATION STATUS IN CHILDREN (0-3 YRs) IN ICDS

LXIX

COMPARATIVE DATA O	F IMMUNIZATION STATUS	OF CHILDREN IN ICDS	Vs NON ICDS (0-3 YRS
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1.65		Sec. 1	BCG			DPT		POLIO			
TH NO	TVDE	SAMPLE SIZE	RECEIVED		SAMPLE	RECEIV	/ED	SAMPLE	RECE	IVED	
IH. NO.		SIZE	NUMBER	90		nomben 001	(5.0	407	240	70.6	
49 ICDS	R	427	NA	_	427	281	65.8	427	540	79.0	
49 A NICDS	R	425	NA	· -	425	95	22.4	425	91	21.4	

COMPARATIVE DATA	OF IMMUNIZATION	STATUS OF CH	HILDREN IN ICDS V	Js NON-ICDS (0-6 YRs)
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1				BCG	- F.			DPT			POLIO	
		2 A	SAMPLE	RECE	EIVED		SAMPLE	RECEIV	ED	SAMPLE	RECE	VED
TH. NO		TYPE	SIZE	NUMBER	%		SIZE	NUMBER	%	SIZE	NUMBER	%
99	ICDS	R	181	140	77.3		181	133	73.5	181	133	73.5
19	ICDS	R	214	43	20.1		214	119	55.6	-	1 -	-
31	ICDS	R	469	207	44.1		469	181	38.6	469	219	46.
66	ICDS	R	400	56	14.0		400	183	45.8	400	217	54.3
123	ICDS	R	300	154	51.3		300	174	58.0	300	125	41.6
94	ICDS	U	335	64	19.1		335	194	57.9	335	197	58.8
95	ICDS	U	1021	611	59.8		1021	777	76.1	1021	815	79.8
8A	ICDS	U	857	695	81.1		857	568	66.3	857	584	68.1
116	ICDS	U	500	296	59.2		500	400	80.0	500	259	51.8
118	ICDS	U	500	178	35.6		500	395	79.0	500	398	79.6
119	ICDS	U		-	-		205	15	7.3	205	53	25.9
	RURAL	5	1564	600	38.4		1564	790	50.5	1350	694	51.4
	URBAN	6	3213	1844	57.4		3418	2349	68.7	3418	2306	67.5
	TOTAL	11	4777	2444	51.2		4982	3139	63.0	4768	3000	62.9
19A	NICDS	R	214	23	10.7		214	18	8.3		_	
31A	NICDS	R	458	43	9.4		458	33	7.2	458	34	7.4
66A	NICDS	R	357	31	8.7		357	17	4.8	357	1	0.3
99A	NICDS	R	186	96	51.6		186	50	26.9	186	50	26.9
123A	NICDS	R	250	160	64.0		250	155	62.0	250	163	65.2
94A	NICDS	U	342	36	10.5		342	141	41.2	342	147	43.0
95A	NICDS	U	199	97	48.7		199	78	39.2	199	90	45.2
8B	NICDS	U	167	43	25.7		167	20	12.0	167	20	12.0
116A	NICDS	U	480	175	36.5		480	321	66.9	480	195	40.6
118A	NICDS	U	500	28	5.6		500	300	60.0	500	266	53.2
119A	NICDS	U	-			-	202	6	3.0	202	45	22.3
1	RURAL	5	1465	353	24.1	5 5 5 3	1465	273	18.6	1251	248	19.8
	URBAN	6	1688	379	22.5		1890	866	45.8	1890	763	40.4
	TOTAL	11	3153	732	23.2		3355	1139	33.9	3141	1011	32.2

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LXXI

SUP	SUPPLEMENTRY NUTRITION COVERAGE IN CHILDREN (0-6YRS)					COVERAG	COVERAGE OF IRON & FOLIC ACID IN CHILDREN (O-6YRS)							
TH. NO	TYPE	SAMPLE SIZE	NUTRITION RECEI	VED %	TH. NO	TYPE	VIT SAMPLE SIZE	VITAMIN-A SAMPLE RECEIVED SIZE NUMBER %		TH. NO	TYPE	IRON SAMPLE SIZE	& FOLIC A REC NUMBER	CID CEIVED %
66 62 34A 108 34 8 95 94	R R T T U U U U	400 2484 390 950 471 293 243 352	56 1095 156 509 165 216 42 184	14.0 44.1 40.0 53.6 35.0 73.7 17.3 52.3	62 66 95 94   	R R U U 	2484 400 902 352   	1930 305 613 215 — — —	77.7 76.3 68.0 61.1 — —	68 94 	R U 	400 352 — — —	164 201 — — — —	41.0 57.1
RURAI TRIBA URBAI TOTAI	Ĺ N	2884 1811 888 5583	1151 830 442 2423	39.9 45.8 49.8 43.4	RUI URI TOI	RAL BAN RAL	2884 1254 4138	2235 828 3063	77.5 66.0 74.0	RURAL URBAN TOTAL	1	400 352 752	164 201 365	41.0 57.1 48.5

	SUPPLEM II	ENTARY NUTRITION N CHILDREN (0-3YRS	COVERAGE )		VITAMIN-A COVERAGE IN CHILDREN (0-3YRS)									
TH. NO.	TYPE	SAMPLE SIZE	NUTRITION NUMBER	RECEIVED %	TH. NO.	TYPE	SAMPLE SIZE	VIT—A NUMBER	RECEIVED %					
210	т	179	34	19.0	57	R	754	234	31.0					
34A	Т	237	35	14.8	8A	U	617	523	84.8					
34 8	U	140	86	61.4	8	U	855	616	72.0					
						RURAL	754	234	31.0					
	TRIBAL	416	69	16.6										
	LIRBAN	140	86	61.4		URBAN	1472	1139	77.4					
	TOTAL	556	155	27.9		TOTAL	2226	1373	61.7					

# COMPARATIVE DATA OF IRON & FOLIC ACID AND VITAMIN-A COVERAGE IN CHILDREN (0-6) YRS

	SAMPLE	IRON & FOLI RECEIVI	C ACID ED	VIT - A RECEIVED			
TH. NO. TYPE	SIZE	NUMBER	%	NUMBER	%		
66 R ICDS	400	164	41.0	305	76.3		
94 U ICDS	352	201	57.1	215	61.1		
ICDS ALL TOTAL	752	365	48.5	520	69.1		
66 R NICDS	357	37	10.4	64	17.9		
94 U NICDS	355	102	28.7	112	31.5		
NICDS GRAND TOTAL	712	139	19.5	176	24.7		

NUTRITIONAL STATUS OF CHILDREN (0-6) YRS

		SAMPLE	NORMAL		GRA	DE I	GRADE II		GRADE III		GRADE IV	
TH. NO.	TYPE	SIZE	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%
31	R	572	249	43.5	140	24.5	134	23.4	42	7.3	7	1.2
16	R	686	177	25.8	237	34.5	181	26.4	91	13.3	0	0.
103	R	830	166	20.0	231	27.8	263	31.7	125	15.1	45	5.4
21	R	303	108	35.6	91	30.0	51	16.8	36	11.9	17	5.6
31R	R	469	207	44.1	147	31.3	78	16.6	33	7.0	4	0.9
23	R	200	54	27.0	55	27.5	57	28.5	14	7.0	20	10.0
115R	R	200	57	28.4	60	30.2	67	33.4	16	8.0	0	0.0
123	R	300	162	54.0	106	35.3	27	9.0	3	1.0	2	0.7
66	R	400	223	55.8	103	25.8	61	15.3	9	23	4	1.0
35	R	710	148	20.8	197	27.7	167	23.5	105	14.8	93	13.1
52	R	16209	6216	38.3	5726	35.3	4017	24.8	223	14	27	0.2
121	R	2204	681	30.9	714	32.4	608	27.6	159	72	42	19
62	R	2484	777	31.3	899	36.2	611	24.6	165	6.6	32	13
29	R	1123	426	37.9	297	26.4	302	26.9	80	71	18	1.6
61	R	209	85	40.7	75	35.9	39	187	6	29	4	1.0
20	R	853	393	46.1	291	34 1	129	15.1	31	3.6	9	1.1
55	R	632	176	27.8	203	32 1	181	28.6	61	97	11	1.1
69	R	1479	489	33.1	609	41 2	317	21.4	64	43	11	0.0
15	R	1849	229	12.4	302	16.3	564	30.5	459	24.8	295	16.0
71A	T	410	161	39.3	101	24.6	100	24.4	40	0.8	8	2.0
34	Ť	1181	379	32 1	331	28.0	270	22.4	152	12 9	Â	2.0
44	Ť	1000	178	17.8	250	25.0	372	37.2	154	15 /	45	4.1
34A	Ť	1120	378	33.8	342	30.5	206	18 /	1/1	12 6	52	4.0
118	Ū	500	197	39.4	139	27.8	116	23.2	33	6.6	15	4.7
125	Ŭ	125	9	72	53	121.0	54	13.2	33	7.2	15	5.0
24	Ŭ	1581	139	88	206	13.0	401	25 4	457	28.0	279	22.0
92	Ŭ	380	78	20.5	124	32.6	142	27.4	437	6.2	12	23.9
106	ŭ	597	118	10.8	170	30.0	192	37.4	74	10.5	12	3.2
84	U U	617	125	20.3	221	25.9	102	30.5	70	12.7	42	1.0
824	Ŭ	220	64	27.0	101	33.8	204	33.1	5/	9.2	10	1.6
6	U U	200	112	56.0	101	44.1 20 F	25	17.5	13	5.7	0	0.0
94	U U	250	241	50.0 69 E	41	20.5	35	17.5	8	4.0	4	2.0
137	11	200	241	10.0	00	17.0	40	13.1	4	1.1	1	0.3
137	U	200	30	19.0	81	40.5	60	30.0	16	8.0	5	2.5
110	U	0357	1943	30.6	2043	32.1	1779	28.0	383	6.0	209	3.3
119	U	205	43	21.0	74	36.1	/1	34.6	15	1.3	2	1.0
15	U	2079	645	31.0	100	33.7	584	28.1	124	6.0	26	1.3
42	0	1026	552	53.8	283	27.6	139	13.5	39	3.8	13	1.3
95	U	902	307	34.0	352	39.0	206	22.8	29	3.2	8	0.9
129	U	544	157	28.9	149	27.4	185	34.0	42	7.7	11	2.0

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LXXV

Contd.....

		SAMPLE	NORMAL		GRADE I		GRADE II		GRADE III		GRADE IV	
TH. NO.	TYPE	SIZE	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%
74	U	605	204	33.7	185	30.6	166	27.4	38	63	12	20
105.	U	885	389	44.0	224	25.3	137	15.5	86	9.7	49	5.5
8	U	855	276	32.3	288	33.7	225	26.3	52	6.1	14	16
140	U	6858	2255	32.9	2787	40.6	1660	24.2	138	2.0	18	0.3
45	U	505	308	61.0	82	16.2	52	10.3	33	6.5	30	5.9
116	U	500	208	41.6	129	25.8	116	23.2	38	7.6	9	1.8
115U	U	200	77	38.5	64	32.0	52	26.0	7	3.5	Ō	0.0
TOTAL	46	61725	20604	33.4	20072	32.5	15465	25.1	3930	64	1654	27
RURAL	19	31712	11023	34.8	10483	33.1	7854	24.8	1722	5.4	630	2.0
TRIBAL	4	3711	1096	29.5	1024	27.6	948	25.5	487	13.1	156	42
URBAN	23	26302	8485	32.3	8565	32.6	6663	25.3	1721	6.5	868	3.3

		SAMPLE	N	ORMAL	GRAD	EI	GRADI	EII	GRADE III		GRADE IV	
TH. NO.	TYPE	SIZE	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%
31	R	294	127	43.2	70	23.8	64	21.8	27	9.2	6	2.0
31R	R	251	103	41.0	78	31.1	40	15.9	26	10.4	4	1.6
69	R	695	207	29.8	245	35.3	192	27.6	51	7.3	0	0.0
15	R	881	101	11.5	137	15.6	297	33.7	213	24.2	133	15.1
35	R	151	36	23.8	51	33.8	23	15.2	21	13.9	20	13.2
21	R	200	64	32.0	58	29.0	45	22.5	22	11.0	11	5.5
16	R	340	73	21.5	104	30.6	92	27.1	71	20.9	0	0.0
61	R	105	38	36.2	38	36.2	21	20.0	4	3.8	4	3.8
29	R	595	231	38.8	136	22.9	162	27.2	52	8.7	14	2.4
57	R	130	27	20.8	46	35.4	42	32.3	14	10.8	1	0.8
120	R	224	130	58.0	67	29.9	25	11.2	2	0.9	0	0.0
34A	Т	511	177	34.6	145	28.4	101	19.8	60	11.7	28	5.5
34	T	564	171	30.3	156	27.7	115	20.4	88	15.6	34	6.0
71A	Т	181	75	41.4	38	21.6	50	27.6	14	7.7	4	2.2
44	T	444	72	16.2.	72	16.2	154	34.7	100	22.5	46	10.4
129	U	237	71	30.0	65	27.4	76	32.1	20	8.4	5	2.1
74	U	311	83	26.7	95	30.5	99	31.8	24	7.7	10	3.2
82A	U	144	37	25.7	56	38.9	39	27.1	12	8.3	0	0.0
8	U	457	192	42.0	127	27.8	98	21.4	27	5.9	13	2.8
106	U	286	75	26.2	81	28.3	66	23.1	40	14.0	24	8.4
72	U	3140	906	28.9	1089	34.7	890	28.3	178	5.7	77	2.5
TOTAL	21	10141	2996	29.5	2954	29.1	2691	26.5	1066	10.5	434	4.3
RURAL	11	3866	1137	29.4	1030	26.6	1003	25.9	503	13.0	193	5.0
TRIBAL	4	1700	495	29.1	411	24.2	420	24.7	262	15.4	112	6.6
URBAN	6	4575	1364	29.8	1513	33.1	1268	27.7	301	6.6	129	2.8

NUTRITIONAL STATUS OF CHILDREN (0-3YRS)

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	an partie	B-COM	PLEX DEFICIEN	ICY	VIT-A	A DEFICIENCY	S SLE		ANAEMIA	
TH. NO.	TYPE	SAMPLE SIZE	NUMBER	%	SAMPLE SIZE	NUMBER	%	SAMPLE SIZE	NUMBER	%
59	R	1150	82	7.1	1150	34	3.0	1		
103	R				830	69	8.3	830	228	27.5
60	R	A TANK I TANK			500	9	1.8	500	289	57.8
16	Ř	686	51	7.4	686	105	15.3	686	544	79.3
55	R	632	24	3.8	632	60	9.5	632	364	57.6
66	R	400	25	6.3	400	2	0.5	243	32	13.2
29	R	1123	24	2.1	1123	239	21.3	1123	598	53.3
19	R	214	6	2.8	214	3	1.4			
15	R	1849	20	1.1	1849	26	1.4	1849	79	4.3
34A	Т	1120	19	1.7	1120	158	14.1	1120	205	18.3
44	Т	1000	22	2.2				10 <sup>2</sup> <u>-</u> 24	_	
34	Т	1181	10	0.8	1181	159	13.5	174 - PTT	-	-
22A	U	112	1	0.9	105	10	9.5	112	25	22.3
22	U	112	15	13.4	112	43	38.4	112	50	44.6
119	U	205	5	2.4	205	8	3.9			
138	Ū	500	34	6.8				500	17	3.4
137	U				200	25	12.5	50 - 7.5		-
106	U	597	28	4.7	597	174	29.1	597	106	17.8
114	U			-	118	86	72.9			
42	Ū	1026	55	5.4	1026	132	12.9	1026	328	32.0
124	U	867	4	0.5	867	26	3.0	867	<b>Ż</b> 3	2.7
95	U	-1, 13 - <u> </u>		. I. <u></u> . I.	902	17	1.9			
125	U		25 P		125	27	21.6		- 1 - 1 - 1	
68	U	1376	39	2.8	1376	151	11.0	1376	132	9.6
94	Ū	352	22	6.3	352	5	1.4	_		
105	Ŭ				885	187	21.1	885	193	21.8
115	Ŭ			_	200	74	37.0			
111	U				1376	151	11.0			
24	Ū			<u></u>	1545	54	3.5			<u>. N. c.</u>
92	U	-		1997 <u>- 19</u> 16 - 19	380	54	14.2		-	
RURAL	9.	6054	232	3.8	7384	547	7.4	5863	2134	36.4
TRIBAL	3	3301	51	1.5	2301	317	13.8	1120	205	18.3
URBAN	18	5147	203	3.9	10371	1224	11.8	5475	874	16.0
TOTAL	30	14502	486	3.4	20056	2088	10.4	12458	3213	25.8

## SIGN & SYMPTOMS OF VITAMIN B-COMPLEX, VITAMIN-A DEFICIENCY AND ANAEMIA IN CHILDREN (0-6YRS)

14 LXXX

			<b>B-COMPLEX</b>			VITAMIN-A		AN	AEMIA	
TH. NO.	TYPE	SAMPLE SIZE	NUMBER	%	SAMPLE SIZE	NUMBER	%	SAMPLE SIZE	NUMBER	%
19	R ICDS	214	6	2.8	·214	3	1.4			
66	R ICDS	400	25	6.3	400	2	0.5	243	32	13.2
92	U ICDS	_	_		380	54	14.2			
94	U ICDS	352	22	6.3	352	5	1.4			
95	U ICDS	_			902	17	1.9	_		
115	U ICDS	_	_		200	74	37.0	W - Carlo Co	Children -	<u> </u>
119	U ICDS	205	5	2.4	205	8.	3.9 '			
137	U ICDS		-		200	25	12.5			
138	U ICDS	500	34	6.8	-		-	500	. 17	3.4
ICDS	ALL TOTAL	1671	92	5.5	2853	188	6.6	743	49	6.6
	RURAL	614	31	5.0	614	5	0.8	243	32	13.2
	URABN	1057	61	5.8	2239	183	8.2	500	17	3.4
19	R NICDS	214	8	3.7	214	18	8.4			
66	R NICDS	357	27	7.6	357	15	4.2	154	42	27.3
92	U NICDS	_			404	116	28.7	-		_
94	U NICDS	355	40	11.3	355	16	4.5	<u> </u>	·	
95	U NICDS	-			169	4	2.4	-		
115	U NICDS	-	-	-	300	117	39.0			
119	U NICDS	202	10	5.0	202	24	11.9	<u> </u>		
137	U NICDS	-			200	70	35.0		_	
138	U NICDS	500	145	29.0				500	34	6.8
NICDS	ALL TOTAL	1628	230	14.1	2201	380	17.3	654	76	11.6
	RURAL	571	35	6.1	571	33	5.8	154	42	27.3
	URBAN	1057	195	18.4	1630	347	21.3	500	34	6.8

## COMPARATIVE DATA OF SIGN AND SYMPTOMS OF VITAMIN-A, VITAMIN B-COMPLEX DEFICIENCY AND ANAEMIA IN ICDS & NON ICDS IN CHILDREN (0-6YRS)

LXXXI

LXXXII 16

## PREVALENCE OF SPECIFIC MORBIDITY PER WEEK IN CHILDREN

		DIARRHOEA				RESP INF.		PY	ODERMA		FEV	JER		EYE INF.		
TH. NO	TYPE	SAMPL SIZE	E NUMBER	%	SAMPLE SIZE	NUMBER	%	SAMPLE SIZE	NUMBER	%	SAMPLE SIZE	NUMBER	8 %	SAMPL SIZE	E NUMBE	R %
31	R	509	59	11.6	509	21	4.1	<u> </u>	<u> </u>	-	509	29	5.7	-		
123	R	250	83	33.2	250	95	38.0		+	-		-		250	21	8.4
15	R	1849	12	0.6	1849	65	3.5	1849	3	0.2	1849	42	2.3	1849	17	0.9
29	R	1123	77	6.9	1123	98	8.7	1123	183	16.3	1123	11	1.0	1123	200	17.8
66	R	400	41	10.3	400	72	18.0	400	18	4.5		_		400	5	1.3
47	R	1260	265	21.0	1260	464	36.8	1260	22	1.7	1260	328	26.0	1260	104	8.3
99	R	181	49	27.1	181	67	37.0	181	11	6.1	181	18	9.9	181	10	5.5
19	R	214	7	3.3	214	4	1.9		- · ·	. <u>-</u>	- 11 - 11 - 11 - 11 - 11 - 11 - 11 - 1	· -	-	—	-	-
34	Т	1120	142	12.7	1120	125	11.2	1120	332	29.6	1120	24	2.1		-	-
94	U	352	22	6.3	352	45	12.8	352	19	5.4	352	12	3.4	352	18	5.1
119	U	205	36	17.6	12 . <del></del>	2 · · · ·	14	205	15	7.3	205	16	7.8		-	-
138	U	500	40	8.0	500	160	32.0	500	65	13.0	500	135	27.0		-	-
95	U	902	79	8.8	902	136	15.1	902	44	4.9	902	109	12.1	902	21	2.3
R	URAL	5786	593	10.2	5786	886	15.3	4813	237	4.9	4922	428	8.7	5063	357	7.1
TI	RIBAL	1120	142	12.7	1120	125	11.2	1120	332	29.6	1120	24	2.1		-	
U	RBAN	1959	177	9.0	1754	341	19.4	1959	143	7.3	1959	272	13.9	1254	39	3.1
GRAN	ND TOTA	L 8865	912	10.3	8660	1352	15.6	7892	712	9.0	8001	724	9.0	6317	396	6.3
	ТҮРЕ	SAMPLE SIZE	DIARRH	IOEA	RESP. INFE	CTION	PH	IODERMA		, Tringel	FEVER		EYI	E INFECTIO	ON	
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TH. NO.			EPISODE	E/YR	EPISODE	E/YR	SAMPLE SIZE	EPISODE	E/YR	SAMPLE SIZE	EPISODE	E/YR	SAMPLE SIZE	EPISODE	E/YR	
65 28 6 42 82	R T U U U	643 155 200 636 229	802 199 243 169 439	1.2 1.3 1.2 0.3 1.9	1566 205 347 292 324	2.4 1.3 1.7 0.5 1.4	200 636 229	191 152 96	1.0 0.2 0.4	643 155 229	1345 224 227	2.1 1.4 1.0	643 636 229	435 65 37	0.7 0.1 0.2	
	RURAL TRIBAL URBAN GRAND TOTAL	643 155 1065 1863	802 199 851 1852	1.2 1.3 0.8 1.0	1566 205 963 2734	2.4 1.3 0.9 1.5	1065 1065	439 439	0.4 0.4	643 155 229 1027	1345 224 227 1796	2.1 1.4 1.0	643 865 1508	435 102 537	0.7 0.1 0.4	

## NUMBER OF EPISODES PER CHILD PER YEAR

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#### COMPARATIVE DATA OF POINT PREVALENCE OF SPECIFIC MORBIDITY IN CHILDREN IN ICDS AND NON ICDS GROUPS

			-	DIA	RRHOEA		RE	SP INF	I	PYODEF	RMA		FEVER	3	E	YE INF	
			SAMP	PLE		SAMP	LE		SAMPLE	an a s		SAMPLI			SAMPLE		
TH. NO.	TYPI		SIZE	NO.	%	SIZE	NO.	%	SIZE	NO.	%	SIZE	NO.	%	SIZE	NO.	%
31	R	ICDS	509	59	11.6	509	21	4.1	-		<u>.</u>	509	29	5.7		1	_
66	R	ICDS	400	41	10.3	400	72	18.0	400	18	4.5			-	400	5	1.3
99	R	ICDS	181	49	27.1	181	67	37.0	181	11	6.1	181	18	9.9	181	10	5.5
123	R	ICDS	250	83	33.2	250	95	38.0	_	_	_	_	-	· · · · ·	250	21	8.4
94	U	ICDS	352	22	6.3	352	45	12.8	352	19	5.4	352	12	3.4	352	18	5.1
· 95	U	ICDS	902	79	8.8	902	136	15.1	902	44	.4.9	902	109	12.1	902	21	2.3
119	U	ICDS	205	36	17.6	- 14		'	205	15	7.3	205	16	7.8	_	_	
138	U	ICDS	500	40	8.0	500	160	32.0	500	65	13.0	500	135	27.0	-	_	-
-	4 URB	AN	1959	177	9.0	1754	341	19.4	1959	143	7.3	1959	272	13.9	1254	39	3.1
	4 RUR	AL	1340	232	17.3	1340	255	19.0	581	29	5.0	690	47	6.8	831	36	4.3
	8 TOT.	AL	3299	409	12.4	3094	596	19.3	2540	172	6.8	2649	319	12.	2085	75	3.6
31	R	NICDS	500	80	16.0	500	13	2.6			<u>.</u>	500	41	8.2		_	_
66	R	NICDS	357	55	15.4	357	67	18.8	357	39	10.9	_			357	7	2.0
99	R	NICDS	186	52	28.0	186	56	30.1	186	19	10.2	186	15	8.1	186	21	11.3
123	R	NICDS	300	111	37.0	300	60	20.0	- Cu.		-		-	** 	300	31	10.3
94	U	NICDS	355	38	10.7	355	64	18.0	355	34	9.6	355	18	5.1	355	22	6.2
95	U	NICDS	169	18	10.7	169	25	14.8	169	10	5.9	169	19	11.2	169	3	1.8
119	U	NICDS	202	83	41.1		_	-	202	35	17.3	202	41	20.3	-		_
138	U	NICDS	500	66	13.2	500	380	76.0	500	195	39.0	500	245	49.0	-		-
<u>.</u>	4 URB	AN	1226	205	16.7	1024	469	45.8	1226	274	22.3	1226	323	26.3	524	25	4.8
	4 RUR	AL	1343	298	22.2	1343	196	14.6	543	58	10.7	686	56	8.2	843	59	7.0
	в тот.	AL	2569	503	19.6	2367	665	28.1	1769	332	18.8	1912	379	19.8	1367	84	6.1

1000			SAMPLE			DURATION	N		
TH. NO	TYPE		SIZE	0-1 YR.	%	1-2YR	%	2YR+	%
21	R	1	240	52	21.7	185	77.1	3	1.3
66 .	R		321	55	17.1	233	72.6	33	10.3
28	Т		170	34	20.0	60	35.3	76	44.7
30	Т		164	22	13.4	109	66.5	33	20.1
94	U		310	52	16.8	226	72.9	33	10.6
7111	2 RURAL		561	107	19.1	418	74.5	36	6.4
1	2 TRIBAL		334	56	16.8	169	50.6	109	32.6
	1 URBAN		310	52	16.8	226	72.9	33	10.6
	5 TOTAL	in a starter	1205	215	17.8	813	67.5	178	14.8

### BREAST FEEDING PRACTICES IN MOTHERS

COMPARATIVE DATA OF BREAST FEEDING PRACTICES IN MOTHERS IN ICDS AND NON ICDS GROUPS

	SAMPLE			DURATION	N		
TYPE	SIZE	0-1 YR.	%	1-2YR	%	2YR+	%
R ICDS	321	55	17.1	233	72.6	33	10.3
NICDS	282	47	16.7	205	72.7	30	10.6
U ICDS	310	52	16.8	226	72.9	33	10.6
NICDS	305	55	18.0	222	72.8	28	9.2
ICDS	631	107	17.0	459	72.7	66	10.5
NICDS	587	102	17.4	427	72.7	58	9.9
	TYPE R ICDS NICDS U ICDS NICDS ICDS NICDS	TYPESAMPLE SIZERICDS321NICDS282UICDS310NICDS305ICDS631NICDS587	$\begin{tabular}{ c c c c c } \hline SAMPLE & & & & & & & & & & & & \\ \hline TYPE & SIZE & 0-1 YR. & & & & & & & \\ \hline R & ICDS & 321 & 55 & & & & & & \\ NICDS & 282 & 47 & & & & & & & & \\ \hline U & ICDS & 282 & 47 & & & & & & & & \\ U & ICDS & 310 & 52 & & & & & & & & & \\ NICDS & 305 & 55 & & & & & & & & & & & & \\ \hline ICDS & 631 & 107 & & & & & & & & & & & & & \\ NICDS & 587 & 102 & & & & & & & & & & & & \\ \hline \end{tabular}$	$\begin{tabular}{ c c c c c } \hline SAMPLE & & & & & & & & & & & & & & & & & & &$	SAMPLE DURATION   TYPE SIZE 0-1 YR. % 1-2YR   R ICDS 321 55 17.1 233   NICDS 282 47 16.7 205   U ICDS 310 52 16.8 226   NICDS 305 55 18.0 222   ICDS 631 107 17.0 459   NICDS 587 102 17.4 427	TYPE SAMPLE SIZE 0-1 YR. % 1-2YR %   R ICDS 321 55 17.1 233 72.6   NICDS 282 47 16.7 205 72.7   U ICDS 310 52 16.8 226 72.9   NICDS 305 55 18.0 222 72.8   ICDS 631 107 17.0 459 72.7   NICDS 587 102 17.4 427 72.7	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

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TH. NO	TY	PE	SAMPLE SIZE	0-6 MONTHS	%	AGE AT WEANING 7-12 MONTHS	%	12 MONTHS+	%
21 23 66 28 30 67 92	R R T T U U		240 200 349 170 164 45 120	22 0 34 0 8 0 14	9.2 0.0 9.7 0.0 4.9 0.0 11.7	61 50 193 8 15 18 98	25.4 25.0 55.3 4.7 9.1 40.0 81.7	157 150 122 162 149 27 8	65.4 75.0 35.0 95.3 90.9 60.0 6.7
	3 2 2 7	RURAL TRIBAL URBAN TOTAL	789 334 165 1288	56 8 14 78	7.1 2.4 8.5 6.1	304 23 116 443	38.5 6.9 70.3 34.4	429 311 35 775	54.4 93.1 21.2 60.2

#### WEANING PRACTICES IN CHILDREN

## COMPARATIVE DATA ON WEANING PRACTICES IN CHILDREN IN ICDS AND NON ICDS GROUPS

			SAMPLE	AGE AT WEANING								
TH. NO	TYPE		SIZE	0-6 MONTHS	%	7-12 MONTHS	%	12 MONTHS+	%			
66	R	ICDS	349	34	9.7	193	55.3	122	35.0			
		NICDS	294	11	3.7	42	14.3	241	82.0			
92	U	ICDS	120	14	11.7	98	81.7	8	6.7			
274	-	NICDS	120	10	8.3	105	87.5	5	4.2			
		ICDS	469	48	10.2	291	62.0	130	27.7			
	3	NICDS	414	21	5.1	147	35.5	246	59.4			

# Abbreviations Used

AIIMS	All India Institute of Medical Science
ANM	Auxillary Nurse Midwife
AP	Andhra Pradesh
AW	Anganwadi
AWW	Anganwadi Worker
BCG	Bacille Callmetti Gueun
BF	Breast feeding
СТС	Central Technical Committee
DPT	Diphtheria, Pertussis Tetanus
DT	Diptheria & Tetanus (toxoid)
HP	Himachal Pradesh
ICDS	Integrated Child Development Service
J&K	Jammu & Kashmir
MCH	Maternal & Child Health
MP	Madya Pradesh
ORS	Oral Rebydrotion Solution
PGIME	R Post Graduate Institute of Medical Education & Research
PHC	Primary Health Centre
PSM	Preventive & Social Medicine
SRS	Sample Registration System
TN	Tamil Nadu
TT	Tetanus Texoid
UIP	Universal Immunization Programme
UP	Uttar Pradesh