

IDENTIFICATION OF FACTORS INFLUEN-
-CING HEALTH AND NUTRITION OF RURAL
WOMEN AND CHILDREN IN KARNATAKA,

A FIELD STUDY IN KARNATAKA.

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Welfare Division

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I. AIM

The present study is an attempt to document the various factors which influence the health and nutrition of women and children, such as dietary and health beliefs, health care - seeking behaviour and perceptions regarding desirable family size.

II. BACKGROUND

There is an increasing interest in women's empowerment, status, self - image, financial independence and its relationship to their health care seeking behaviour for themselves and their children, as well as its ultimate impact on the women's own health, their fertility behaviour and health of their children. ISST was part of a multicentric study on the effect of poor rural women's work status and income on the health and development of their children, which explored some of these issues. During that study certain interesting findings emerged such as those regarding health care and diet of women and children, for example extreme restriction of diet during early lactation period. These seemed to merit further study. It became apparent that there were widely prevalent patterns and practices of health care/response to illness that were extremely significant in their potential impact on women's and children's health, and on the appropriate utilization of health services. It was also felt that in-depth evaluation of certain programmes and services such as

ICDS, Anganwadis and the primary health centre was important in understanding use or non use of these services. We also came across locally recognized disease patterns, many of which seem to be perceived as being a single entity although to us they appear to be a constellation of diseases. This might have relevance to the health care seeking behaviour of the population since the health care providers do not seem to understand the phenomenon and do not know how to respond.

DESCRIPTION OF THE STUDY AREA

The Bangalore study population consists of women in rural households in 8 villages in the taluk of Kanakapura, in Karnataka State. The area was chosen because ISST has had previous experience working there.

Karnataka is divided into 20 districts, the Bangalore Rural district being the area approximately south of Bangalore City, the capital of Karnataka. Bangalore Rural district is further divided into a number of taluks of which the Kanakapura taluk is the one under study.

Kanakapura is a large taluk, with the taluk headquarters, the town of Kanakapura, being located about 60 Kms from Bangalore city.

There is a mix of areas under subsistence cropping and commercial cash cropping. Sericulture is also wide spread in the area

Ragi is the main subsistence crop in Kanakapura taluka. It is usually sown around June-July and harvested in November - December, while the dominant cash crop, groundnut, is sown in October and harvested in January. In irrigated areas, rice is also sown in September and harvested in June.

The staple food of the people in this taluka is ragi and rice. The major crops grown in this taluka are ragi, jowar, rice, pulses, fodder crops, oilseeds (groundnut, coconut, sesamum, niger seeds, castor) and to a certain extent fresh fruits and mulberry (for sericulture).

Kanakapura taluk has altogether 4 primary health centres at Kanakapura, Hosadurga, Maralavadi and Sathanur. Kanakapura town has modern medical health facilities, a hospital and several private practitioners. In the villages traditional healers and dais also provide services. Kanakapura is an ICDS block; food supplements are available to pregnant and lactating women and children.

SECONDARY DATA FOR BANGALORE RURAL DIST. & KANAKPURA TALUK

1989 -1990

AREA
(Total area in Sq.Km)

	Total area	No. of taluks	Hoblis	Mandal Panchayat	Zilla Parishads	Inhabited villages	Uninhabited villages
KANAKAPURA TALUK	1590	-	6	20	8	236 (224 elect- rified)	22
BANGALORE RURAL	5814	8	35	103	39	1707	177

POPULATION

	Total	Male	Female	Ratio	Scheduled caste	Scheduled tribe	Pop. Density per sq. km. 1981	Density 1991	Birth rate	Decennial growth rate 1981	1991
KANAKAPURA TALUK (1981)	2,72,429	1,41,437	1,31,000	926/1000	46,800	3,500	171	DNA		23.94	DNA
BANGALORE RURAL (1981)	14,52,000	7,43,000	7,09,000	954/1000	2,71,000	40,000	250	286		24.3	14.7
BANGALORE R 1991 Census	16,65,468	8,54,223	8,11,245	950/1000							

The agewise breakup of people in the Bangalore district (prior to bifurcation into Bangalore and Bangalore rural districts) according to the Director of Census Operations, Govt. of India, Bangalore was as follows in 1981.

BANGALORE DISTRICT

Age Group	Number	% of Total
0 - 4	5,88,595	11.9%
5 - 9	6,58,584	13.3%
10-14	5,90,210	11.9%
15-19	5,01,771	10.1%
20-24	4,91,891	9.9%
25-29	4,45,095	9.0%
30-39	6,12,934	12.4%
40-49	4,44,282	9%
50-59	2,72,227	6%
60	3,04,823	6.2%
Age not stated	7,198	0.2%
Total	49,47,610	

In Kanakapura taluk agricultural labourers constitute 26% marginal landless farmers, 17% small farmers, 7% and large farmers 4% of the total population (1981 census)

The land utilisation in the district was as follows:

Land Utilisation (In Hectares)

	Geog. Area	Forest	Non-Agri use	Barren	Cultivable waste	Pastures	Trees & groves	Fallow	Sown
KANAKAPURA TALUK	1,59,426	45,262	6,219	14,422	504	20,634	138	943	70,575
BANGALORE RURAL	5,86,000	81,000	44,000	38,000	6,000	48,000	14,000	39,000	3,16,000

AGRICULTURE AND ANIMAL HUSBANDRY

Distribution of land-holdings by size class
No. of holdings/ Total Area

	< 1 Hect. Marginal	1-2 Hect. Small	2-4 Hect. (Semi-medium)	4-10 Hect. (Medium)	> 10 Hect. (Large)	Total
Kanakapura Taluk *2	18,158/ 9,438	9,259/13,619	6,592/ 18,092	3,086/17,754	549/8,629	37,644/67
Bangalore Rural *1	1,22,423/61,619	62,716/90,777	45,231/1,24,975			

1 Source: Statistical Abstracts '83 - '84 - figures for Bangalore District 1980 - 1981, not Bangalore Rural

2 Source: Bangalore rural district statistics at a glance 1989-1990

Net Irrigated area (in hectares)

	Canals	Tanks	Wells	Borewells	Other sources
Kanakapura Taluk	895	2560	6680	982	550
Bangalore Rural	1700	23100	22900	8700	1300

1989 - 1990

Ration card holders *

	Fair Price shops	Green card holders	Saffron card holders	Others
KANAKPURA TALUK	-	31500	22700	-
BANGALORE RURAL	773	143000	117000	51000

*

: Green - Income <
Saffron - Income <

Area under important crops (in hectares)

	Paddy	Ragi	Other cereals	Tur	Other pulses	Ground-nut	Mulberry	Sugar cane
Kanakapura taluk	3710	34073	498	2355	12037	8450	-	455
Bangalore rural	18200	151500	5600	7200	68400	18700	-	1700

Production of Important Crops (in tonnes) *

	Paddy	Ragi	Other cereals	Tur	Other pulses	Ground-nut	Mulberry	Sugar cane
Bangalore rural	40900	197600	12200	3100	10300	29000	-	143000

* Data for Kanakapura taluk was not available

LIVESTOCK

	Cattle	Buffaloes	Sheep	Goats	Pigs	Poultry
Kanakapura taluk	125500	10700	50000	68100	900	203000
Bangalore rural	561000	120000	288000	229000	-	1282000

RAINFALL

	Rai- guage stations	Normal rainfall (in mm) 1901-70	Actual rainfall (in mm) 1989-90	Rainy days
Kanakapura taluk	9	768	755	45
Bangalore rural	41	817	712	46

HEALTH

	Hospitals	PHC's	PH units	Dispen- saries	Family Welfare centres
Kanakapura taluk	1	6	3	1	1
Bangalore rural	5	45	32	7	16

IMMUNIZATION ACHIEVEMENT

	D.P.T	Polio	B.C.G	Measles	T.T	F.P operations
Kanakapura taluk *	25744/ 36700	25721/ 36700	30133/ 36700	21145/ 36700	28957/ 47400	11271/ 13720
Bangalore rural						

* Bangalore Rural Zilla Parishad Data

MEDICAL PERSONNEL (1984 - SOURCE

	No. of Doctors	No. of nurses	No. of ANMs	No. of LHVs	Live Birth rate/1000		Death rate/1000		Infant Mort. rate/1000	
					rural	urban	rural	urban	rural	urban
Bangalore rural	4157	3114	7458	916						
Bangalore rural district					30.2	26.0	10.6	6.0	80.4	41.4

EDUCATION

Literacy rate as % of the population

	TOTAL	MALE		FEMALE	
		89-90	91 census	89-90	91 census
Kanakapura taluk	24.09%	32.82%		14.67%	
Bangalore rural	32%	43%	52.14%	21%	32.9%

ADULT EDUCATION

	Adult Education Centre		Akshara Sena Centre	
	Enrolment		Enrolment	
Kanakapura taluk	178	7320	DNA	DNA
Bangalore rural	300	9000	359	22000

TRANSPORT (in Kms)

	National Highway	State Highway	Major Roads	Dt. Other Roads	Dt. Village & Mun. Roads
	Kanakapura taluk	-	125	216	-
Bangalore rural	114	409	667	73	DNA

COMMUNICATIONS

	Post offices	Telegraph offices	Telephone exchange	Telephones
	Kanakapura taluk	56	11	10
Bangalore rural	349	80	32	10200

VETERINARY INSTITUTIONS

	Dispensaries	Mobile dispensaries	Artificial insem. centres
Kanakapura taluk	11	1	2
Bangalore rural	56	8	57

BANKING

	Commercial Banks	Grameena Banks	Total Deposits (in Crores)	Total loans
Kanakapura taluk	10	6	DNA	DNA
Bangalore rural	75	24	100	95

BENEFITS

	House sites allotted	House for rural poor	Mahila mandals	Yuvak mandals	Maternity allo. ben eficiaries	IRDP	Anthyo daya	100 well	TRY SEM
Kanakapura taluk	198	49	62	88	822	1073	150	59	45
Bangalore rural	580	787	368	337	2100	5673	260	88	346

	New Borewells	Bhagya mandira	Saplings planted	Gobar gas plants setup
Kanakapura taluk	92	DNA	DNA	20
Bangalore rural	228	200	32	289

PENSIONERS

	Old age pensioners	Disabled pensioners	Widow pensioners	Govt pensioners
Kanakapura taluk	13770	2829	5319	DNA
Bangalore rural	42000	11000	25000	3100

	Toddy shops	Arrack shops	Liquor shops
Kanakapura taluk	DNA	DNA	DNA
Bangalore rural	434	426	99

SELECTION OF VILLAGES

At the start of the original study on women's work and child health and welfare the 258 villages in Kanakapura Taluk were classified into small, medium and large villages based on population size. All villages which had 200 - 400 households (HH) were categorised as medium-sized villages. Such medium-sized villages are known to enjoy some kinds of infrastructure like

schools, roads, etc. but are not likely to have become as urbanised as larger villages tend to be, nor to be totally remote and neglected as happens with many of the small villages. We therefore decided to select the study villages from these middle order villages. After a survey of the taluk had been conducted the 8 villages were chosen on the basis of accessibility by road, a population composition that included an appropriate choice of households for the study and easy access to health and welfare services e.g. presence of a sub-center or ICDS center (Anganwadi) in the village or in the neighbouring village.

As a second step, background information such as labour pattern, population details and cropping pattern in these villages was collected using the 1981 census data and taluk level sources. The 1981 Census provides village level information on the number of main workers, marginal workers and non-workers. The number of female workers to the total female population of each village was calculated and the villages with a mix of workers and non-workers were selected. Information on the number of children below five in each village was obtained from the block office of the CDPO and those villages which had more than 100 such children were selected. Information on the cropping pattern was obtained from the Agricultural Assistant Director's office in Kanakapura. The 8 study villages were finally

selected after the written information about them was verified by personal visits. At these village visits it was also verified whether there were about 75 HH in each of the villages in which there were 2 children below 5 years of age.

Two subcentre villages were selected - Kadahalli and Achalu, along with 3 additional villages in each subcentre.

Achalu subcentre

Achalu

Jakkegowdana doddi

Bommanahalli

Thotahalli

Kadahalli subcentre

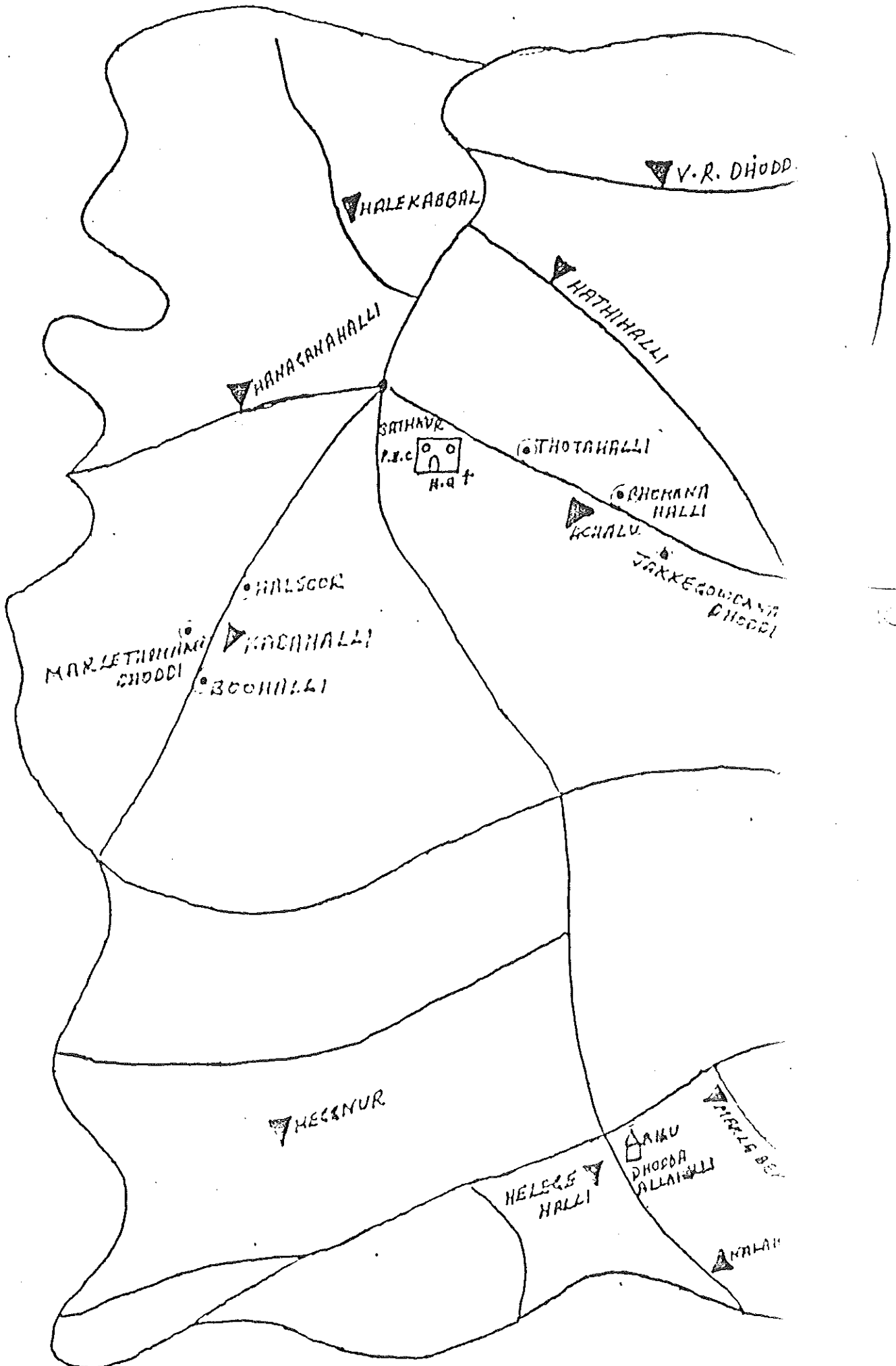
Kadahalli

Halasur

Muraletthimmanadoddi

Boohalli

MAP OF SATHUR



DESCRIPTION OF VILLAGES:

The Kadahalli sub centre villages have access to good bus facility and are located about 2-3 Kms away from Sathanur.

The Achalu sub-centre villages have good access to bus facilities. All the villages (excepting Maralethimmanadoddi and Jakkegowdanadoddi) are covered under ICDS. More details of these villages are presented in the Table below.

SUB-CENTRE : ACHALU

Name of the village	Distance from sub-centre	No. of house-holds	Total population	No. of children below 6 years	Description of the village
Achalu	Sub-centre village	197	1128	97 0-6 : 5 6-1 : 6 1-2 : 14 2-3 : 19 3-6 : 52	<u>Dominant caste groups:</u> Gowdas, Muslims and S <u>Village Infrastructure:</u> Bore well, and a water tank for drinking facilities. The village also has a tank for irrigation purposes, pucca road and good bus facility schooling upto 5 th standard. Anganwadi centre <u>Main Crops Grown:</u> Bajri Groundnut and a small extent mulberry and 1 idy Women are involved in agriculture and sericulture
Jakke Gowdana Dhoddi	3/4 km	103	560	124 0-6 : 11 6-1 : 6 1-2 : 20 2-3 : 21 3-6 : 66	<u>Dominant Caste Groups:</u> SC, Voddaru, Medass and Gowda. <u>Village Infrastructure:</u> Primary School, Anganwadi Centre, Drinking Water (bore well), pucca road good bus facility. <u>Main Crops Grown:</u> Bajri Groundnut. Women participate in quarry medri and agricultural work

Name of the village	Distance from sub-centre	No. of households	Total population	No. of children below 6 years	Description of the village
Bommana halli	3/4 km	151	875	157 0-6 : 26 6-1 : 10 1-2 : 24 2-3 : 35 3-6 : 62	<u>Dominant Caste Groups:</u> SCs and Gowdas. <u>Village Infrastructure:</u> Primary School, Anganwadi Centre, 3 bore wells for drinking water, Kuccha road. <u>Main Crops Grown:</u> Ragi, mulberry, paddy and groundnut. Women are involved in agriculture and sericulture.
Thotahalli	2 kms	222	1238		<u>Dominant Caste Groups:</u> Gowdas. <u>Village Infrastructure:</u> It has bus facilities, electricity and Anganwadi centre along with a primary and middle school. <u>Main Crops Grown:</u> Ragi, jowar, mulberry, groundnut and castor. Women are involved in agriculture.
Kadahalli	Sub-centre (rented bldg) Jayanthi ANM	128	752	187 (According to Anganwadi records) 0-6 : 6 6-1 : 6 1-3 : 40 3-6 : 45 (55: according to ANM records)	<u>Dominant Caste Groups:</u> Gowdas & SCs. <u>Village Infrastructure:</u> ANM Headquarters, Anganwadi Centre (Mahadevamma), MLC (Shivalingagowda) in the village, primary and middle school, electricity and water from bore well. Pucca Road and good facility. <u>Main Crops Grown:</u> Ragi, Jowar, Groundnut and mulberry. Women are involved in Agriculture and Sericulture.

Name of the village	Distance from sub-centre	No. of households	Total population	No. of children below 6 years	Description of the village
Halasur	1 km	165	1818 M-859 F-959 SC-318 ST HHS-52	143 (according to Anganwadi's records) 0-6: 12 6-1: 14 1-2: 33 2-3: 26 3-6: 58 (107 according to ANM's records)	<u>Dominant Caste Groups:</u> Lingayats, Vokkaligas, SC & ST. <u>Village Infrastructure:</u> Anganwadi centre (Nagalaskshmi), BDO sanctioned Shishuvihara, CARE food is supplied in the primary school, water from bore well, electricity, pucca road and good living facility. <u>Main Crops Grown:</u> Ragi, Jowar, groundnut & mulberry Women involved in agri. and seri. & good bus conveyance.
Boohalli	1 km	198	1536 M-782 F-754	184 (according to Anganwadi records) (170 according to ANM's records)	<u>Village Infrastructure:</u> Anganwadi centre (Bhagyamma), primary and middle school, water from bore well. Good bus conveyance. Male Health Asst (Manchegowda), pucca road and good living facility. <u>Main Crops Grown:</u> Groundnut, ragi, mulberry, sesame, castor seeds and pulses. Women involved in sericulture and also agriculture.
Marlethi mmana dhoddi	1 km	48	21	21	<u>Village Infrastructure:</u> A small hamlet 1/2 km from Kadahalli. Approach is from Kadahalli by Kuccha road. Bus conveyance to Kadahalli is good, drinking water (bore well). School upto 4th std. No Anganwadi centre. <u>Main Crops Grown:</u> Ragi, Jowar, groundnut and mulberry. Women are involved in agriculture.

STUDY METHODOLOGY:

Three field investigators who were residents of Kanakapura town and had participated in the previous study and hence were familiar with the area, its dialect and customs, the women in the selected HHS and also with anthropological methods were selected. They were supervised by the Project Coordinator and the consultant anthropologist, who also visited the area on several occasions.

Interviews were held with several local officials such as the Tahsildar, CDPO, PHC doctor, lady Health visitors and ANMs. Secondary data had already been collected, for example -

1. Cropping pattern
2. Women's work pattern
3. Number of children below 5 years
4. Rainfall etc.

Selection of Households

A village-wise census of households had been conducted, and some 350 HH selected for collection of quantitative data. The households were selected on the basis of the following criteria.

1. Child below 4 years
2. Total family income below Rs.12000
3. Land-holding less than 5 acres

Additionally, 14 of these households were chosen for case studies. Using qualitative methods, we collected information on aspects of their lives such as

1. Women's work
2. Childcare
3. Breast feeding practices
4. Introduction of semi-solid and family food
5. Social change
6. Daily cycle observation
7. Marriage
8. Social support
9. Education
10. Gender difference
11. Money management

DATA COLLECTED

The same households were visited several times during the present study and the following information was collected in detail:

(A) Women: Pregnancy and Lactation

Prenatal, delivery and post natal care.

- Work pattern, any change during pregnancy and lactation.
- Extent of antenatal coverage, reasons if low
- Breast feeding behaviour and beliefs.
- Dietary patterns, any specific restrictions and beliefs.
- Nutrition parameters such as height, weight and Haemoglobin levels.

(B) Morbidity patterns in women and children

- Nature of health care, both preventive and curative;
- Patterns of health care seeking
- Expenditure on health care and sources of care. Any evidence of gender discrimination in access to health care.

C. Children:

-
- Nutrition and feeding practices.
 - Feeding pattern in relation to:
 - a. Adequacy or otherwise of children's growth
 - b. Food beliefs and prejudices.

Survey of ICDS and health facilities:

All 6 anganwadis in the area were visited on at least one occasion, and observations made on their method of operation. Parents of children attending the anganwadi, as well as anganwadi workers and helpers were interviewed.

ANMs were interviewed, as also PHC staff.

Hemoglobin estimation

Hemoglobin estimations were done on about 400 women and children from 6 months to 57 years of age. The estimations were done by the cyanohaemoglobin method at the Nutrition Research Centre of St. John's Medical College, Bangalore.

FINDINGS

I--The socio-economic profile of the women in our study population is given below:

	No.	%
Landless	64	21.3
Marginal	192	63.8
Small	45	15
<u>Religion</u>		
Hindu	298	99
Muslim	3	1
<u>Caste</u>		
SC	116	38.7
ST	5	1.6
Backward Hindu	175	58.1
Other Hindu	2	0.7
Other religious group (Muslim)	3	1
<u>Family</u>		
Nuclear	180	59.80
Joint	12	3.99
Extended	109	36.21
1 - 4 members	84	27.91
5 - 8 "	198	65.78
9 - 12 "	17	5.65
> 13 "	2	0.66

Education: >5 years

	ILLI	1-5	Mid	Sec	B.G	Gd
<u>>5 = 10</u>						
M	33 35.9	58 63.0	1 1.1	0		92 100
F	69 55.7	52 41.9	3 2.4	0		124 100
<u>11 = 15</u>						
M	9 25.7	4 11.4	18 51.4	4 11.4	0	35 100
F	33 55.9	15 25.4	10 17.0	1 1.7	0	59 100
<u>16 = 20</u>						
M	18 52.9	6 17.7	1 2.9	6 17.7	3 8.8	34 100
F	106 84.1	10 7.9	9 7.1	1 0.8	0	126 100
<u>21 = 30</u>						
M	124 69.7	26 14.6	11 6.2	16 9.0	1 0.6	178 100
F	155 88.1	15 8.5	5 2.8	1 0.6	0	176 100
<u>31 = 40</u>						
M	97 72.3	19 14.3	12 9.0	5 4.1	0	133 100
F	34 97.1	1 2.9	0	0	0	35 100
<u>41 = 50</u>						
M	29 87.9	3 9.1	1 3.0	0	0	33 100
F	27 93.1	2 6.9	0	0	0	29 100
<u>>50</u>						
M	50 84.3	9 15.2	0	0	0	59 100
F	67 97.1	2 2.9	0	0	0	69 100
PG	851	222	71	34	4	1182
Nil	72.0	18.8	6.0	2.9	0.3	100

	No.	%
<u>Housing</u>		
a) Ownership	277	92.03
Rented	7	2.33
Free with someone	17	5.65
b) Construction		
Pukka (Brick wall/ RCC or tiled roof/ cement or mosaic floor)	55	18.27
Kacha (Mud or thatch wall mud floor/leaf or thatch roof)	63	20.93
Semi pukka (combination of above)	183	60.8
c) Kitchen		
Kitchen separate	224	74.42*
Kitchen corner of room	76	25.25
Kitchen make shift area	1	0.33
d) Kitchen Ventilation		
Kitchen well ventilated	12	3.99
Kitchen partly ventilated	127	42.19
Kitchen not ventilated	182	53.82

* Very few of these are actually separate rooms. The main (or only) room is generally subdivided into living, cooking and sometimes animal;s areas by a waise high wall with an opening for entry.

	No.	%
<u>e) Stove</u>		
Earthen chula	290	96.35
Smokeless	11	3.65
<u>f) Cattleshed</u>		
Separate	66	30.84
Within house	148	69.16
<u>Drinking water</u>		
Tap	56	16.09
Hand pump + other	242	69.54
Well	34	9.77
Pond/Tank	16	4.6
<u>Distance of water source from house</u>		
Within house	1	0.33
Neighbourhood	165	54.82
Within village	119	39.53
Outside village	16	5.32
<u>Toilet facility</u>		
None	231	79.4
Within home		
(open or soakpit)	41	14.1
Joint/Public	19	6.5

Only 27.71% of households have electricity.

OCCUPATIONS OF INDEX MOTHER

	Primary		Secondary	
	No.	%	No.	%
- Cultivator	100	(33.2)	22	(7.3)
- Agri. Labour	75	(24.9)	24	(8.0)
- House wife	72	(23.9)	63	(20.9)
- Sericulture	27	(9.0)	61	(20.3)
- Govt. Service	1	(0.3)	0	
- Craftsman	7	(2.3)	0	
- Business	2	(0.7)	0	
- Petty Business	1	(0.3)	0	
- Casual labour	2	(0.7)	4	(1.3)
- Working unpaid Family worker	2	(0.7)	2	(0.7)
- Sericulture labourer	2	(0.7)	6	(2.0)
- Handicraft	3	(1.0)	0	
- Dhobi/laundry	1	(0.3)	0	
- Hotel/dhaba	4	(1.3)	1	(0.3)
- Tailor	0		1	(0.3)
- Grazing	2	(0.7)	5	(1.7)
- Agarbathi Packing	0		1	(0.3)
- Not ascertained	1	(0.3)	0	
	301		190	

111 women (36.9%) reported no secondary activity.

INCOME

Nearly 50% of households in rural Karnataka have a daily per capita expenditure of Rs. 3 or less (Children & women in Karnataka - a Situational Analysis 1990)

The cash income of our study households are shown in the table below. This does not include the cash value of food grown, or from household livestock.

Household Income/ Annum* (in Rs.)

	No.	%
<5000	154	52.9
5001 - 10000	98	33.7
10001 - 15000	29	10
>15001	10	3.4
	-----	-----
	291	100

Household per capita income/annum

	No.	%
<500	34	11.7
501 - 1000	71	24.4
1001 - 1500	32	29.2
1501 - 2000	46	15.8
2001 - 5000	56	19.2
5001 - 10000	2	0.7
	-----	-----
	291	100

* (Child <15 = .5 of adult)

Often expenditure far exceeds income, and many families are caught in a cycle of perennial debt. Loans are rarely taken from financial institutions like banks or rural credit organisations as the families find these institutions too intimidating. Often the source is another family member or neighbour, or the local money lender. In the latter case interest rates can be as high as 360% per annum. Not surprisingly, these loans are often a life time burden, with families selling themselves or their children into bonded labour (called 'jeetha' in this area) to pay off the loan.

REPRODUCTIVE STATUS

About half the women were married before puberty, and a majority (97%) began to cohabit with the husband ('Prastha') between 14 & 17 years.

<u>Age at 'Prastha'</u>	<u>No.</u>	<u>%</u>
13 - 14 yrs	169	58.1%
15 - 17 yrs	114	39.2%
18 - 20 yrs	8	2.7%

Obviously, laws regarding age at marriage are not regarded very seriously. When the investigators were attending a girl's wedding, the response of the father of the bride to a question about her age was "Your government says she must be 18, doesn't it? So she must be 18!"

Age of women at delivery:

As is seen in the table below, 47.5% of all births were to women under 18 years of age, 9.2% being to girls less than 15. Caste does not appear to make any marked difference in woman's age at delivery.

No. of Births (all Live & Birth) x
Age and Caste of Mother (Pregnancy Chart)

Age of women	No. of Births		Total
	SC/ST	Others	
< 15 years	33 (8.9%)	48 (9.4%)	81 (9.2%)
15+ - 18	143 (38.4%)	195 (38.2%)	338 (38.3%)
18+ - 25	154 (41.4%)	219 (42.9%)	373 (42.3%)
25+ - 30	28 (7.5%)	31 (6.1%)	59 (6.7%)
30+ - 35	13 (3.5%)	13 (2.6%)	26 (3.0%)
35+ - 40	1 (0.3%)	1 (0.2%)	2 (0.2%)
> 40	-	3 (0.6%)	3 (0.3%)
	372 (100%)	510 (100%)	882 (100%)

The total number of pregnancies was 905. There were 856 livebirths (6 of which were reported as premature), 26 still-births, ~~23~~ abortions.

The total number of pregnancies for each woman is given in the table below.

<u>Tot. no. of pregnancies</u>	<u>No. of women</u>	<u>%</u>
1	52/	17.28
2	75/	24.92
3 - 4	125/	41.53
5 - 6	35/	11.6
7 - 8	14/	4.65

80 infants were liveborn but died subsequently. The cause of death is shown below by age group. The cause of death is as reported by the mother, and may not be accurate.

	< 1 mo.	1-6 mo.	6-12 mo.	> 1 yr.
Prematurity	3	3	-	-
Diarrhoea	-	4	3	1
Gastro-intestinal	3	1	-	1
Tetanus	1	1	-	-
Measles	-	1	1	1
Fever	-	3	-	-
Congenital malformation	-	1	-	-
'Black magic done'	-	1	-	1
Other	10	23	3	-
Cause unknown	8	2	3	-

(The 26 "other" include diagnoses like convulsions - 6, feeding problems - 8, and swelling of stomach -2 among other causes of death).

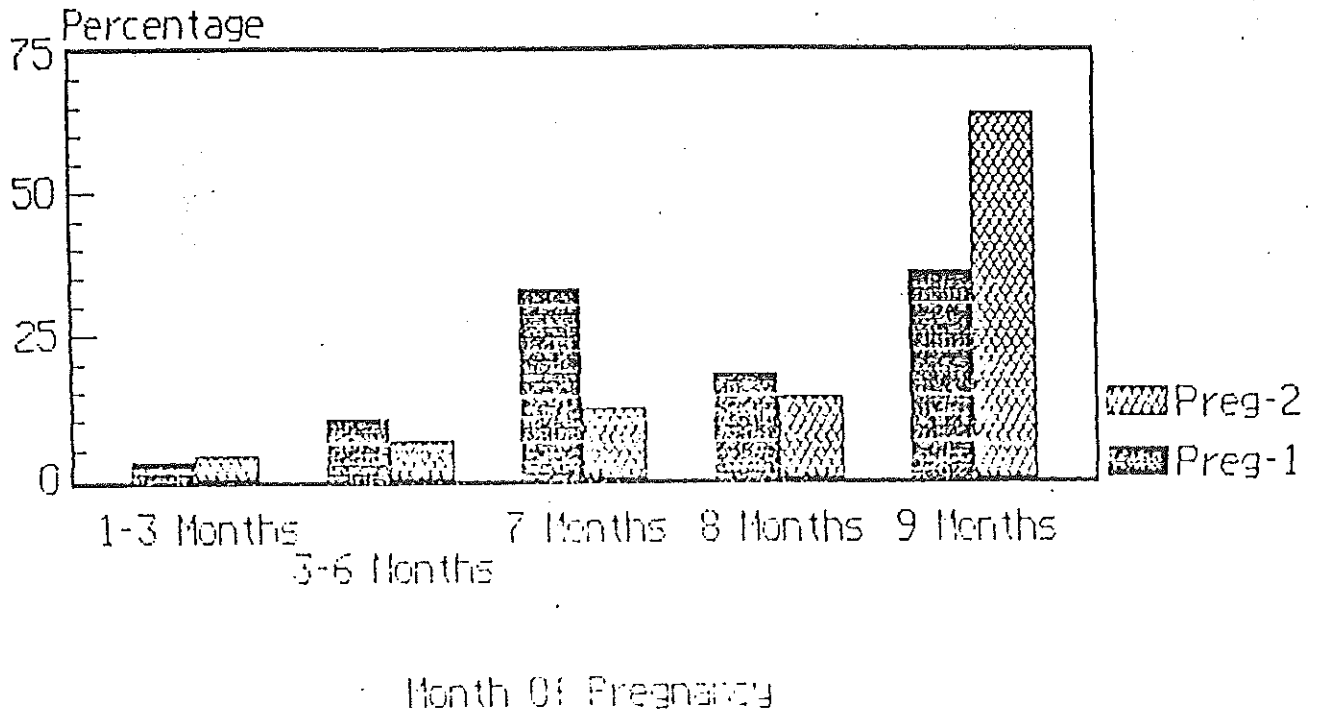
37% desired one additional child, & 2% desired 2 or 3 more children. The other 60% wanted no more children, or expressed no opinion (1 case). Predictably, this seemed to depend on the number of living children.

ANTENATAL CARE

There is reason to believe that rural women look upon pregnancy and child birth as a normal physiological process, and so do not see any need for special antenatal care or delivery in an institution. This certainly seems to hold true in our area. However, it is also true there are strongly held beliefs regarding food restrictions and the desirability of changes in activity when pregnant. Our findings reveal that many women work until late in pregnancy, although they stop doing heavy work as early as possible when pregnant, especially if it is the first pregnancy. One of the women, complaining about harassment by her in-laws said to us "Even though they made me do wage labour almost until the last day. I went to my mother's house on Friday, only got 2 days rest and delivered on Monday. That is how badly they treated me".

Figure 1

Month Of Pregnancy Until Which IM Worked
By
Parity



SC and ST women seem to suffer even in this regard, 64% of them continuing to work after 7 mos. of their first pregnancy as compared to 48% of other women. For subsequent pregnancies there seem to be no differences. About 50 deliveries occurred at the woman's natal home or at a facility near it. Most women stayed at the natal home for two months before delivery (some for as long as 6 months prior) and for 4-5 months after.

There are several food taboos during pregnancy, and most women reported avoiding foods such as papaya, groundnuts, drumstick leaves and til.

FOODS AVOIDED DURING PREGNANCY

Sweet Potato	122	(20.7%)
Colostrol milk	118	(20.0%)
Eggs	94	(16.0%)
Sesame	81	(13.8%)
Drumstick leaves	54	(9.2%)
Papaya	23	(3.9%)
Coconut	19	(3.2%)
Banana	18	(3.1%)
Groundnuts	17	(2.9%)
Jaggery	5	(0.9%)
Fish	3	(0.5%)
Fried Gram	3	(0.5%)
Pumpkin	3	(0.5%)
Guava	2	(0.3%)
Ragi Roti	2	(0.3%)
Jack fruit	2	(0.3%)
Horse Gram	2	(0.3%)
Spices	1	(0.2%)
Rice	1	(0.2%)
Potato	1	(0.2%)

During pregnancy, many women take a medicine called "Ulsichakke", made from the bark of *Thespesia populnea* (portia tree). This is supposed to prevent the newborn child from developing "Kembara" (described later) One Muslim woman reported additionally taking a green medicine made of "thagge soppu" which is only used during the first pregnancy and only by Muslims.

Details of antenatal care for the women's most recent pregnancy are given below:

<u>Number of</u>	<u>Number of</u>	<u>Percentage</u>
<u>Antenatal checks</u>	<u>Women</u>	<u>of women</u>

N = 301

0	120	39.9%
1	29	9.6%
2	40	13.3%
3	80	26.6%
4	32	10.6%

296 children were live born and were still alive, 3 had been still born and 3 children were live born but had died subsequently. One of the 3 died at 20 days because of "difficulty urinating", one at 6 mos. of measles and convulsions and one at 4 mo. of unknown causes.

Almost 40% had not had any antenatal care at all. Of the 181 women who had received antenatal care, in the month of the first checkup is given below.

Month of first A-N checkup

1 - 3 mo	3+-6 mo	6+- 7mo	7+- 8mo	8+- 9	Total
43	93	36	3	6	181
23.8%	51.4%	19.9%	1.7%	3.3%	

Only 24% of women were first seen for antenatal care in the first trimester, 50% in second trimester and 25% in the third trimester.

Overall, 10.8% were seen by a private doctor, 42.6% by PHC or Govt. hospital doctor, 44.9% by the LHV or ANM and 1.7% by "others".

Total expenses per check up were as follows: (Combining transport, medication, tests and other expenses)

Mean	18.3	Std Dev	29.1
Median	18.5	Min. 0	Max. 220

Cost for Antenatal check

Free	<10	11-25	26-50	51-100	101-200	201-300
138	44	101	66	42	4	2
42.1%	9.8%	22.6%	14.3%	9.4%	0.9%	0.5%

There appears to be no major difference in the costs for the first check up as compared to subsequent ones.

When costs are examined according to the type of provider, a distinct hierarchy emerges, with private medical care predictably costing the most.

Cost according to provider

Provider	Mean	Med.	SD	Min	Max	No.
Private doctor	92.3	88.0	75.2	6	260	20
PHC/Hospital doctor	60.7	36.0	64.2	0	290	79
LHV/ANM	10.9	0	26.3	0	100	85
Others	225	225	225	225	225	1

It should be noted that these costs include those of transport and medication purchased. This may explain the cost of care at the PHC or government hospital, which are otherwise supposed to be free.

Antenatal care seemed to be related to education of the mother, in so far as 42% of women with no schooling reported no antenatal care, as compared to 25% of women who had attended primary or secondary school. 50% of the latter women had 3 or 4 checkups, but only 35% of illiterate women had as many. Since the number of women with some schooling was only 36, as opposed to 253 with no schooling, this may not be statistically significant.

Services rendered during A/N check up.

Even those women who did receive antenatal care receive very varied services. The percentage of women receiving each of the following services is given here:

Type of service	Yes
Registration card	2.6%
Physical examination	37.9%
Weight recorded	3.0%
Blood test	22.3% *
Urine test	4.0%
Iron & Folic acid supplement	57.8%
Tetanus toxoid	58.5%

* The figure for blood test during pregnancy is apparently due to a misunderstanding by the women and the investigators. The ANM and the PHC doctor state categorically that routine hemoglobin estimations are not done, but if a woman reports being febrile, a blood smear for malaria parasite may be done.

Thus, it would appear that the antenatal care consists largely of dispensing of iron/folic acid pills (which the woman may or may not take), and the administration of tetanus toxoid. A detailed history is rarely taken and the physical examination is rather cursory consisting in mainly evaluating the height of the fundus. Under these circumstances, it is unlikely that a high - risk woman would be identified.

Iron/Folic acid supplement:

Of the women who received iron and folic acid supplements, compliance was rather poor. 7.2% took <10 tablets, 25.5% 11-30 tablets, 15.5% 31-60 tablets and 9.9% >60 tablets. Tetanus toxoid: Tetanus toxoid administration and no. of doses given is shown in the table below:

One dose	32 (10.6%)	Three doses	97 (32.2%)
Two doses	47 (15.6%)	TT not given	125 (41.5%)

Since data were being collected retrospectively, these figures probably are not an accurate reflection of TT coverage at the present time. This has markedly improved following the advent of UIP, as is documented by the fact that the percentage of women not receiving TT dropped from 55.4% of mothers of older children to 29.6% of mothers of children <2 years old. Similarly, 61% of mothers of less than 2 year children received 2 or 3 doses, as compared to 32.4% of mothers of older children.

Supplementary food from ICDS

Only 25% of women collected supplementary food from the Anganwadi during the antenatal period. Of the 225 women who did not, 133 (62%) delivered at their own (husband's) home or at a hospital or PHC near it, and hence would have been eligible to receive the food supplement. 86(38%) delivered at their natal home and

therefore would not have been eligible for food from the Anganwadi in that village. However, most of these women, moved to the parental home in the last trimester of pregnancy only and thus could have collected the food from the Anganwadi till they moved to the parental village. The utilization of this important facility is dismayingly low, and the reasons for this need to be explored.

These data highlight the fact that antenatal coverage is very low and rather superficial. Hardly any risk factor is identified. Some components of the services, however, seem to receive a better response; most women had the tetanus toxoid injections, locally called 'bimansi' injections, (injections for pregnant women) whereas the compliance is low for iron and folic acid supplement, and for use of ICDS food supplements.

DELIVERY

Details of location of delivery and persons assisting are given below.

1. Location

PHC Sub-centre	Govt hospital	ESI hospital	Private Clinic	Husband's Home	Parent's Home
4	22	2	3	186	84
1.3%	7.3%	.7%	1%	61.8%	27.9%

Thus, the vast majority of deliveries, (89.3%) occur at home. 86% of first deliveries occurred in the woman's natal home; this figure drops to 71.1% for second deliveries and to 31.2% for third and subsequent ones.

2. Person assisting delivery

Type of provider	No	%
Private Doctor	5	1.6
Government Doctor	21	6.5
ANM/LHV/Nurse	56	17.3
Trained Dai	11	3.4
Untrained Dai	42	12.9
Relatives/Neighbour	166	51.1

When delivered by family members or untrained persons the women are often delivered in the squatting position. However, the trained dais and ANMs routinely have women deliver while lying supine - a practice, which is now thought to be undesirable as it can cause

hypoxia. Thus, unfortunately this is a case where a good tradition has been replaced by an undesirable "modern" practice. No medications are given during labour, except sometimes "jeerakashaya" (decoction of cumin seeds) to give strength in the labour.

POST NATAL PERIOD

In Kannada, a woman in the post partum period is known as bananthi, and the process known as banathana. This concept recognises the immediate need for women to recover from the trauma of childbirth, acknowledges their vulnerable state, and emphasizes the importance, in the long term, of building strength for leading an active life subsequently. The bananthi period is highly regulated, there are many rituals and customs aimed at promoting health, preventing illness, and treating ailments.

Post-partum customs and practices, the underlying beliefs, values and attitudes of women are reflected in:

- a) Diet - A strict diet schedule, with many pre- and prescriptions, is followed. Especially during the first few days after childbirth, fluid intake is severely restricted, and the diet essentially consists of a gruel (ganji). See Appendix.

The concept of "hot" and "cold" foods seems to dictate food preferences and avoidances. Hot foods are a must while cold foods are shunned. It is believed that the mother's milk is affected by the food she eats. So foods that are supposed to have a bad effect on breast milk, thus causing illness in the baby are avoided. In addition to "cold" foods, cold liquids, particularly cold water, (even

physical contact with it) are forbidden. In fact, often the fluid intake is restricted to allow the "bad/dirty" liquids accumulated during pregnancy and child birth to dry out.

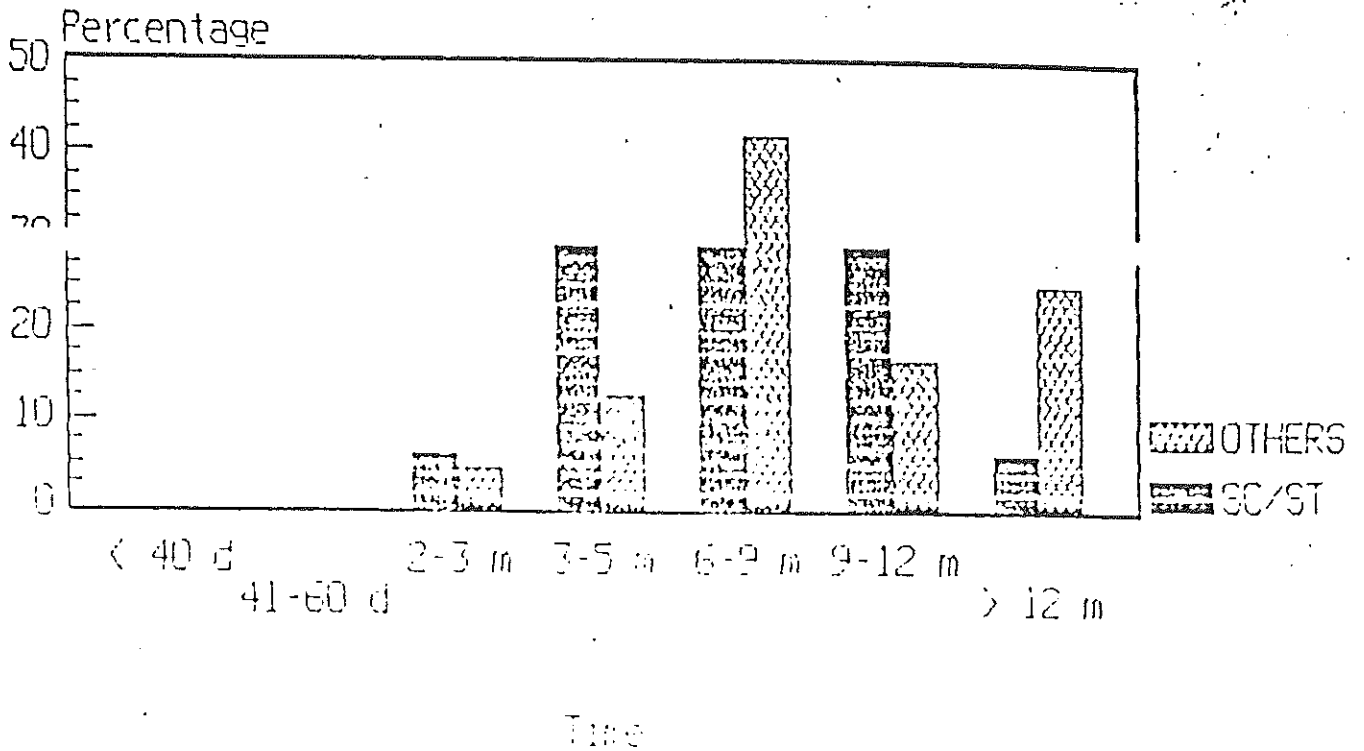
- b) Rest, work, and movement: Ideally, bananthis are supposed to rest completely. The bananthis does not go out of the house till 40 days after childbirth and she is not supposed to return to work for a period of at least three months. Her movements outside the house are restricted. These restrictions refer to ideal situations but poor bananthis and those without social support are forced to work much earlier. Since these practices may be assumed to be most stringently observed for the first pregnancy, we have looked at these data for 30/ST versus other women, and as shown in the figure below no women resumed work earlier than 60 days after giving birth. Following this period however, 30/ST women seem to return to work significantly earlier than others.

(Figure)

Figure 2

Time Resumed Work By Parity & Caste (I)

First Pregnancy



- c) The bananthi is vulnerable to catching cold during this period; hence she is dressed warmly, avoids draughts and contact with cold water. If she fails to do so she may contract sanni, a culture specific illness which seems to have the features of "hysteria," convulsion and post partum neurosis/psychosis.
- d) A mother is also vulnerable to supernatural forces which may cause beethi shanke, literally "fear and suspicion/doubt". This has features common with sanni. These syndromes are widely recognised, but women seldom seek help from professional health workers as these are not defined as illnesses the doctor can cure. Indeed, it is felt that in some cases it can be dangerous to have a person with these problems treated by modern methods, as treatment or injections makes the spirits angry and patient becomes worse. Instead, rituals are conducted to protect her; activities and exposures which put her at risk are prohibited.
- e) Ideally, sexual intercourse during bananthana, (and preferably during the entire period of lactation) is forbidden. How strictly this is adhered to in third and higher pregnancies, when the delivery often occurs in the husband's house, is not known.

Some of the customs among the
appear to contradict current beliefs
are: discarding of colostrum, limited
oil for the baby, extreme caloric and
of the mother during breastfeeding
little as 500 ml of fluid and 100-
several days' restriction of the
several months and ascribing of ailments
to supernatural causes, which may
These beliefs particularly those
strongly held and cannot be changed
them. Instead, feasible
alternatives have to be developed

ATTITUDES TO CONTRACEPTION

Women were questioned regarding their knowledge of contraceptive methods. While all but 2 knew about tubectomy, the percentage who knew about other methods was as follows:

IUD	58.2%
Pills	46.4%
Vasectomy	45.7%
Condom	18.2%

Only one man out of 301 had undergone a vasectomy but 150 (50%) of the women had had a tubectomy performed.

Tubectomy incidence & No. of pregnancies

<u>Total no. of pregnancies</u>	<u>N</u>	<u>% of women post-tubectomy</u>
1	52	1.3%
2	75	19.5%
3 - 4	125	55.0%
5 - 6	35	17.2%
7 - 8	14	7.3%

Tubectomy incidence x No. of living children

<u>No. of living children</u>	<u>No. & % of women</u>
One	3 (3.3%)
Two	38 (25.0%)
Three	66 (43.4%)
Four	27 (17.8%)
Five	12 (7.9%)
Six to Eight	4 (2.6%)

	150

Most women had the operation performed after 3 living children. However, we were surprised to find that some women had had a tubectomy after 1 child - of these, one woman was the second wife, and the husband has 2 previous children by the first wife (who also lives with them). Another woman's husband has several children by a previous marriage.

38 women had a tubectomy after 2 living children. 3 of these had a total of 3 or more pregnancies - 3 women had still births and 5 had live born children who died postnatally. 30 chose to be sterilized after only 2 pregnancies. Of the 38, 20 had both sons, 15 one son and one daughter and 3 were sterilized after having 2 daughters.

Survey of usership of temporary methods reveals an extremely low rate of either current or past usership among these women.

Method	Used in Past	Using currently
IUD	6	3
Condom	1	1
Pill	5	2

Obviously these figures reflect the current major thrust for terminal female methods of contraception, and further substantiate the observation that most tubectomies are performed after the woman has 3 or more living children.

BREAST FEEDING

All the women studied breast fed their babies successfully except 2, one because she was ill and the other because she had no breast milk. Breast feeding behaviour was studied in detail because we find that many conditions which western authors are obsessed with such as painful and cracked nipples, flat or retracted nipples, engorgement, preparation for breast feeding etc. are extremely rare. In this study one woman reported a cracked nipple, 3 had engorged breasts and 2 had abscess formation. Therefore undue attentions to these problems by health workers may be counter productive. The same applied to breast milk failure.

Beliefs regarding withholding colostrum are strong and hardly any woman breast fed the baby within 12 hours, and very few even within 24 hrs. as the following table shows:

<u>Initiation of</u> <u>breast feeding</u>	<u>% of</u> <u>women</u>
---	-----------------------------

0-12 hours	4%
13-24 hours	17.4%
within 48 hours	25.1%
within 72 hours	46.7%
after 72 hours	5.8%

The following reasons were given for withholding breast feeding.

No breast milk is produced so early	26.7%
"Tradition"	18.6%
Early milk is bad for the baby	45.3%

The women feel that feeding colostrum causes the baby's stomach to swell, or results in diarrhoea.

The following pre lacteal feeds were given

- Castor oil	49.6%
- other woman's breast milk	31.2%
- Water with or without sugar	15.4%
- Animal milk/other	3.8%

Castor oil was given as a prelacteal feed in 144 cases, of which no additional substance was given in 84 cases. In another 49 cases breast milk from another woman was given as well as castor oil, and in yet another 11 cow's milk, sugar water or ghee and honey were given with the castor oil.

Castor oil use is very common in this area, and it is felt that it helps to clear out the "dirt that has accumulated in the baby's stomach" (meconium).

Although the women report giving upto 15 ml of castor oil in 2 days, they claim that the infants never have diarrhoea. The belief in the value of castor oil is deeply engrained and not easily changed by advice from health personnel. One woman reported that though they agreed to use sugar water when advised to do so by the ANM, "after she went away, we gave castor oil as always. Why should we upset her, the poor nurse?"

A feeding bottle was used for prelacteal feeds only in 3 cases. Otherwise the babies were fed by spoon or traditional feeding beaker ("olale") or by dipping a finger in the feed and putting it in the baby's mouth.

Breast feeding was continued for several months, as is the common practice in this area.

0 - 6 mo	2.6%
6+ - 9 mo	7%
9+ - 12 mo	25.2%
1 - 2 yr	48.7%
2+ - 3 yr	12.2%
3+	1.7% (2)

However, exclusive breast feeding seems short - lived, with only

Breast milk from another lactating woman is often fed for the first few days, though actual breast feeding by a wet nurse is rarely reported. This milk is always taken from a woman of the same caste.

Most women reported giving the infant medicine to improve its digestion, after the first week or 10 days of age. Some give a traditional combination of spices called 'soothkara' - this contains black pepper, cardamom, "arishna" and "bajje". Many now say that preparing this (it is to be ground fresh each time) is too much trouble and use gripe water. They give upto a bottle/month for the first month, and upto 3 or 4 bottles/month by the time the child is 5 or 6 months old. This can cost as much as Rs.30 - 40.

SUPPLEMENTARY FOODS

Water seems generally to be fed to the infants only after several months, 36% of women introducing it between 4 & 6 months, and another 57.7% after 7 months. 13 women (5%) reported only giving the child water after 12 months. This traditional wisdom seems to be well entrenched though the pediatric literature has called attention to it only recently. (Bidinger 1991, Sachdeva 1991)

Supplementary foods were begun after 4 months by most women -

Age of introduction of supp. food	No./	%	Type of supp. food
< 30 days	5	1.8	5 An.milk
1 - 3 mo.	19	6.6	9 An.milk 10 Other
4 - 6 mo.	139	38	46 An.milk 63 Other
7 - 9 mo.	63	24.3	23 An.milk 45 Other
10 - 12 mo.	63	23	18 An.milk 50 Other
1 - 3 yr.	14	5.1	1 An.milk 13 Other
> 2 yr. (33 & 36 mo)	2	0.7	1 An.milk 1 Other

Overall, 36% gave animal (usually cow's) milk as the first supplementary food, 51% khichri or other home made semisolid foods, 8% biscuits in tea, 3.6% rice/dal/ragi balls and 1.4% commercially available weaning foods like

Farex etc.

48.5% report feeding milk to the child using a bottle (regular feeding bottle or ordinary bottle with a nipple attached), the rest using a spoon, cup or local feeding beakers ("olale")

GROWTH AND NUTRITION:

Woman's Nutrition

The diet in this area is generally very restricted, with the typical diet for the day being tea in the morning with bread or some cereal preparation, ragi mudde (balls made of ragi) with a thin curry containing some vegetables and pulses in the afternoon, tea again in the evening, and the leftover ragi mudde and saaru in the night. Hardly anyone eats either rice or animal protein with any regularity. Even this restricted diet is sometimes further limited by the quantity of food available. According to our estimates of intake, the mean caloric intake per day for the women is 1935. Daily caloric intake in increments is given in the table below.

Energy In-take Indexmother

		<1600 1600-1800	1800-2000	2000-2200	2200-2500	2500-3000	>3000	Total
16-18 yrs.	7 41.2	2 11.8	3 17.7	1 5.9	2 11.8	2 11.8	0 0	17 100
18-21 yrs.	23 36.5	7 11.1	11 17.5	5 7.9	8 12.7	7 11.1	2 3.2	63 100
21 yrs.	82 31.1	19 9.1	26 12.4	32 15.2	21 10	21 10	9 4.3	210 100
Total	112 38.6	28 9.7	40 13.8	38 13.1	31 10.7	30 10.3	11 3.8	290 100

Our data show that the majority of women in our study consume less than the RDA ; when the woman is pregnant or lactating, the deficit in calories and protein will be even greater than is indicated here.

Index mother

	No.	%
Women with weight < 38 Kgs	69	23.8
Women with height < 145 cm	13	4.5

These women are by definition at high risk for perinatal morbidity and mortality

Children

The caloric intake of children of different age groups is given below.



Energy In-take- Children(Age X Sex)
(L-SECTION)

Age	> 1800			1500 -1800			1200- 1500			1000- 1200			800 - 1000			600 - 800			400 - 600			200 - 400			Total	
	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F		
0 - 6 Months	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 - 12 Months	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	3	1	2	3	2	1	15	7	8	22	
12 - 24 Months	1	0	1	1	1	0	3	2	1	2	0	2	7	2	5	12	5	7	20	11	9	36	18	18	82	
24 - 36 Months	3	2	1	6	4	2	3	1	2	8	3	5	8	5	3	20	10	10	19	12	7	24	11	13	91	
36 - 48 Months	1	0	1	3	2	1	8	4	4	15	9	6	13	9	4	26	16	10	17	7	10	16	6	10	99	
48 - 60 Months	1	1	0	1	0	1	8	6	2	5	1	4	11	5	6	10	9	1	8	4	4	8	3	5	52	
60 - 72 Months	2	2	0	1	0	1	1	1	0	2	1	1	6	0	6	3	2	1				4	2	2	19	
72 - 84 Months	0	0	0							2	0	2	1	0	1	0	0	0				1	0	1	4	
> 84 Months	1	1	0													0	0	0							1	
Total	9	6	3	12	7	5	23	14	9	34	14	20	47	22	25	74	43	31	67	36	31	104	47	57	378	

Only 1 child out of the 22 who were between 6 and 12 months of age was getting more than 800 calories, which would be the lower limit of the RDA for this age group. The respective percentages of children getting equal to or more than the RDA were 10% of the 1 to 3 year group (RDA 1125), 5.3% of the 4 to 6 year group (RDA 1600) and none of the 7 to 9 year group (RDA 1925) in which, however there were only 5 individuals.

The weights for age of the children were analyzed and charted by the Gomez criteria of grades of malnutrition () The table below gives our findings.

All Children (K-Section)

W/A Median percentile of Median BY age of child

	Count Row Pct	Normal	Grade I Malnut.	Grade II Malnut.	Grade III Malnut.	Total
6-11 Months	2	1 33.3	1 33.3	1 33.3		3 .8
12-17 Months	3	1 12.5	3 37.5	3 37.5	1 12.5	8 2.2
18-23 Months	4	2 3.9	25 49.0	22 43.1	2 3.9	51 13.9
24-29 Months	5	1 2.2	17 37.8	23 51.1	4 8.9	45 12.3
30-35 Months	6	1 1.8	22 40.0	28 50.9	4 7.3	55 15.0
3 - <4 Years	7	4 5.9	21 30.9	38 55.9	5 7.4	68 18.6
4-5 Years	8	6 5.4	38 33.9	53 47.3	15 13.4	112 30.6
Above 5 Years	9		10 41.7	10 41.7	4 16.7	24 6.6
Column Total		16 4.4	137 37.4	178 48.6	35 9.6	366 100.0

Anaemia:

109 women and 208 children between the ages of 6 months and 15 years had haemoglobin estimates performed. The results are given below:

	Normal	Anaemic	Clinically significant	Severe
	Hb>11	8 - 11	6 - 8	<6
	No.	No.	No.	No.
	%	%	%	%

% Women				
Nonpregnant	17	49	18	8
N : 92	(18.5)	(53.3)	(19.6)	(8.7)

Pregnant	1	1	1	2
N : 5	(20)	(20)	(20)	(40)

Lactating	1	5	4	2
N : 12	(8.3)	(41.7)	(33.3)	(16.7)

% Children				
6 mo - 1 yr	0	1	4	2
N : 7	(0)	(14.3)	(57.1)	(28.6)

1 yr - 2 yrs	1	11	7	3
N : 22	(4.6)	(50)	(31.8)	(13.6)

2 yrs - 3 yrs	4	11	17	3
N : 35	(11.4)	(31.4)	(48.6)	(8.6)

3 yrs - 4 yrs	5	23	8	2
N : 38	(13.2)	(60.5)	(21.1)	(5.3)

4 yrs - 5 yrs	4	13	14	2
N : 33	(12.1)	(39.4)	(42.4)	(6.1)

5 yrs - 10 yrs	3	34	22	7
N : 66	(4.5)	(51.5)	(33.3)	(10.6)

10 yrs - 15 yrs	-	4	3	-
N : 7		(57.1)	(42.9)	

This indicates that the incidence of clinically significant anaemia is quite high, and severe anaemia is present in many women and children.

MORBIDITY

3 visits were made to each household during the 6 month period, and the respondent was asked about any episode of illness in the past 15 days.

A total of 600 episodes of illness were reported by 589 persons (out of a total population of 1627).

	Round 1	Round 2	Round 3
Individuals	200	177	212
Episodes	204	182	214

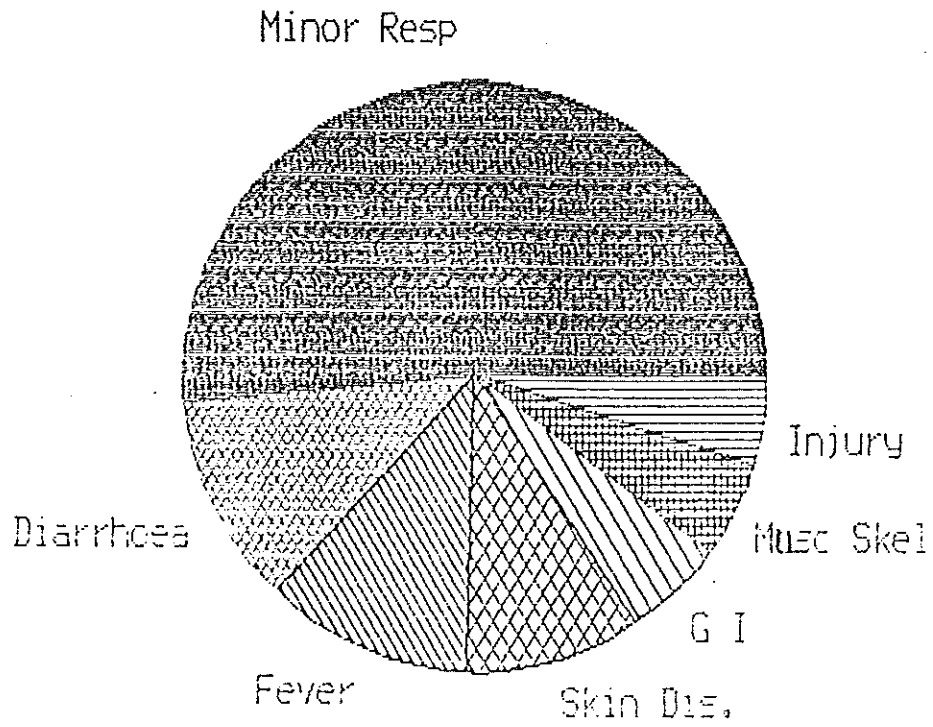
- Individual ill (ie IM/IF/Child etc)

Overall distribution of illness was as follows:

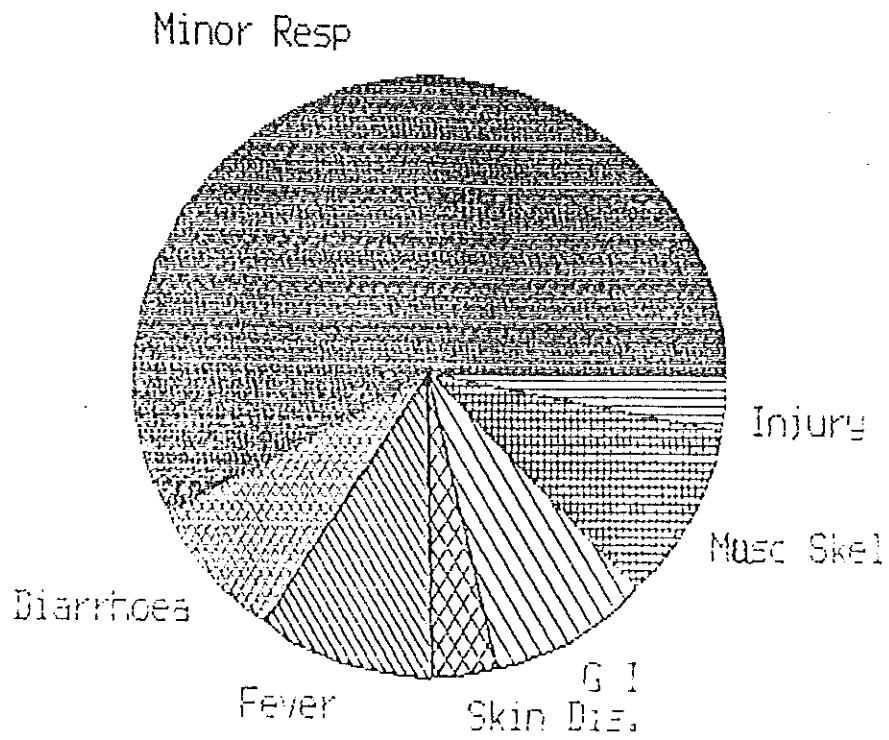
Minor respiratory	42.7%
Diarrhea & Vomiting	9.5%
Fever of unknown origin	9.5%
Skin disease	8%
Gastrointestinal (other than diarrhoea)	4.6%
Musculoskeletal	4.3%
Injury	4.1%

The pie charts below show these figures graphically, as well as the distribution of illness for women over 15 years of age and for children under 15.

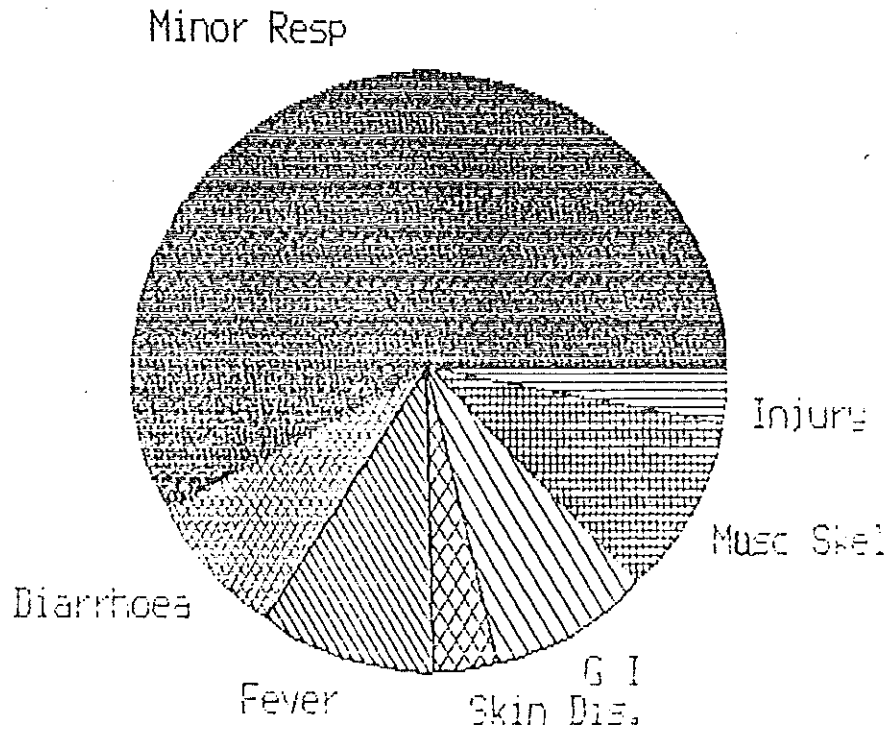
Distribution Of Illness (Total Popln.)



Distribution Of Illness (Females >15Yrs)



Distribution Of Illness (Females >15Yrs)



Utilisation of Services:

As noted by Khan et al. (1982), women have more episodes of illness that are of longer duration than men in the family. But, only 9% of women sought treatment from the PHC or government health system, the majority preferring to rely on traditional remedies. As a result, they make contact with the health care system late in their illness, thus worsening the prognosis.

Analysed age-wise, the distribution of morbidity is as follows:

< 1 Yr	20 (3.3%)
1 - 5 Yrs	231 (38.5%)
6 - 10 Yrs	53 (8.8%)
11 - 20 Yrs	48 (8.0%)
21 - 30 Yrs	132 (22.0%)
31 - 40 Yrs	45 (7.5%)
41 - 50 Yrs	21 (3.5%)
51 - 60 Yrs	19 (3.2%)
> 60 Yrs	31 (5.2%)

	600

Types of Care providers:

31.7% of episodes received no attention. 16.3% were treated by a home remedy or purchase of medication from a pharmacy. For 3.3% a village healer was consulted (12 ayurvedic, 5 allopathic and 2 homeopathic) or pooja done. 23.1% of episodes were treated by the ANM or at PHC or govt hospital, and 25.6% by modern private practitioner or hospital.

Total cost per episode averaged Rs. 9.08 with (max: 720.00)and (min: 1.00)

Diarrhoea:

26 episodes of diarrhoea were reported in children less than 5 years of age. This represents a 6 week experience, and the total number of children under 5 was 499. 23 % (6) mothers made changes in the solid food given to the child. 2 gave bread, 2 rice and curds and 2 others stopped all solid food. 46% reported that the child ate less solid food, while 42% consumed their normal amounts.

42% (11) made changes in fluid intake, one giving dal water and rice gruel, one Electral and 9 made non-specified changes (which did not include giving ORT, lime or fruit juice, nor lassi). 39 % increased fluids, 58% kept the fluid intake the same, and only one decreased it. Nine women had taken the child to the doctor.

Locally recognized diseases:

Several local names and syndromes of disease seem to exist. Ones we have encountered are:

Sanni
Kembara:
Beethi Shanke
Kesara Hunnu
Isbu
Arasthi

The last 4 are varieties of skin infections described by a local general practitioner as follows:

Isbu - All types eczema, fungal infections, Psoriasis, broadly all skin lesion which are predominantly allergic complicated or uncomplicated.

Nagara -

Hunnu 'Impetigo' furunculosis, 'Pyoderma' (superficial infection of the skin)

Arasthi- 'Allergic' inflammation, sometimes complicated by secondary infections

Kembara appears to be connected with child bearing and generally affects child. The people in the area believe that it can be prevented by taking "Ulsinchakke" during pregnancy. This is the bark of the portia tree (*Thespesia Populnea* Var *Acutifolia*) and it is taken as a decoction or powder. There are various manifestations of Kembara in the child which seem to include jaundice, various skin eruptions (erythema toxicum, staphylococcal skin disease, omphalitis) and prolonged diarrhoea during the first several months of life.

Beethi Shanke* is thought to be caused by possession by spirits and again the term is used for a wide spectrum of diseases and symptoms. Diseases we have heard called Beeti Shanke include rheumatoid arthritis, epilepsy and dizziness during pregnancy.

IMMUNIZATION:

The source of information regarding immunization was the ANM or Anganwadi worker in 71% of cases and a neighbour or friend in 13%. TV & Radio were cited as the main source of information by only 2.1% and 2.7% of women respectively. This is startling evidence that the so-called 'mass' media, which are heavily relied on for dissemination of health and other public service information, may in fact not be reaching their target audience.

92% of women knew about polio and the availability of immunization for this disease, but only 25 - 45% knew about other common preventable diseases:

Less than 10% of women overall had fairly good knowledge of immunization and the diseases preventable by it.

The actual immunization status by age groups and the type of immunization is given in the tables below.

B C G

75% of all children had received BCG

Ø - 6 mo 80%
6+ - 12 mo 88%
1 - 2 yr 79.4%
>2+ - 6 yr 63%

OPV 1/DPT 1

	OPV 1	DPT 1
All	79%	78%
Ø - 6	80%	75%
6+ - 12	90%	90%
1 - 2	84%	83.3%
2 - 5	68%	67%

OPV 2/ DPT 2

	OPV 1	DPT 1
All		
Ø - 6	72.2%	72.5%
Ø - 6	70%	65% (1 child got OPV not DPT)
6+ - 12	81.7%	83.3%
1 - 2	80.4%	80.4%
2 - 5	60.0%	61.0%

OPV 3/ DPT 3

All	57%	57%
Ø - 6	53.3%	53.3%
6+ - 12	71.7%	71.7%
1 - 2	61.8%	60.8%
2 - 5	48%	49%

Booster 1

1 - 2	8.8% *
> 2	8.3%

* Note: some of these children may be <18 mo. of age and not eligible for booster, so this is probably a false low.

Booster 2

Only one child was over 5 years of age, and he had received a second booster.

Measles

10 - 12 mo.	42.3%
1-2 yr.	28.4%
>2 yr.	18.4%

Percentage of eligible children immunized, by sex

Type of immunization	Female	Male
B C G	72.2	78.6
DPT/OPV 1	72.4	83.8
DPT/OPV 2	71.6	75.5
DPT/OPV 3	57.2	61.3
Booster 1	10.5	11.7
Booster 2	0	100 (1 child)
Measles	23.1	28.8

Less Female children seemed to be immunized than male children; the difference is not very great, but is consistent for all immunizations. However, the difference may not be significant.

DESCRIPTION OF ANGANWADIS

In the course of this study we have visited the six ICDS Anganwadis and one Anganwadi that supposedly is for only SC & ST children.

They are housed in various places ranging from pucca houses and huts to a verandah, a crude cattle cum silkworm shed on a backyard. Most have an area or cupboard that is lockable, where food supplies, weighing scales and the numeron registers are kept. The cooking area may or may not be separate, but most of them, being poorly ventilated, fill up with smoke when the cooking is done.

One AWW mentioned that the main problem with the AW was that lack of indoor space for the children. However, she was noncommittal when he asked her if she took the children outside to play.

POPULATION

According to the AWW children between 1-3 years of age are not supposed to be at the Anganwadi though they are entitled to food. In the register when food has been taken for them they are marked present. The 3-6 year olds are the ones who come to the AW. Supposedly they are taught songs and games and then given food. Pregnant and lactating women are also given food - double the quantity that is given to the children. But women who have come to their natal houses in the village

cannot get supplementary food.

All the recipients are watched closely. The children are supposed to be weighed at intervals. If their health and nutritional status does not show a steady good level the workers say they give more food. If there is still no improvement, often it is a sign that the food is not being consumed by the recipient and is perhaps being fed to others- maybe to cattle also.

Initially the women were being given packets of uncooked food but now the food is cooked and given to them. They do not seem to object to this say the AW.

Attendance: This varies from anything between 60-90% though in one Anganwadi we found that the attendance register is marked before hand for the whole week. Children had been marked present on a day when we had observed the AW to be closed and knew that AWW and her helper were in Janakapura. She told us that they make up by giving extra food on the next days. That they do not like the food or are away from the village.

In another AW we noticed only about 50 children coming for the food. Although the AWW said that they cooked for eighty. It was not clear what was done with the excess food.

Anganwadi Worker

Most AWW are young, in their 20's or 30's... Some are married. They are all well dressed. None of the 6 are resident of the village where they Anganwadi is located. They commute to their village of work spending as much as Rs. 4/day in bus charges. Most of them say that they preferred not to work in their own village as they would get "less respect". Some in nearby villages walk to work. Most have studied upto SSLC level, one has failed SSLC.

One AWW told us that there is an initial training period of 3 months in Bangalore for AWW's. There "trained" workers are then assigned to an AW depending on the vacant positions existing. After two years there us an 18 day refresher couse at the taluq headquarters. in this case Kanakapura. There is no further subsequent training.

One supervisor had been posted on an ACDPO and had been away for the past 3 months at the time of our visit. When present, she sometimes teaches the AWW new songs to teach the children when she comes.

In another village the AW teacher was involved in the census of the village. Hence her normal routine of visiting 2-3 households a day was disturbed.

AW Activities

The children are supposed to come in the mornings and the food is cooked and fed to them by 1.30 pm. In one village the helper went around collecting "troublesome" children and those parents cannot bring them. From 2-4 pm the AW worker makes home visit. In another AW children were found trickling in throughout the morning and simply sitting against the wall. Some of them were dirty and unkept and no effort was seen made to keep them from rolling on the mud floor. A dirty dog, full of fleas was seen to enter another AW, shake itself and lie next to the children. In another AW children were found coming even after the 'class' has been sent home.

We noticed that while the children were waiting for their food not much was being done with them. The AWW or the helpers show little sensitivity or imagination in their handling of the children though some of them are obviously kind and protective. The children are not able to sing songs by themselves they can repeat what the teacher sings.

In another AW that met on the verandah of a house the teacher was observed not doing anything with the children. When asked why she said that shw could not teach songs etc in a public place where the menfolk could see her. She was allowed to use the inside of that house only for cooking purposes.

The workers seem to get no outside help with the teaching programme at the Anganwadi. Any teaching aids or crafts materials they need they must procure themselves in one AW when we asked to see the teaching materials we found broken strings.

The children got themselves dirty rolling on the floor but the AW or helper was not seen doing anything. Before serving food in one AW, the helper got the children to wash their hands while she poured water for them but most of them were not able to wash their hands very well.

This class also incorporates general cleanliness and hygiene practices and is compulsory for mothers once a month, when the gram sevika visits.

According to the AWW there is no discriminations against families from SC/ST either by workers or other families. But we found otherwise. In one village the SC/ST children were found sitting separately. Children were found using their own bowls rather than the plates that the AW is supposed to have. The reason given by the AWW was that parents did so to avoid "contamination" from AW bowls which could have been used by SC/ST children. Prejudices indeed run deep.

In one village the SC/ST people complained that the AWW would be forthcoming in their attitude towards the children only in front of ISST workers or other

inspectors. The parents were badly treated on complaining or protesting. When asked why they did not go to the SC representative in the Mandal Panchayat, we got the reply that they too would not bother to do anything. Another AW exists in this village, only for SC & ST children. AW in this village had been inoperative there was no food given there, and lately the worker had not been coming. These children were found not to be going to the ICDS AW either.

Adult literacy per se is not one of the AW programmes. The 52 part radio programme for women's literacy which was to be encouraged by the Anganwadis does not seem to be functioning here. The AWW did not seem aware of it.

IMMUNIZATION

An immunization camp is held once a month in the Kadahalli AW for 6 villages. This is co-ordinated by the AWWs with the ANM who administers the vaccine doses, and fills each child's immunization card. The AWW keeps a separate record of this in a register. The children are brought by jeep if it is available otherwise AW staff to bring them by public transport. The other villages represented here are Boohalli, MT Doddi, Halasur, Dhoonthur and Harihara. Some AWW take children from their anganwadi to the larger ones for immunizations.

In another AW the AWW had been given a kit of 12 medicines but did not know how to use them. The AWW comes here once a week to check if any children are ill. The supervisor visits once a month or so to check the registers.

FOOD

The food that most Anganwadis get at this time is the corn-soy mixture from CARE and refined vegetable oil from the USA. In one AW the oil was bought from outside. Earlier the supplies were erratic but now the deliveries are regular. For the past year in one AW the supply was regular according to the AWW. In another AW 3 months ago there had been no food for eight days. The corn-soy blend is cooked in various ways- sweet or salty. One AWW said that "most parents and children do not like this food very much and claim that the children get diarrhoea when they eat it. They preferred the previously available CFTRA energy blend.

WATER

Is mostly brought to the AW by the worker or her helper from nearby borewells. In one AW, the helper said that though she advised the mothers on the cleanliness of their children they said they had no time to wash them. The helper says she washes those children who have not been washed at home.

FUEL

Although food is provided the program does not supply cooking fuel. One AW helper said she has to collect the firewood herself, often from thorny fences.

Individual households contribute firewood in one of the villages. In another, the AWW and helper take turns going round the village to collect the children and in the process collect the firewood too from different families. All this consumes considerable time.

MAHILA MANDAL

The Mahila Mandal is active in only 8 of 20 villages.

The AWW's immediate supervisor is the Gram Sevika, who has about 20 villages under her. She visits each of them once a month. She conducts the mahila mandals and their activities. She rounds up the women to talk to them about the activities and purposes of the MM. She then selects 3 women who speak well and who she feels would be objective to represent the village. The Gram SEvika in one village said there is no caste or economic status based selection to the MM.

One of the MM programmes is a tailoring class using a sewing machine. The mahila mandal collects fees from the trainees to pay the teacher. Women can get loans from the MM to eventually buy their own machines. In one village though tailoring classes are continuously

being conducted no one seemed very sure whether any of the women were able to generate any income by tailoring.

In another village the women who have learnt tailoring make use of the sewing machine in the Aw on an irregular basis.

REGISTERS MAINTAINED

Several registers have to be maintained at the Anganwadis. Some of them are:

- Food cooked
- stock received/used
- cooking and nutrition classes for women
- No. of children present
- record of immunisations
- list of medicines
- medicines given to people
- Doctors visit
- Illnesses and other problems
- Inspectors visits
- Growth charts
- Admission registers
- Attendance registers
- Annual census of village for CDP (includes no. of households, No. of people, their ages and occupations and so on.

On looking at the growth charts in one village, we noticed that every child appears to have stayed a steady

weight for one year according to the growth chart. On probing as to how the entries are made it was obvious that the AWW understood neither the basic concept of the growth chart nor how entries should be made. The Gram sevika or supervisor does not find this unusual and also didn't seem to feel responsible for catching of these errors and correcting the worker. In another, children had not been weighed for several months.

According to the Gram Sevika, nutrition classes are conducted by her once a month in every village. A cooking class also gives women ideas about preservation of seasonal foods eg., papaya jam.

In another AW we were given vadas to eat which were very tasty and according to the gram sevika used less oil. While we were there a class for mothers was being planned to teach them how to cook nutritious food using locally available ingredients.

Only in one village we found detailed and neat notes kept by the AW teacher on the various activities. She had conducted health camp for women and nutrition classes.

Teching materials are virtually non-existent - a few ragged charts hang on the walls of one or two of the anganwadis, but no "hands-on" material was ever shown to us.

The general impression we have formed is that the main activity of these AW's is handling out food supplements, which are not always well accepted. The AWWs are poorly prepared, have little back up, and a great deal of their time is taken up in paper work. Education and stimulation of the pre school child is virtually non-existent. Community involvement consists of one individual donating some physical space but otherwise there is almost none.

Evaluation of PHC and ANM services.

The PHC is located at Sathanur village. We were told by the doctor in charge that it had been upgraded to a minimum need PHC, and covers a population of over 61,000. There is a PHU at Doddahalhalli, covering a population of 27,000. The PHC is staffed by one medical officer, a Lady Health Visitor (LHV) and other staff. The LHV supervises 8 Auxiliary Nurse Midwives (ANMs), who serve a total of 71 villages. Some of the ANMs have to cover as many as 14 villages. About 40 patients per day are seen at the PHC for out-patient care, and about 25 to 30 deliveries annually occur at the PHC. The facilities for antenatal care at the PHC are minimal. Weight and blood pressure can be checked, and urine for albumin. Haemoglobin levels cannot be checked, and for this the woman would have to be sent to Kanakapura. There is no labour room as such at the PHC, in fact there is not even an adequate toilet. Intra-venous glucose infusions can be given to a patient, or to a woman in labour, but no other interventions such as forceps can be performed here. Laparoscopic tubectomies used to be done by the medical officer at the local Traveller's Bungalow, but since a dispute has arisen with the staff there, this has been stopped. Women go to Kanakapura for tubectomy. Recently someone has donated three acres of land, so a new PHC building may be constructed - about Rs. one lakh needs to be collected

from the public for this purpose. A maternity centre was sanctioned at MTDoddi, but no progress has been made.

Medications are in chronically short supply, and quite inadequate for the needs. Even iron and folic acid tablets cannot be dispensed except for MCH needs. Therefore, a non-pregnant woman, however anaemic, could not be given iron by the PHC.

ANM services.

Two ANMs serve the villages in the study area. They are both married women, who live in what is labelled the sub-centre. In actual fact, these are rented spaces, barely adequate for them to live in, and no patients are seen at these "sub-centres". One of them covers 10 villages, the other 9, and they are supposed to visit each village at least once a week. They try to visit 2 or 3 contiguous villages on one day, but feel very hampered by the lack of transport.

Their responsibilities, on paper, are very wide-ranging, but in fact they concentrate on family planning activities, immunization, and maternal and child health care. One says that older people in the villages ask her why she cannot provide any help to them, and resent the emphasis on MCH. Though they claim to know about all ill women and children, we found they were unaware of at least two seriously ill children in their areas. They have adequate supplies of iron/folic acid tablets, chloroquine and Vit. A but feel the lack of other drugs like paracetamol, ORT packets and

medication for worms and scabies. They feel the supplies of medicines at the Anganwadis should be available to them.

They claim to make regular antenatal visits, and to examine all pregnant women and give them appropriate advice, but feel the women do not take it. They attend deliveries when they are called by the families, and one of them claimed to attend about 6-8 per month. She keeps injections of methergine at hand, to deal with emergency post-partum bleeding. They also say they work with the dais, both trained and untrained, who get no other supervision. They also say they make routine post-natal visits - daily for about 10 days, and once a week for the first two or three months. However neither seemed aware that the lactating woman should be given iron supplements.

A large number of registers have to be maintained by the ANMs, and they feel an inordinate amount of their time is spent on paper work. The accuracy of some of these records is questionable, as one of the ANMs had not recorded a single infant or neonatal mortality in the past 15 months.

The kind of service given by these two women varies considerably in quality, as is stated even by the residents of the villages. Even the one who is very conscientious and hard-working, however, is hampered by lack of supplies, support services and on-going training. To some extent, they seem to share the beliefs and prejudices of the people in the area, which makes them sometimes less effective than one might wish.

DISCUSSION OF FINDINGS

DELIVERY

Our findings regarding management of deliveries are in keeping with that some 70% of deliveries in rural areas are attended by untrained personnel, when they do, often only too late (WHO, 1990b). Most women, especially in the lower socio-economic groups (who often also belong to the scheduled castes) are delivered by an untrained dai or a relative. Beliefs about pollution may interfere with even such care as is available. A further observation we have made is that the traditional birth attendant seems to belong to a disappearing breed. Considered of lowly status because of her caste or occupation, the dai is also regarded as tainted because she deals with child - birth pollution, and is, therefore, unwelcome at other times - for example, in the pre and post natal periods. This seems to be true in Kanakapura as in other parts of India (Jeffrey et al., 1989). The grand daughter of a TBA,

when asked whether she had learnt this craft from her grand mother, sneered and said "why should I do such dirty work?" The aging grand mother simply replied that she would keep doing it for as long as she could, since this was her "dharma". Also particular customs and practices may differ among different castes, and also between Hindu and Muslim families. Having a trained dai in attendance does not always solve the problem, as undesirable "modern medicine" practices, (such as injections of pitocin to speed up labour) may become commonly used, with unfortunate consequences.

POST NATAL

As mentioned earlier of maternal and child health care during the post natal period receives the least attention. The "maternal depletion" caused by repeated and closely spaced pregnancies is rarely compensated by adequate nutrition - rather, her already inadequate diet is often further reduced by adherence to traditional food taboos, and medical care may be neglected because of proscriptions on her mobility.

Even the existing services function particularly poorly in this regard, as is borne out by an ICMR study (UNICEF, 1985-86) which showed the following figures for health worker visits to mothers in the post natal period

Within 3 days after delivery	36%
4-7 days	35%
> 8 days	29%

While programmes to provide food supplements in pregnancy and lactation exist, few women avail of the supplementary food supplied via the ICDS program for several reasons including poor quality of the food, women's attitudes about accepting food from a non-family source, and food taboos. As mentioned earlier, in Kanakapura, only about 25% of pregnant women even collected the supplement. And, often these supplements were eaten by others or shared.

There appears to be a relative neglect of postnatal care even in the classic Ayurvedic text, Sushruta Samhita, but one of the recommendations it does make is that that the mother should be given gruel for the first few days after delivery.

Traditional Postnatal Care:

There is evidence in the literature to suggest that Infant Mortality Rate (IMR) among infants born at the mother's natal home is lower than in those born in the father's parent's home. The reasons for this could include better care at birth as well as better nutrition and a reduced workload, both before and after delivery. It must be kept in mind though that women who

deliver at the natal home tend to be younger, as this is the norm for the first two deliveries. Other beliefs and practices may be distinctly beneficial, such as the enforced rest and curtailment of activity which may play a role in conserving energy expenditure.

The kind of beliefs and practices at the time of delivery and postnatal period that we encountered in this population exist all over the country. The study done by the Lok Swasthya Parampara Samvardhan Samithi (LSPSS 1990a and 1990b) collected local beliefs and practices in mother and child care from several different regions. These customs were evaluated by a group of Ayurvedic practitioners to determine which were supported by Ayurvedic teachings. Various practices existed for many aspects of pregnancy, delivery and post natal care of mother and child some of which are mentioned below. They often varied between regions and several were contradictory. Many practices were unsupported by Ayurveda and some are listed below:

<u>Possibly harmful/contrary to current medical practice</u>	<u>Fits current medical practice/Possibly beneficial</u>
* Pressure on abdomen during contractions.	* Breast feeding on first or second day.
* Manual extraction of retained placenta	* High calorie diet
* Diet of ganji for several days.	* Rest for three months.

LACTATION

Food intake during lactation: Though it is recognised that good nutrition and adequate rest are essential for fulfilling the extra demands of lactation, the diet of many poor women provides only 1800-2000 Kcal/day. Yet, they produce 400-600 ml of breast milk at a caloric cost of 450-500 Kcal/day. In Mysore, a study showed that undernourished mother's ability to breast feed was not greatly impaired, and no significant deficit in physical development of their infants was observed. Most studies have focused on the women's ability to lactate and have largely ignored the cost to her health. Although some studies claim that loss of body weight during lactation may be very little, the true extent of loss of body mass may be masked by an increase in the amount of body water (Gopalan, 1989). As an article in the Lancet (1991) points out

"Even under conditions of extreme malnutrition, a lactating mother will continue to produce adequate milk for the baby, if necessary consuming her own body tissues; in some developing countries women lose weight during lactation. Sadly, those women who are least prepared for the nutritional stresses of lactation are also those who have the fewest choices... Far more attention needs to be paid to the possibility of giving supplementary food to lactating mothers and to the adequate

NUTRITION:

Several factors affect a woman's growth. Some of these, like inadequate nutrition, have a cyclical inter-generational pattern. Girls who have a poor nutritional status, and marry early in adolescence, then bear many children with little spacing, are at high risk. Poverty, demands of pregnancy and nutrition, food taboos, chronic health problems lead to maternal depletion, making women susceptible to maternal morbidity and mortality (Batliwala 1987):

Maternal stature and body weight are good indicators of maternal nutritional status. Early marriage and child birth in the teenage years are still extremely common, especially in rural areas. Our data as shown earlier, bear this out. Child bearing during this period, even before the girls own growth is complete, further exacerbates the risks of pregnancy and delivery. The additional demand of nutrients for fetal growth is superimposed on the mothers' own growth needs. An estimated 8% of the births are attributed to mothers below 19 years of age (Registrar General 1981). In the study area too, teenage pregnancies are not uncommon, being 37% of all births. The consequences of this early pregnancy, delivery and lactation on women's health are known to be deleterious.

Even when the woman has attained adult growth before her first pregnancy, her stunted stature, mainly a reflection of inadequate nutrition, may still put her at a disadvantage. About 24% of adult Indian women in the reproductive period have body weights less than 38 kilogrammes, and 16% have heights less than 145 centimetres (NNMB 1980), and thus by definition fall into a high risk obstetric category.

Food intake during pregnancy: The weight gain during pregnancy of poor Indian mothers averages 6.5 kg as opposed to 9 - 10 kg for well nourished Indian women. Some women are reported to gain no weight at all! A poor pregnant woman's caloric intake may be 1400-1800 Kcal/day and protein 40 gm/day or less (Mathai 1989), as contrasted to the recommended daily allowance (RDA) shown below:

RDA Energy & Protein: Indian Women and Girls

	<u>Non Pregnant</u>	
<u>Adult Women</u>	<u>Energy (Kcal)</u>	<u>Protein (gm)</u>
Sedentary	1800	50
Moderate	2100	50
Heavy	2450	50
<u>Adolescents</u>		
16 - 18 years	2050	66

The ICMR recommends that the dietary allowances for pregnant women, especially those with low dietary intake

and poor pre-pregnant nutritional status, should be an additional 300 Kcal and 10-15 gm of protein daily over the above recommendations (ICMR, 1989).

Although medical experts recommend increased nutrition, and view weight gain during pregnancy as positive, traditionally (in many communities in India and Africa) this is not advocated due to the fear the baby will grow too large, and make delivery difficult (Nichter 1989). In addition, some nutritious foods may be forbidden. Traditional practices, based on Ayurvedic or other high traditions, may prescribe a balanced diet according to their tenets, but what is practised may be quite different as the recommended foods may be too expensive, or not available.

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ANAEMIA

Maternal Anaemia: The reported prevalence of anaemia (Hb < 11 gm/dl) in pregnancy is 50-70% in rural areas. The predominant cause is iron deficiency.

The prevalence of anaemia in children is estimated to be between about 60 & 92% (UNICEF 1991)

This is mainly due to Fe deficiency - either because of inadequate intake, poor absorption or increased losses. Anaemia is also common, both because iron stores may be inadequate due to maternal anaemia and short gestation, and the intake of iron rich foods may be low. It has implications for low birth weight as well as maternal morbidity and mortality and can affect a child's growth and capacity for physical activity and learning.

Iron expenditure may be as high as 800 mg during the overall course of a single pregnancy, and the mother's loss of iron during lactation is estimated to be about 1mg/day. Agarwal and associates report from Uttar Pradesh and Bihar that an average of 1/3 of pregnant women have clinically significant anaemia (<8 mg/dl) with 29% having seriously low levels of <6 mg/dl. Although the picture is not as grim in Kanakapura, significant number of women suffer from severe anaemia.

Inadequate diet, especially folic acid deficiency, is known to play a role in causing toxemia, antepartum haemorrhage, premature labour, post-partum haemorrhage, and puerperal sepsis (ICMR, 1977). It is well documented that pregnancy, under nutrition and anaemia are associated with immunosuppression and an increased susceptibility to infection (Ramachandran 1989). Thus, anaemia in turn worsens the outcome of pregnancy, and, not surprisingly, maternal mortality is five times higher in anaemic women (WHO, 1990).

Disturbingly, an ICMR study shows little difference in the percentage of anaemia between women who were supplied with iron supplements and those who received none. Poor compliance may be partially due to local beliefs, eg: iron pills are heating, beliefs which are shared by the women we interviewed. This type of association was also noted in South Kanara (Nichter, 1989b). The iron pills also cause diarrhoea in some women. The ICMR has also reported that one third of the iron & folic acid tablets distributed were sub-standard. (ICMR 1989), so that the women who take these would be getting less than the optimum amounts of these supplements.

An Indian woman from deprived circumstances may spend most of her reproductive years pregnant or lactating. The metabolic demands of these periods, superimposed on inadequate dietary intake and high physical activity, results in further deterioration of maternal nutritional status.

Several factors which interact in a complex pattern have strong effects on women's morbidity - nutrition, pregnancy and socio economic status (Jesudasan and Chatterjee, 1980). For instance, mortality and morbidity do not increase because women do not go to school but because they are subject to lack of exposure, awareness and inadequate or inappropriate health care and nutritional practices. One way of studying the impact of these "intermediate variables" (Ware 1984) is to contrast the knowledge and practices of educated mothers and those of illiterate women. The same holds good for other variables such as different socio-economic status, place and type of delivery, nutrition and so on.

SUMMARY

A study of the health status of women and children in eight villages of Kanakapura taluk reveals that considerable scope exists for improvement. Existing services have serious short-comings and cannot function as they should. Deep rooted health beliefs exist, and must be taken into consideration when attempting to design health schemes and intervention.

DIET IN THE POST NATAL PERIOD

	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5	Woman 6
Imed			Water, Ragimudde with upsaru and averekaalu	Coffee	Coffee with jaggery Rava with jaggery 1c Kanji	Rava kanji with jaggery no milk
D-1	Rava Kanji	Rava Kanji F10 with jaggery 1/2 achu F6 x 2 Coffee F10 x 1	Rice with jaggery and garlic x2 Coffee x 2	Rice & Rava kanji with jaggery 2C Sappe Anna 1C raw Coffee x 3	Kanji 1c x 2 Coffee 1c x 2	
2						Rava 1/2 ltr Milk 2 c (could have more milk but cannot afford)
3						
4			F10 coffee x 1 'Sappe anna' F6 x 2 Water F9 x 2			
5						Rice/Oil/Jaggi Sigdi mensu occasionally Chicken x 1-2
6				Coffee & bread x 1 Belesaar & rice x2 Veg (no potatoes Meat 1x 4-5 days)	Sappe anna x 3	occasionally ragi & chicken x 1 - 2/ no
10		Ragi mudde 1/2 x 2 Rice F6 x 2 Saaru F12 x 3 Coffee F10 x 1			Saaru (mensu/titi) Rice Chicken q 3-4 d	
11						
12				Rice & Sigdi saaru x 2 or mensu saaru chicken q 2-3 d		
13	Sigdi saaru mensu saaru Rice					
3 wk		Regular diet	Regular diet (Usually Rice/mensu saaru or sigdi saaru till 3 mo. but she 'eats what she pleases')			
1 mo				Reg. Diet		
2 mo						Reg. diet
3 mo	Regular diet				Regular diet	

* Advised by LPH to avoid bringal potato, pumpkin, drumstick leaves, chicken and dry fish

