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**SUMMARY OF FINDINGS OF USAID ASSISTED ICDS
IMPACT EVALUATION**

**SECOND FOLLOW-UP SURVEY 1987-88 in
PANCHMAHALS (GUJARAT) and CHANDRAPUR (MAHARASHTRA)**

March 1989

Summary of Findings of USAID Assisted ICDS Impact Evaluation Second Follow-up Survey - 1987-88

This is a summary of the major findings of the second follow-up (F2) impact evaluation survey of the USAID assisted Integrated Child Development Services Project (ICDS) in 1987-88 compared to the findings of the baseline (B) survey in 1984-85 in the same villages. The Indian term "anganwadi" will be used throughout this report to refer to the village center at which all of the ICDS services are delivered. Each anganwadi in the USAID assisted districts serves an average total village population of 700. Data presented are from 16 anganwadis in 4 blocks (Dahod, Jhalod, Jalol and Jambhugoda) of Panchmahals district, Gujarat state and 23 anganwadis in 5 blocks (Bhadrawati, Gondpipri, Mul, Nagbhid and Sindewahi) of Chandrapur district, Maharashtra state.

The results of the second follow-up in this summary should be viewed as an interim assessment of project progress after three years of implementation because: 1) they are from only approximately half the sample of blocks and anganwadis surveyed at baseline, since it is planned to do a final survey round in all of the baseline anganwadis in 1989-90; 2) several essential project inputs had not yet been fully introduced at the time of the survey, namely mobile in-service training of the workers, enhanced nutrition/health education (NHED) for mothers, and full coverage of priority groups with supplementary nutrition; and 3) the data were collected during the third continuous year of India's worst drought of the century.

Sample Size

The data were collected by M.S. University of Baroda, Baroda Medical College, Nagpur University, Nagpur Medical College and Indira Gandhi Medical College. The sample sizes for the baseline and follow-up surveys are shown in Table 1. By design, data were to be collected for every child 0-6 years of age, and every pregnant or nursing woman up to 6 months after delivery. Actual coverage achieved in the surveys was 68-88% of the total population in these groups. Data were collected during the same season (November-March) in both rounds. Further details of sampling, methodology and findings may be found in the 1988 report by M.S. University on the findings of the second follow-up survey.

TABLE 1 SAMPLE SIZE FOR BASELINE (84/85) AND FOLLOW-UP (87/88) IMPACT EVALUATION SURVEYS OF USAID ASSISTED ICDS PROJECT				
GROUP	PANCHMAHALS		CHANDRAPUR	
	Baseline	Follow-up	Baseline	Follow-up
Children 0-36 mos.	859	909	1125	995
Children 37-72 mos.	553	805	912	995
Pregnant Women	88	125	150	134
Nursing Women <6 mos.	152	155	216	199

Socio-economic and Demographic Characteristics

For the most part, the socio-economic and demographic characteristics were the same for the baseline and follow-up samples. The baseline data collection was done in the year prior to the drought (1984). Subsequently, there was continuous drought in Panchmahals during the three years which elapsed between the baseline and the follow-up, due to failed monsoons in 1985, 1986, and 1987. In contrast Chandrapur was only mildly affected by drought in 1987. The consequences of the drought in Panchmahals are reflected in the significant decline in the percent of families who relied on agriculture for their livelihood between B and F2 (69% vs. 37%). No such shift was observed in Chandrapur where 55% were employed in agriculture at both rounds. This is a clear indicator of the severity of the drought in Panchmahals which made farming impossible and forced families to rely on government relief works for their income. While type of occupation bore no significant relationship to the nutritional status of children at baseline in either district, employment in agriculture became significantly associated with malnutrition in Panchmahals at follow-up but not in Chandrapur.

In Panchmahals, fewer mothers were employed at follow-up than at baseline (39% vs. 51%), probably due to limited agricultural job possibilities during the drought. Although per capita income increased, it did not keep pace with inflation or food prices during the drought, leading to a significant drop in purchasing power in both districts. Thus it may be unequivocally stated that there was a worsening of poverty between the baseline and follow-up which would be expected to be reflected in a deterioration of the nutritional status of children, in the absence of interventions like ICDS and the government of India's (GOI) drought relief works.

The effect of the USAID assisted ICDS Project on improved coverage of essential health and nutrition (child survival) services for children and pregnant and lactating women, which are

not expected to be influenced by drought, will be presented next, followed by the coverage for supplementary nutrition (supplementary feeding). Finally the impact of the project on child nutritional status, which is expected to be affected both negatively by drought and positively by ICDS services, will be reviewed.

Improvements in Health and Nutrition Services for Children

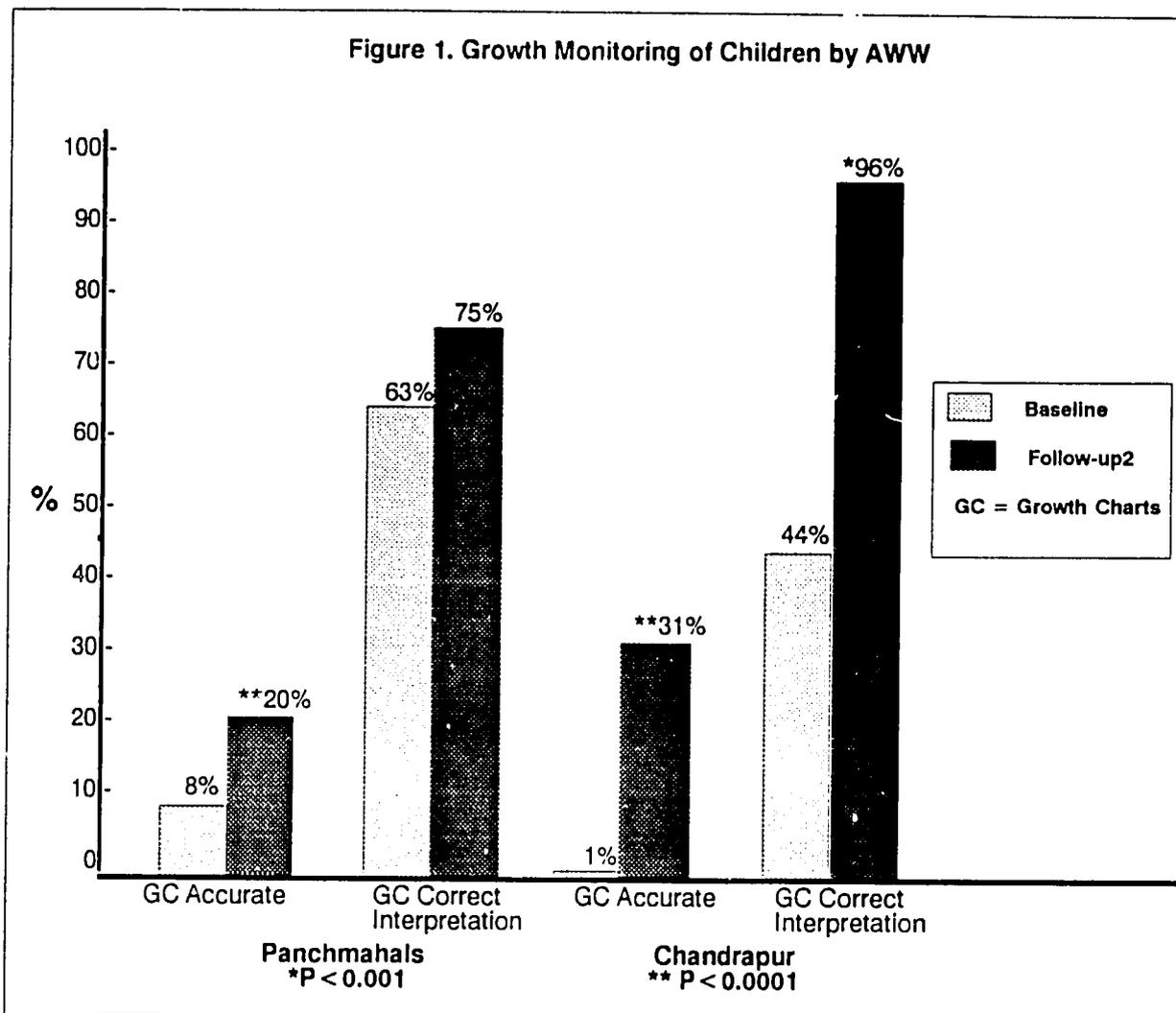
Growth Monitoring

Dramatic improvements in growth monitoring or monthly weighing of children were observed at F2 with an increase in the percent of children with growth charts from 28% at B to 42% at F2 in Panchmahals and from 4% to 63% in Chandrapur. There was a corresponding improvement in the completeness and accuracy of the anganwadi worker's weighing of children and plotting of weight on the charts. Approximately half of all growth charts in both districts at follow-up had weight plotted for the previous three months, with the most recent weight consistent with the weight of the child taken by the survey team. This is in sharp contrast to baseline where in Panchmaha's only 28% of the charts had been accurately maintained and in Chandrapur only 18%.

Figure 1 shows the increase in the percentage of all children with accurate growth charts and the improvement in the anganwadi worker's correct interpretation of the growth curve. These improvements in growth monitoring are primarily attributable to the in-service training of the supervisors and anganwadi workers in growth monitoring by CHETNA in 1987 using the instructional materials designed for the USAID assisted ICDS Project by the JSI Training Advisor. The anganwadi workers interviewed also noted that their supervisors, the mukhya sevikas, were spending more time during their visits to the anganwadi overseeing the accuracy of the growth monitoring component at F2 than at B. However, since most children still did not have an accurately plotted growth chart, with poorest coverage of children under one year of age, further improvements in growth monitoring to achieve the intended universal coverage are required. While in Panchmahals all anganwadis had properly functioning weighing scales at F2, only half of the anganwadis in Chandrapur did. Therefore, the lack of reliable weighing scales is one of the main obstacles to be overcome in Chandrapur.

Vitamin A and Iron/Folic Acid Supplementation

There was a notable increase in coverage of children from 12 - 72 months of age with megadose vitamin A supplements at F2 in both districts (Figure 2). As a consequence, the percentage of children with clinical eye signs of vitamin A deficiency fell at follow-up, though



only significantly so in Chandrapur. One of the reasons why more children received vitamin A supplements at follow-up may be the change in distribution guidelines issued nationally by the Ministry of Human Resource Development between baseline and second follow-up which permitted the anganwadi worker to distribute vitamin A and iron/folic acid. Formerly only the Auxiliary Nurse Midwife (ANM) of the Health Department could distribute these nutritional supplements and due to the distance between the health center and the village, access was limited. Despite the improved distribution system for vitamin A supplements through the anganwadi, most children still had not received this essential protection against nutritional blindness at F2 and the prevalence of deficiency signs remained unacceptably high. Reasons for the poor coverage which may include an inadequate supply of vitamin A, should be investigated and resolved.

There was also a marked decline at F2 in the prevalence of pallor signs of iron deficiency anemia in children (Figure 3). Again, this improvement was probably due to greater accessibility

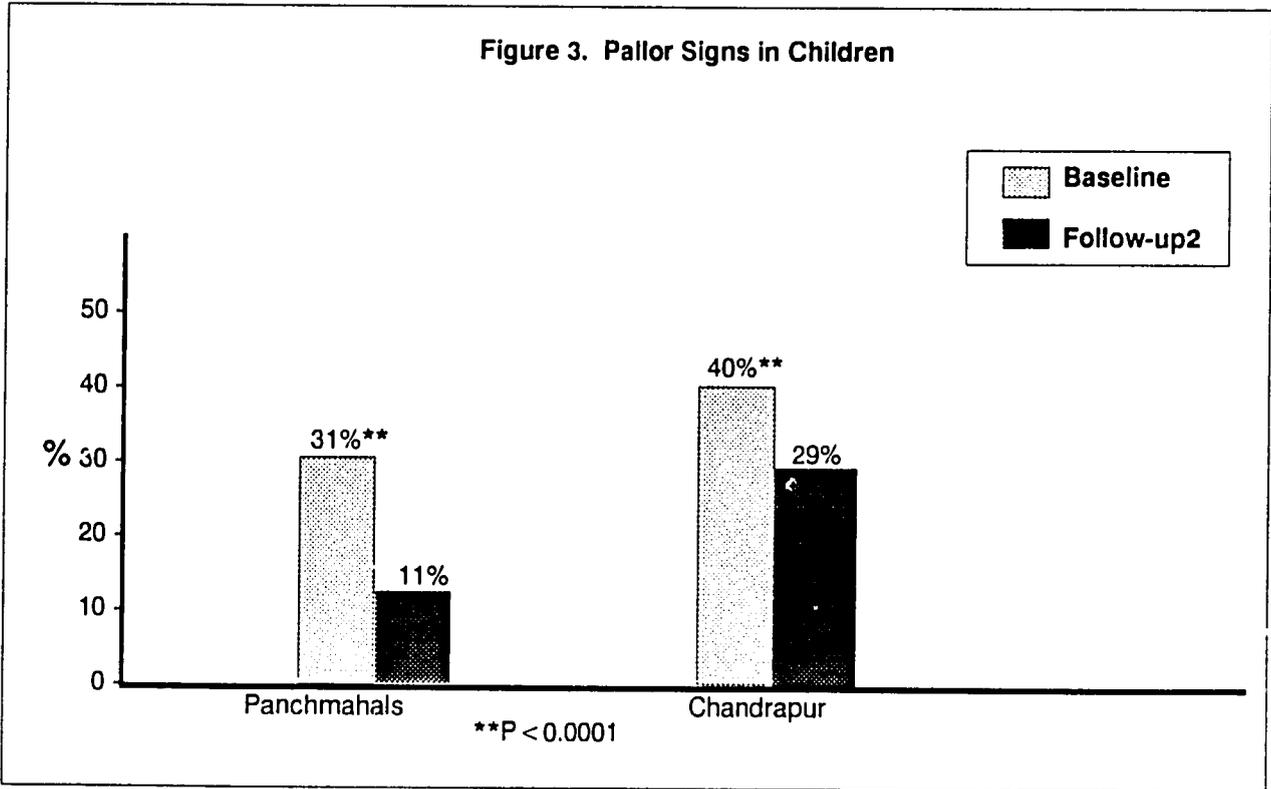
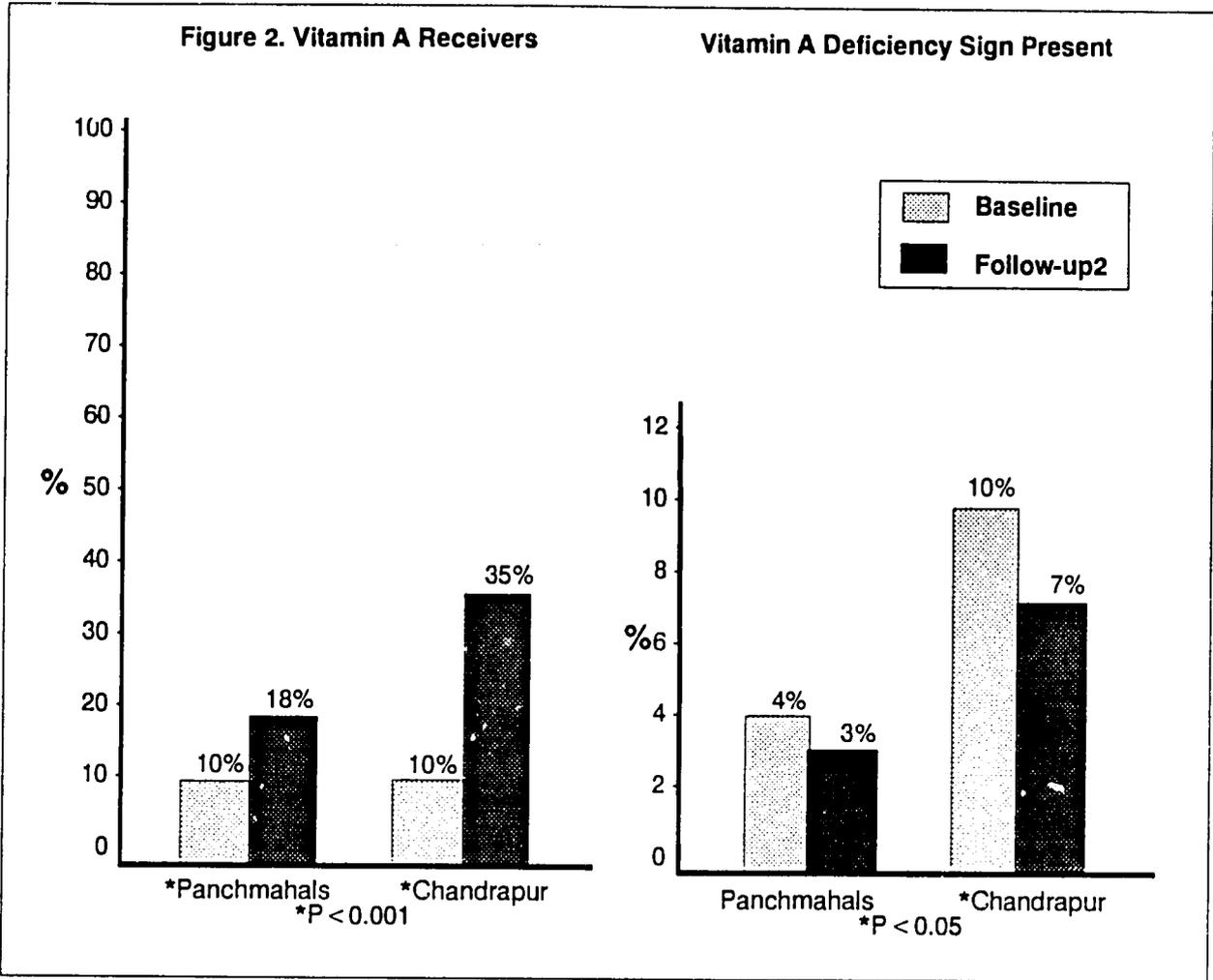
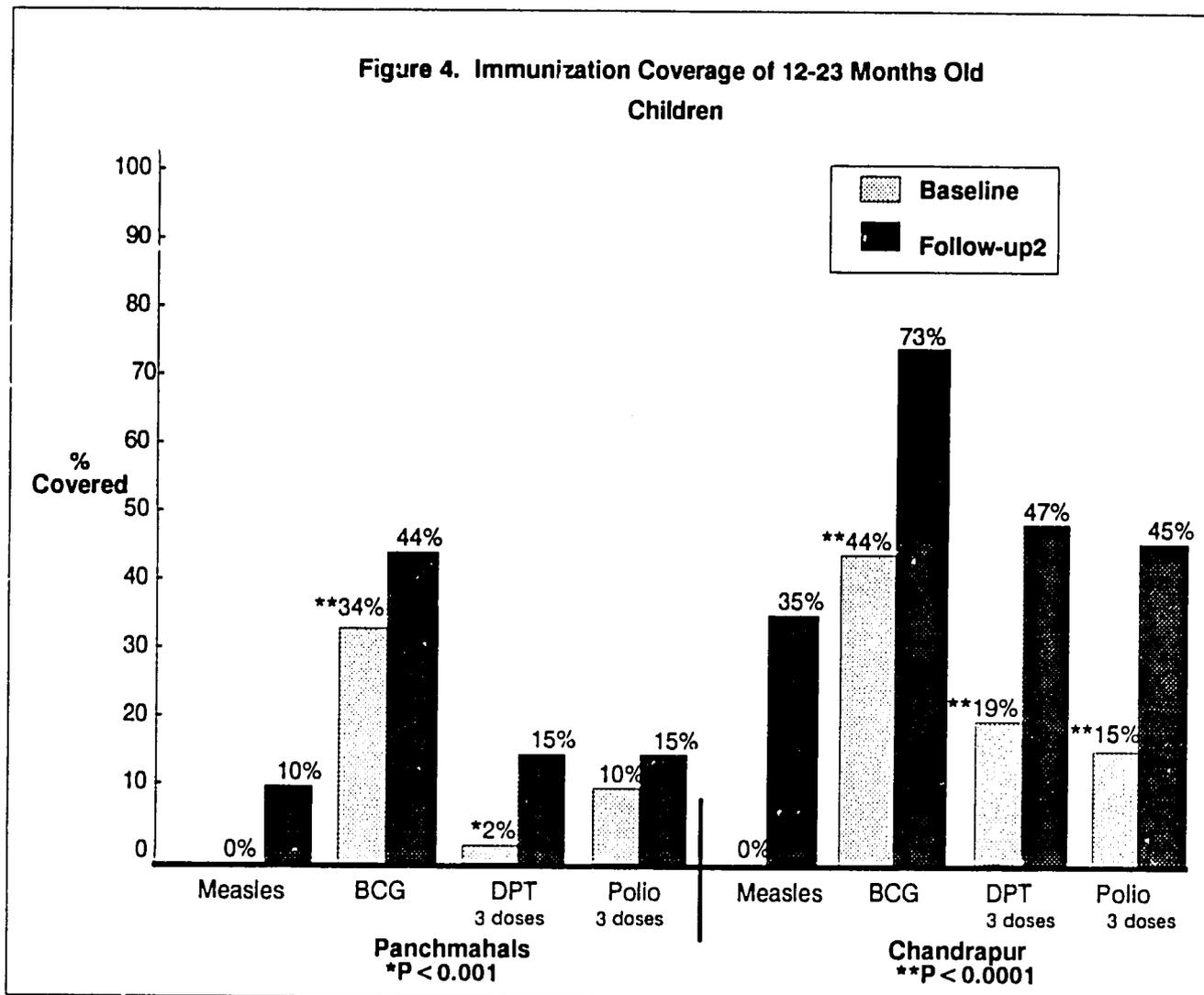


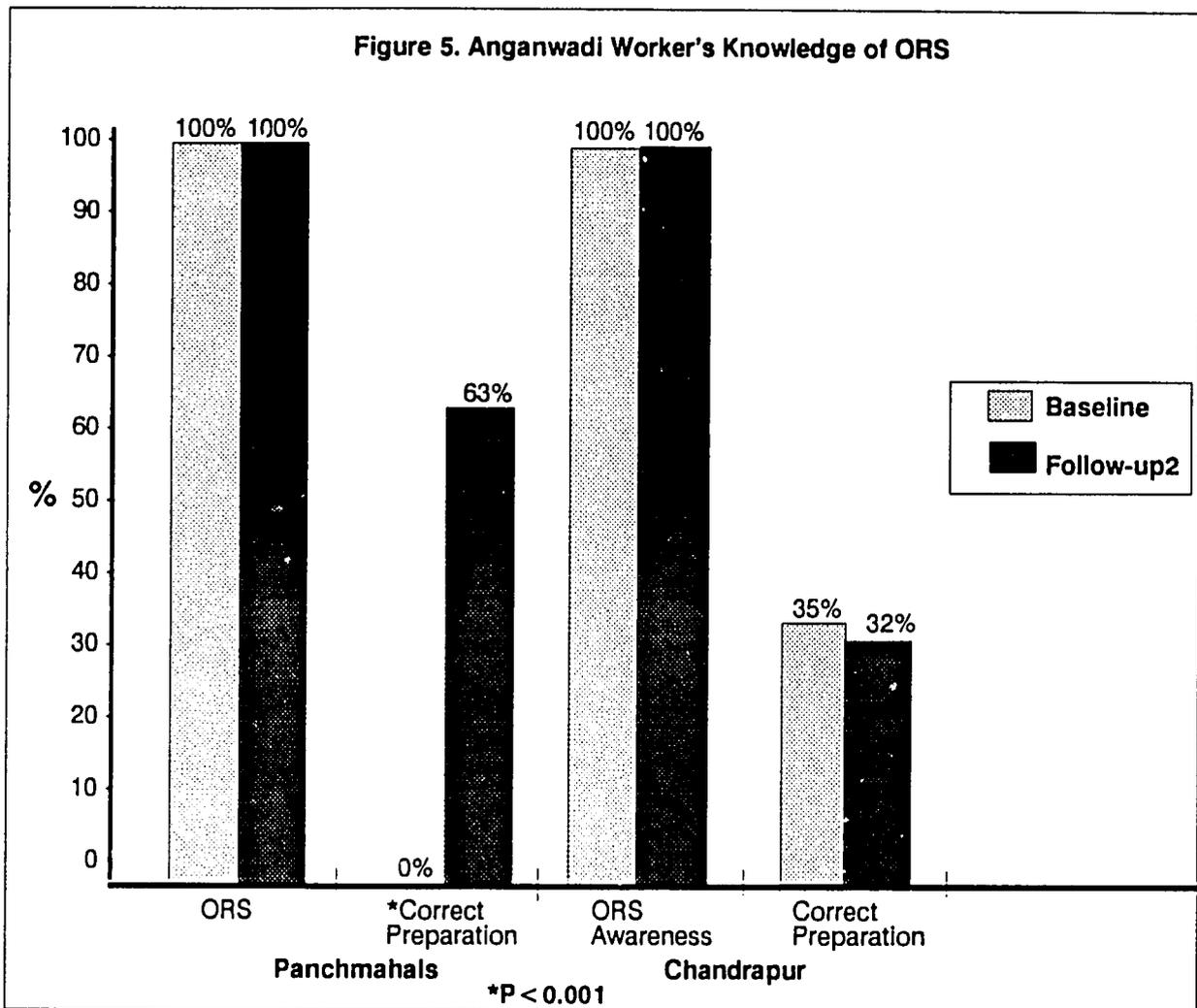
Figure 4. Immunization Coverage of 12-23 Months Old Children



of both pregnant and nursing women and children to iron/folic acid supplements when distributed by the anganwadi worker, instead of the ANM. No data on receipt of iron/folic acid supplements by children were collected. However, there was an increase in the coverage of women with the supplements, which will be discussed later.

Immunization Coverage

The Universal Immunization Programme of the government of India was introduced in Panchmahals district in 1985/86 and in Chandrapur district in 1986/87. This largely explains the substantial improvement in the percentage of fully immunized children (by parent's recall for children 12-23 months of age) between baseline and follow-up in both districts (Figure 4). However, since the majority of children still were not fully immunized at F2, this component needs to be stepped up if the goal of universal immunization coverage is to be attained.

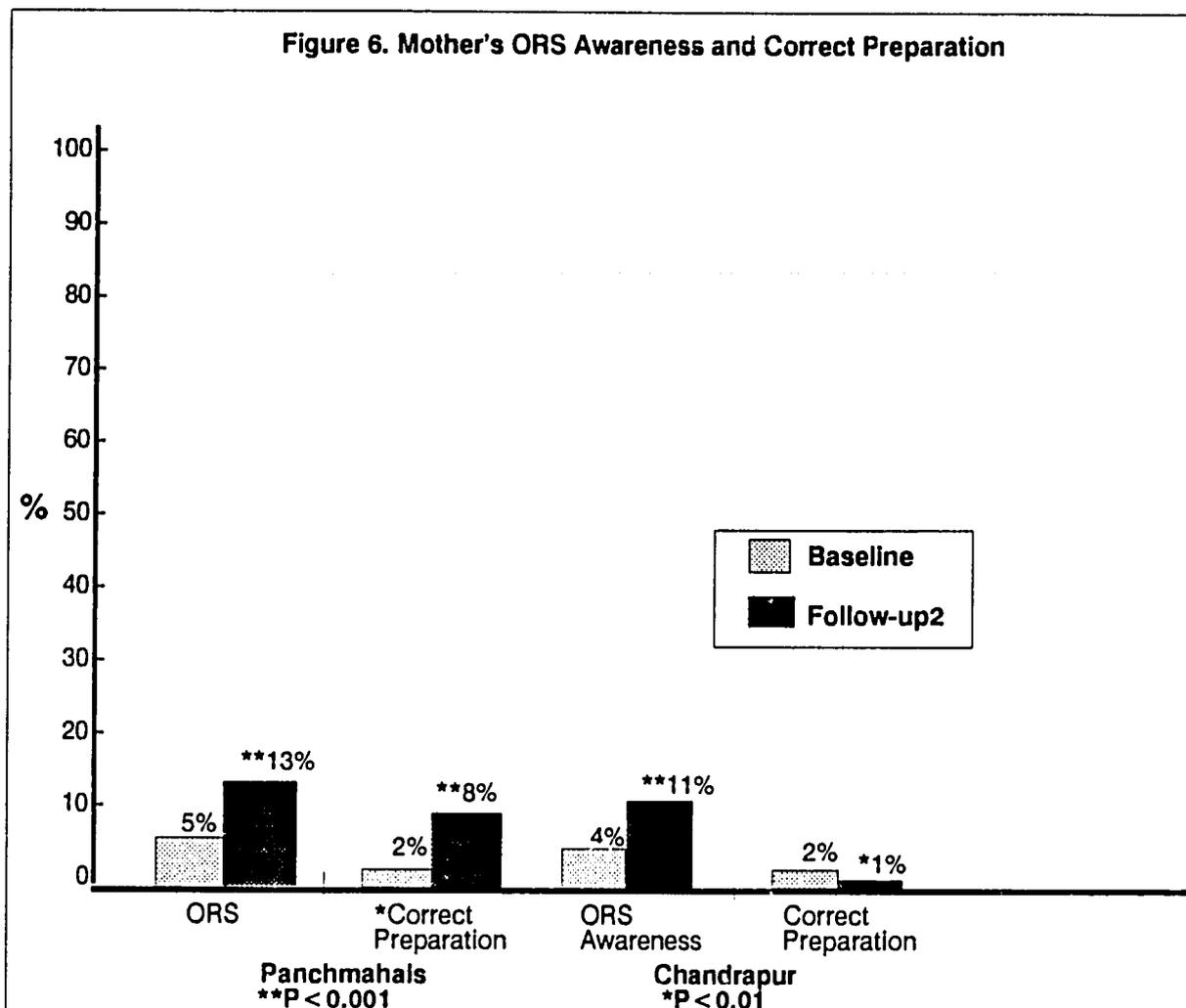


Knowledge of Oral Rehydration Therapy (ORT)

The Ministry of Health and Family Welfare's program for management of diarrheal diseases includes the distribution of oral rehydration salts in packets for severe cases and the promotion of home-made, sugar-salt solution to prevent dehydration. Between B and F2, CARE conducted a special educational campaign under a USAID grant to promote ORT in Panchmahals district but not in Chandrapur. Subsequently, all anganwadi workers nationally received a measuring cup and spoon in their first aid kit for making sugar-salt solution, which was modeled after the one used in the CARE campaign and provided by the Ministry of Human Resource Development. The percent of mothers who had received oral rehydration packets rose sharply from 4% at baseline in both districts to 25% at follow-up in Panchmahals and 16% in Chandrapur.

The positive impact of the CARE campaign can be seen in Figure 5. Although all anganwadi workers in both districts were aware of ORT at baseline, the proportion who could correctly make sugar-salt solution rose from none at baseline to 63% in Panchmahals, whereas there was no improvement in Chandrapur. However, Figure 6 shows that despite the anganwadi

Figure 6. Mother's ORS Awareness and Correct Preparation



worker's awareness of ORT, only a few mothers at F2 spontaneously mentioned sugar-salt solution as something they would use if their child had diarrhea (13% in Panchmahals and 11% in Chandrapur) and even fewer mothers could make the solution correctly. Probably due to the CARE campaign, eight times more mothers in Panchmahals than in Chandrapur could make sugar-salt solution correctly, but the percentages remained very low even in Panchmahals. One campaign is obviously not sufficient to achieve the behavioral changes necessary to get mothers to use ORT and make the solution correctly. Repeated training and reinforcement are required. Provision of the same measuring cup and spoon to the mothers which the anganwadi worker possesses would probably greatly facilitate correct preparation.

Nutrition and Health Education

While nutrition and health education (NHED) for mothers is part of the ICDS package of services, it is one of the weaker components. For this reason the USAID assisted ICDS project includes enhanced nutrition and health education, based on a social marketing approach. However, the improved NHED component had not been introduced at the time of the follow-up

survey. Therefore there was no significant change in mothers' attendance at nutrition and health education classes or mothers' knowledge, attitudes and practices over baseline.

Home Visits and Health Check-ups for Malnourished Children under Three Years

Figure 7 illustrates the very encouraging rise in the percent of malnourished children under three years of age who had received a home visit by the anganwadi worker in the past three months at F2 in both districts. Such visits are essential to assure the attendance of this priority group at the anganwadi and to monitor weight gain during recuperation from malnutrition.

Figure 8 shows that there was also a doubling of the percentage of malnourished under threes who had received a health check-up by the ANM or other health staff at F2 versus B. Health check-ups are critical since malnourished children often have other underlying medical problems which need treatment.

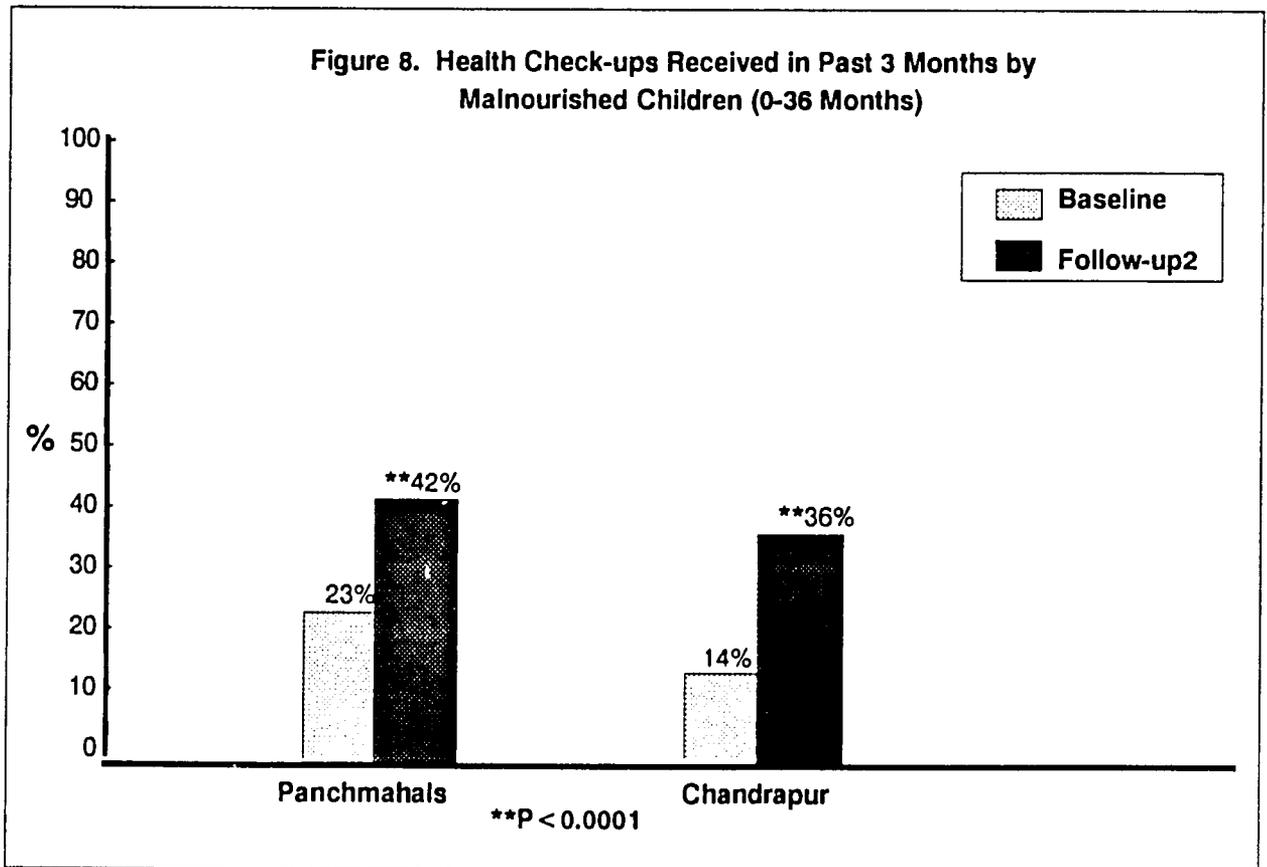
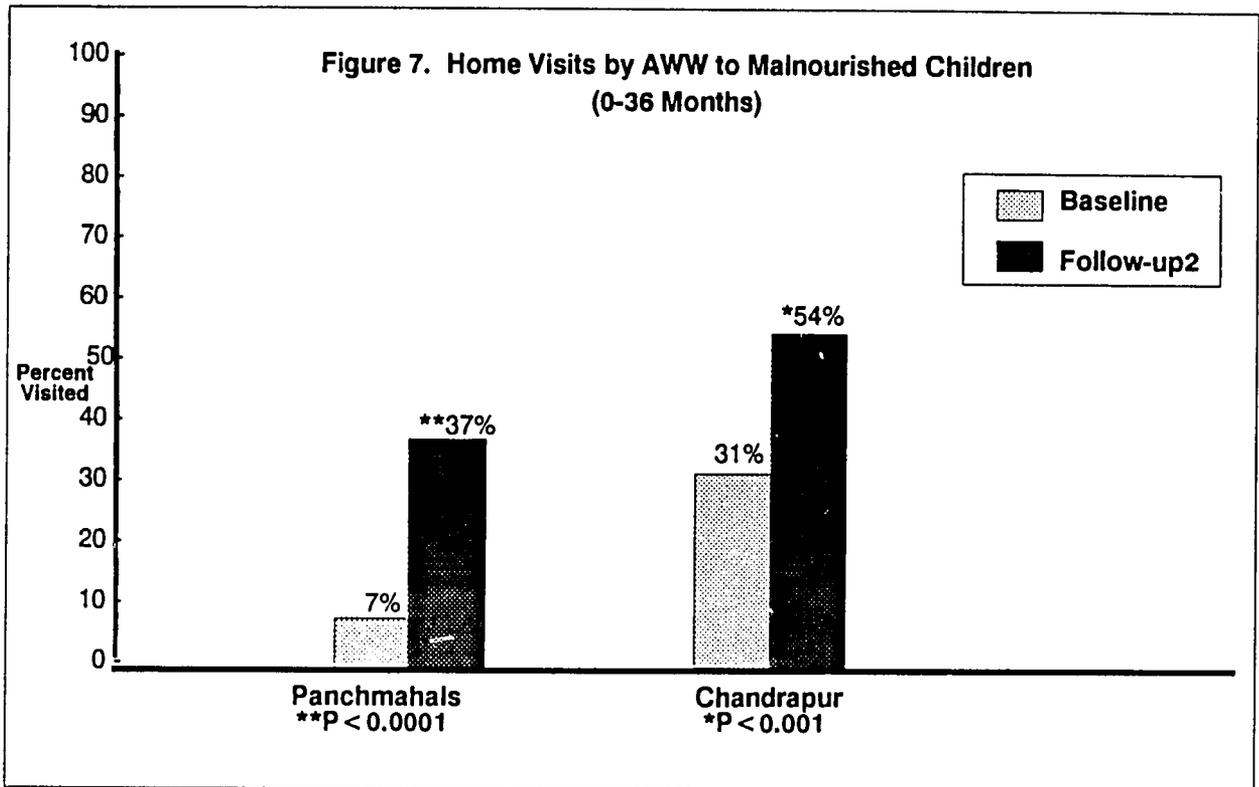
Improvement in Health and Nutrition Services for Pregnant and Nursing Women

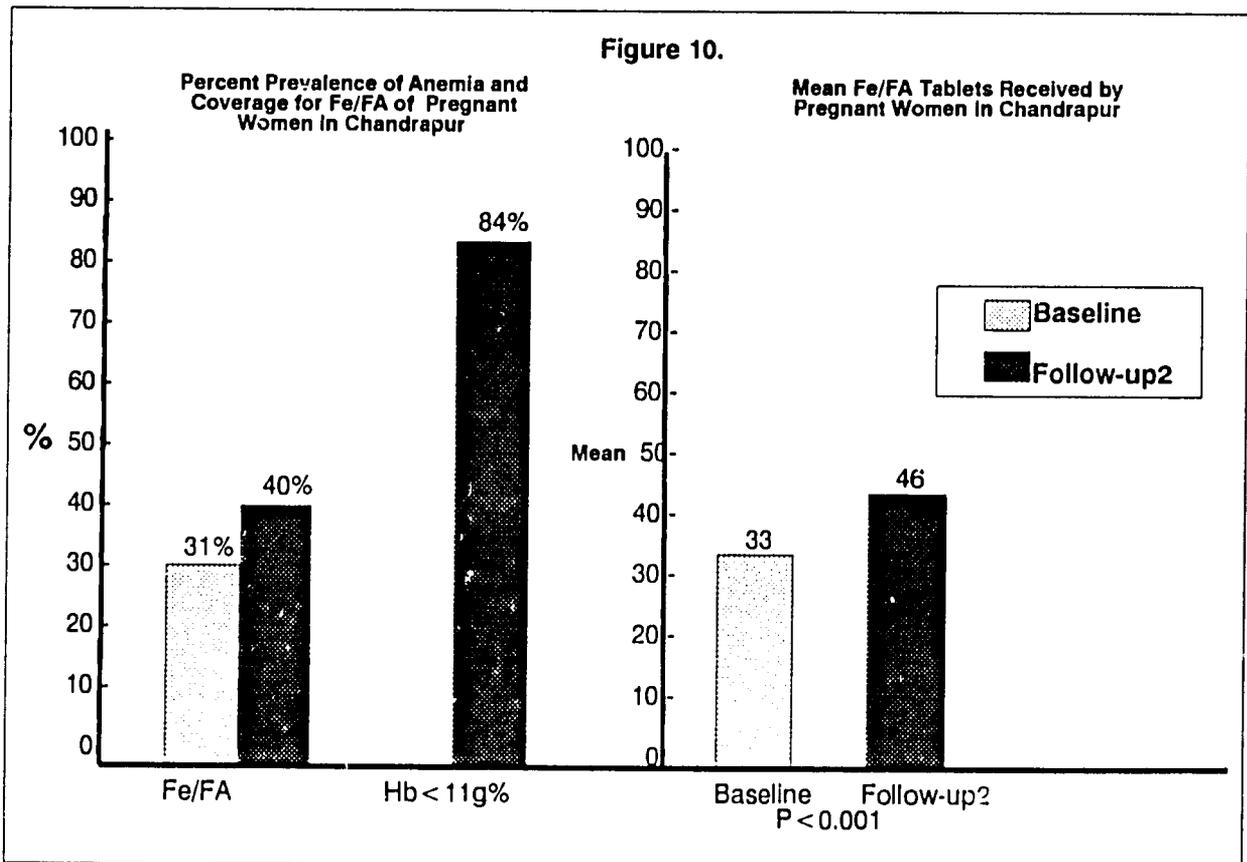
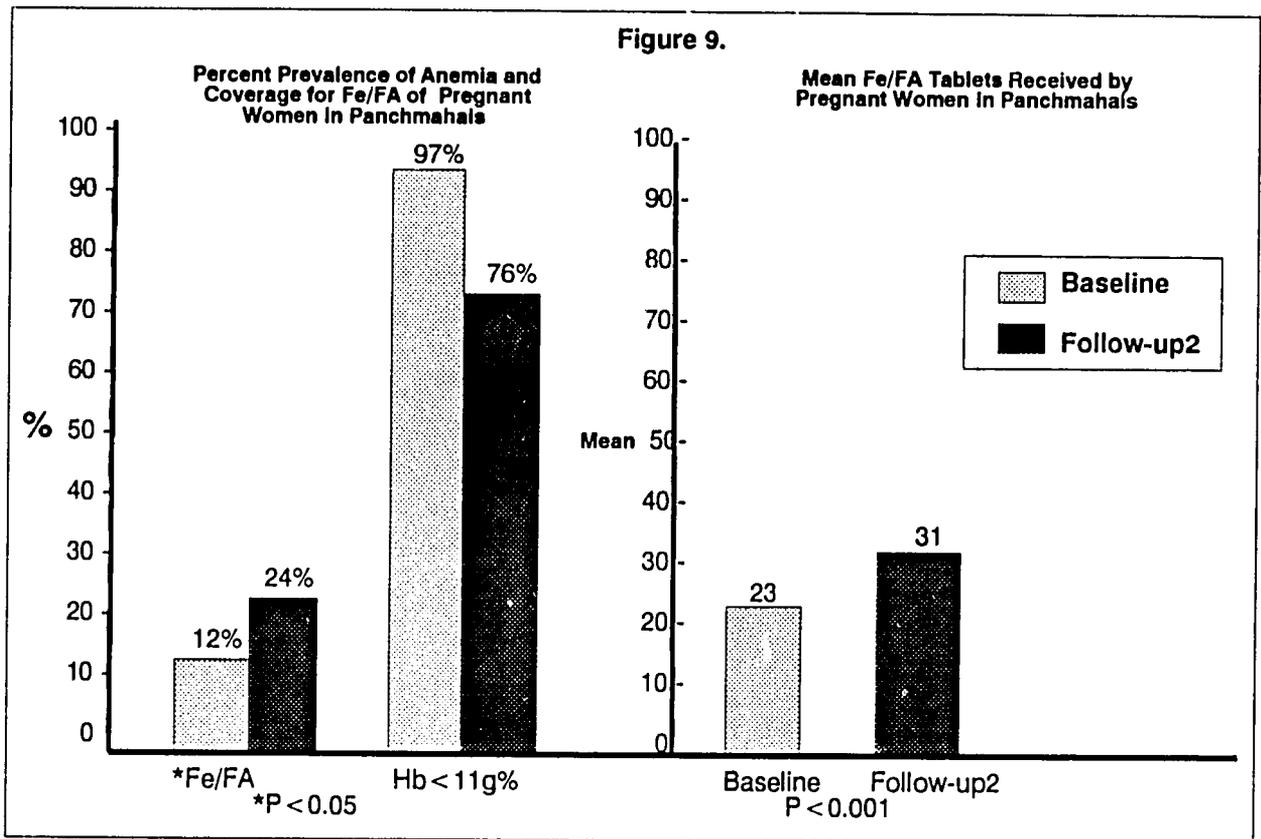
Anemia Prophylaxis

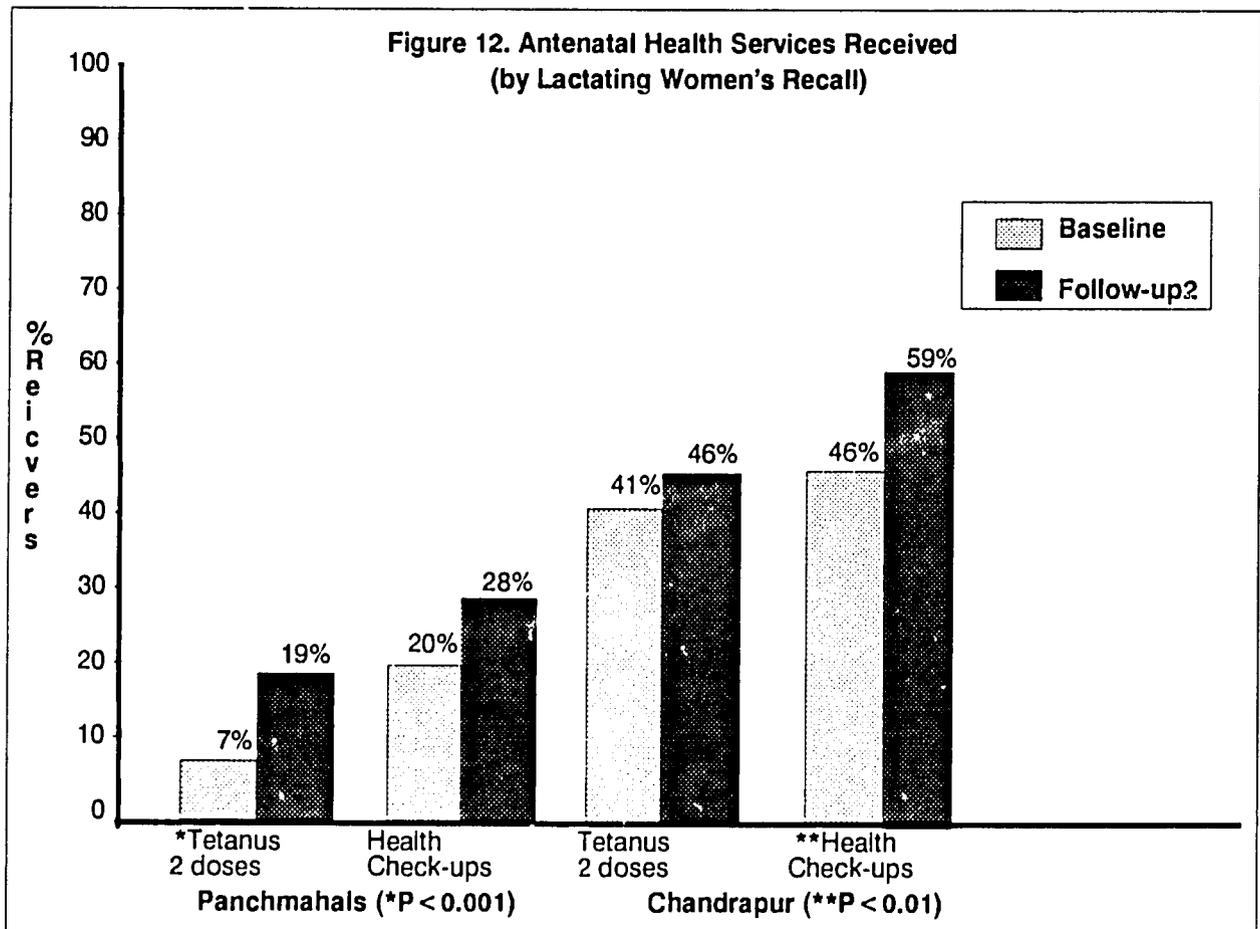
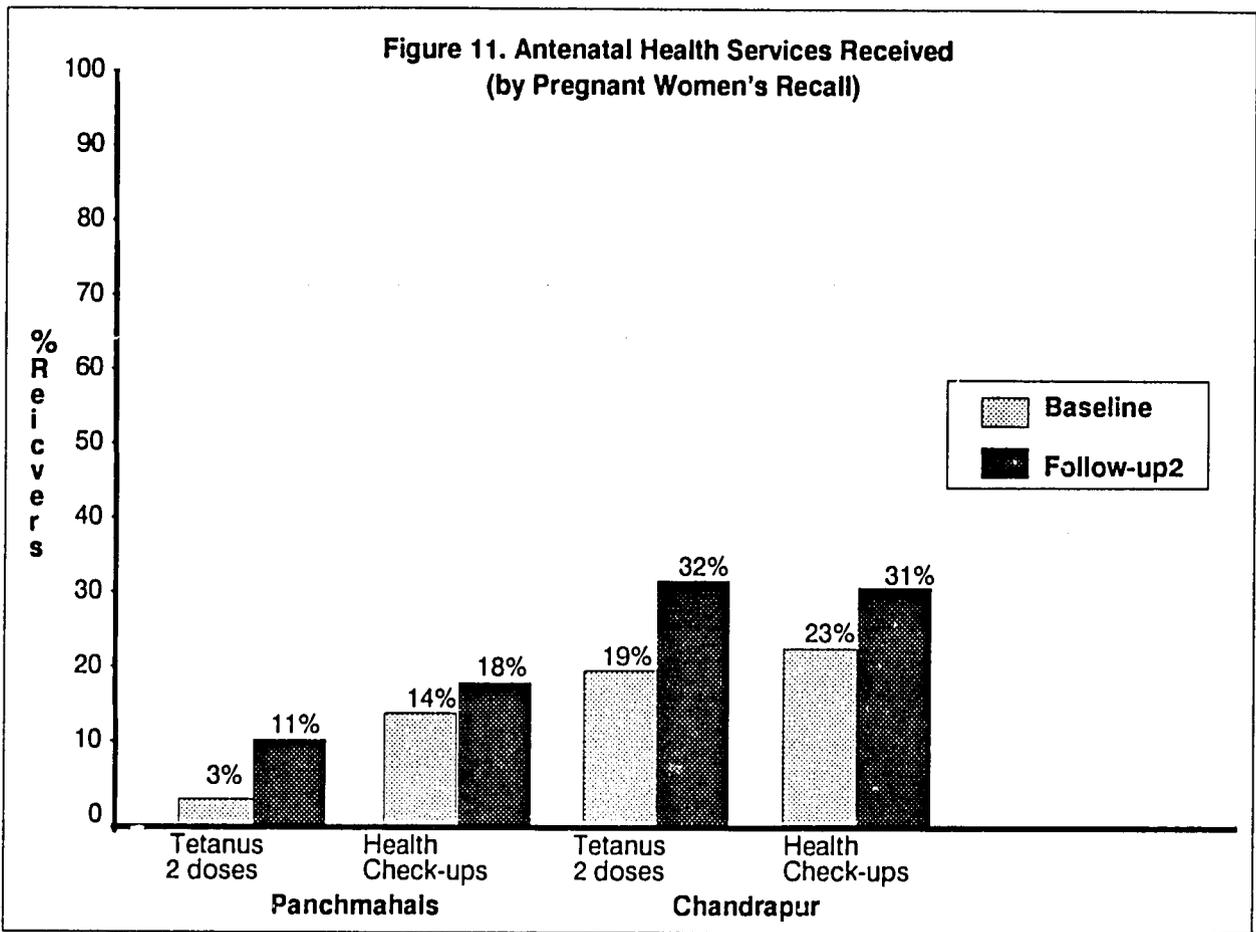
As mentioned earlier, there was a substantial increase in the percentage of pregnant women who received iron/folic acid supplements between B and F2 (Figures 9 and 10). The improved coverage was reflected both in the greater number of women who received tablets and in the increased average number of tablets received by each woman. As a result of the improved distribution of iron/folic acid supplements at F2, there were fewer pregnant women with anemia as measured by hemoglobin less than 11 g/dl. For nursing women, as well, the percentage who received iron/folic acid supplements nearly doubled between B and F2 from 22% to 37% in Panchmahals, and from 41% to 72% in Chandrapur, with a corresponding increase in the average number of tablets received. Though the progress in the anemia prophylaxis component of ICDS is commendable, still most pregnant women were not receiving iron/folic acid tablets and more than three-fourths of them remained anemic. Given the risks which anemia poses for mother and infant, iron/folic acid supplementation needs more emphasis so that supply and distribution problems can be overcome and all pregnant and nursing women protected.

Antenatal Health Services and Tetanus Immunization

There were improvements in the provision of tetanus toxoid immunization and antenatal health check-ups to pregnant women as seen in Figure 11 by pregnant women's recall and in Figure 12 by lactating women's recall. Nevertheless most women still were not receiving these essential prenatal health services.

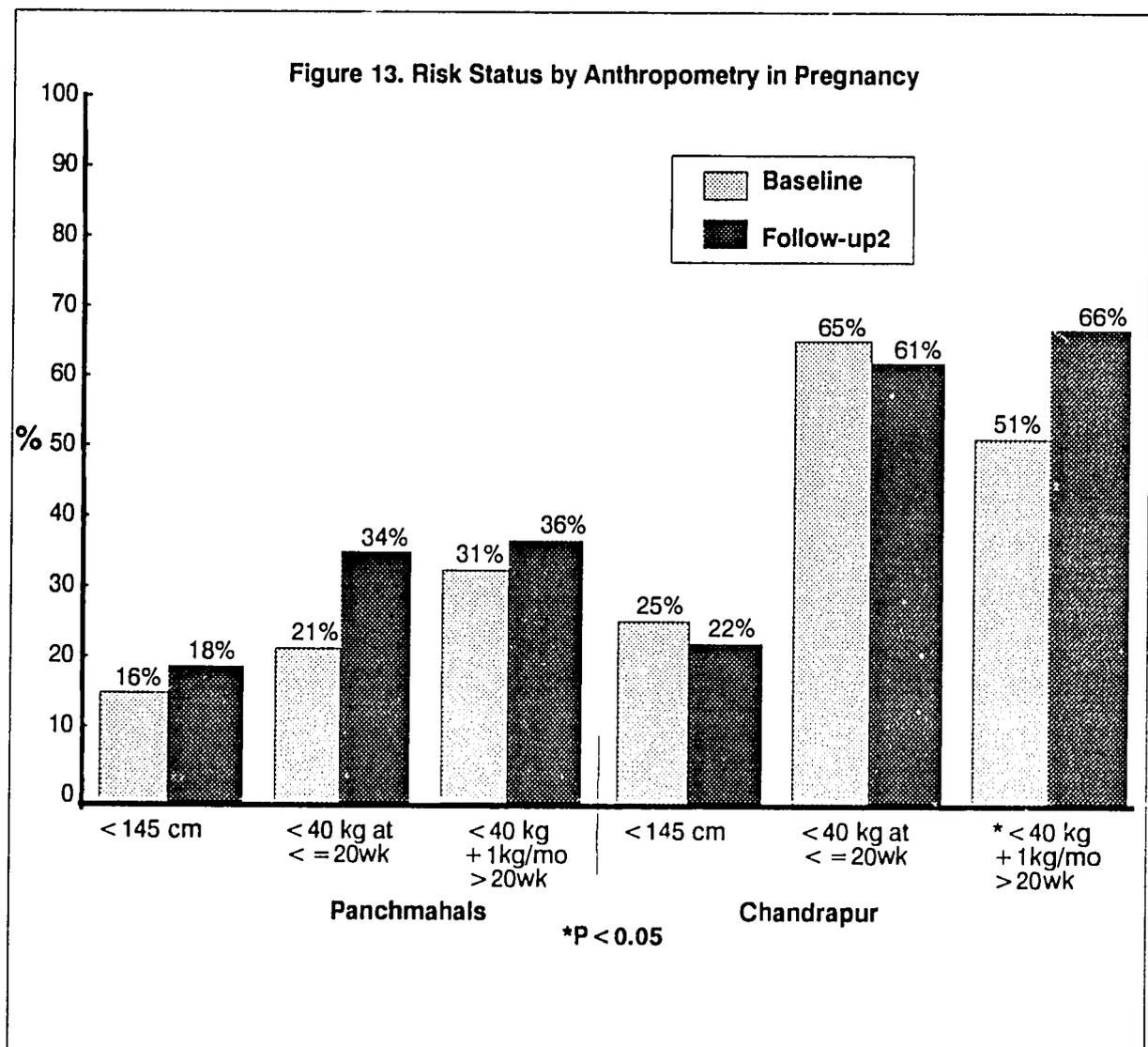






Risk Status of Pregnant Women by Weight and Height

The ICDS program uses well established risk factors to identify women who are more likely to deliver low birth weight babies, and attempts to enroll as many of these high risk women as possible for antenatal services. There was little change in the proportion of pregnant women at-risk between B and F2. Nearly all pregnant women had one or more of the risk factors (79% in Panchmahals and 84% in Chandrapur at F2). Three of the risk factors pertain to maternal weight and height; the prevalence of women affected by these is shown in Figure 13. In Chandrapur, there was a significant increase at F2 in the percentage of women with inadequate weight gain after 20 weeks of pregnancy, which is disturbing. In general, more women were underweight in Chandrapur than in Panchmahals. However, when all nutrition risk factors are considered, there is an acute need for prenatal maternal dietary supplementation in both districts in order to prevent low birth weight.



Visits to Anganwadi by the Mukhya Sevika (Supervisor) and Auxiliary Nurse Midwife (ANM)

Essential support services to the village based anganwadi worker include regular visits by her supervisor--the Mukhya Sevika (MS). Supervisors are expected to visit each anganwadi in their circle once a month. However, this is difficult and seldom achieved given the fact that each MS is normally responsible for 17 anganwadis in tribal areas, and the distances to be covered by her on foot or by bus are very long. As a possible solution to the problem of infrequent supervisory visits, the USAID project has experimented with reducing the supervisor to anganwadi worker ratio to 1:10 in Panchmahals district, but not in Chandrapur. The results of the experiment as seen in Figure 14 are striking. As a consequence of doubling the number of supervisors in Panchmahals at follow-up, 94% of the anganwadis had received 10 or more visits by the Mukhya Sevika in the past year versus only 44% at baseline. While there was also an improvement in Chandrapur between B and F2 from 4% to 36% of the anganwadis receiving 10 or more visits, it lagged far behind Panchmahals, probably due to the inadequate supervisory ratio.

Delivery of health services to ICDS beneficiaries is contingent on regular visits, preferably weekly, by the Auxiliary Nurse Midwife from the sub-health center. Figure 15 shows no significant improvement between B and F2 in the mean number of ANM visits received by anganwadis in Panchmahals, which averaged approximately one visit per month. However, in Chandrapur, there was an eight-fold increase in mean number of ANM visits from 1 to 8 in the past three months. The reasons for the better performance in Chandrapur are not clear, but one factor which may have contributed was the decision by the Chief Executive Officer of Chandrapur district, between B and F2, to make the ANM's and MS' circle one and the same which has greatly facilitated coordination between the ICDS and health workers.

Supplementary Nutrition Coverage of Priority Groups

The provision of PL 480 Title II food supplements through CARE to women and children in ICDS is referred to as supplementary nutrition which is synonymous with supplementary feeding. On the positive side, at follow-up, food was available at the anganwadis for an average of 93% of the feeding days in the past three months in Panchmahals and 96% in Chandrapur. This was a major improvement over the early years of the project when the supply of food to the anganwadis was irregular, particularly in Chandrapur. The USAID Project Paper had set a target of a food Supply Efficiency Ratio of 90% or more, which had been achieved. One problem noted at F2, in Panchmahals only, was that double rations were not being given to severely malnourished children and pregnant and nursing women, as intended.

**Figure 14. MS Visits at Anganwadi in Past One Year
(Percent of anganwadis receiving 10 or more visits)**

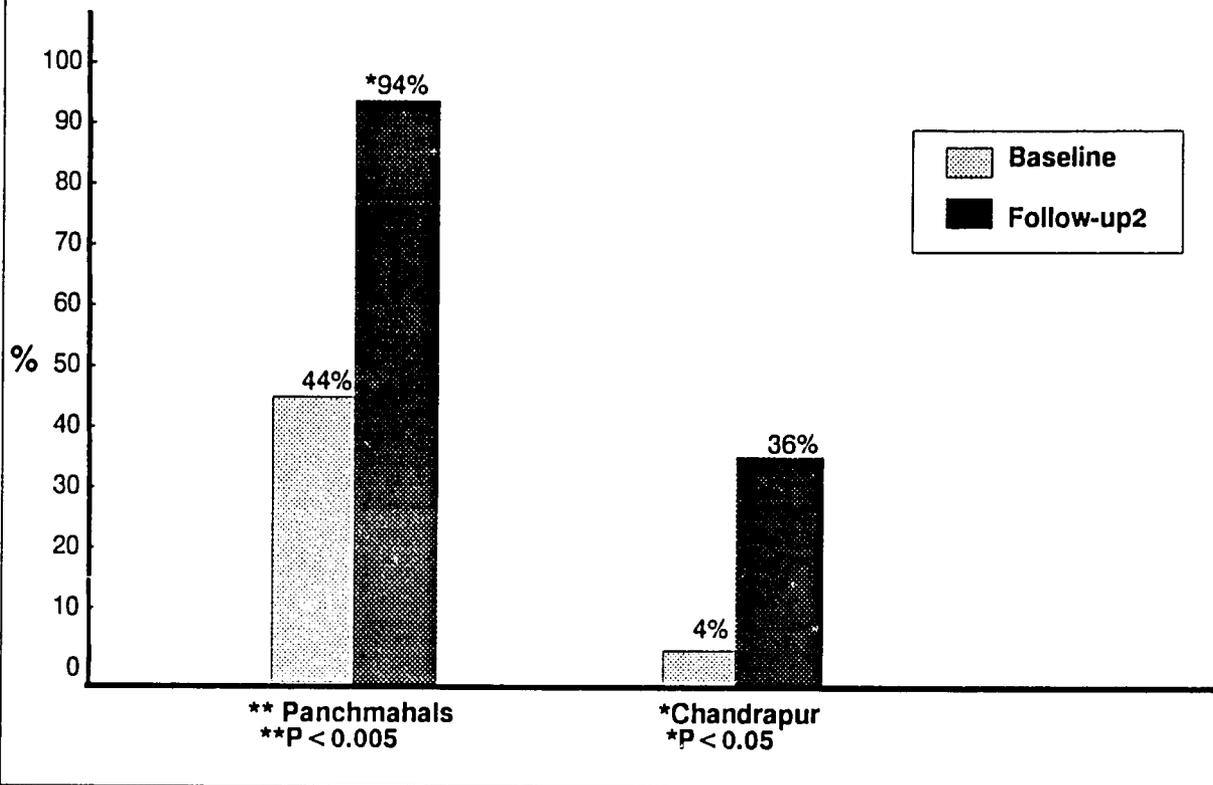
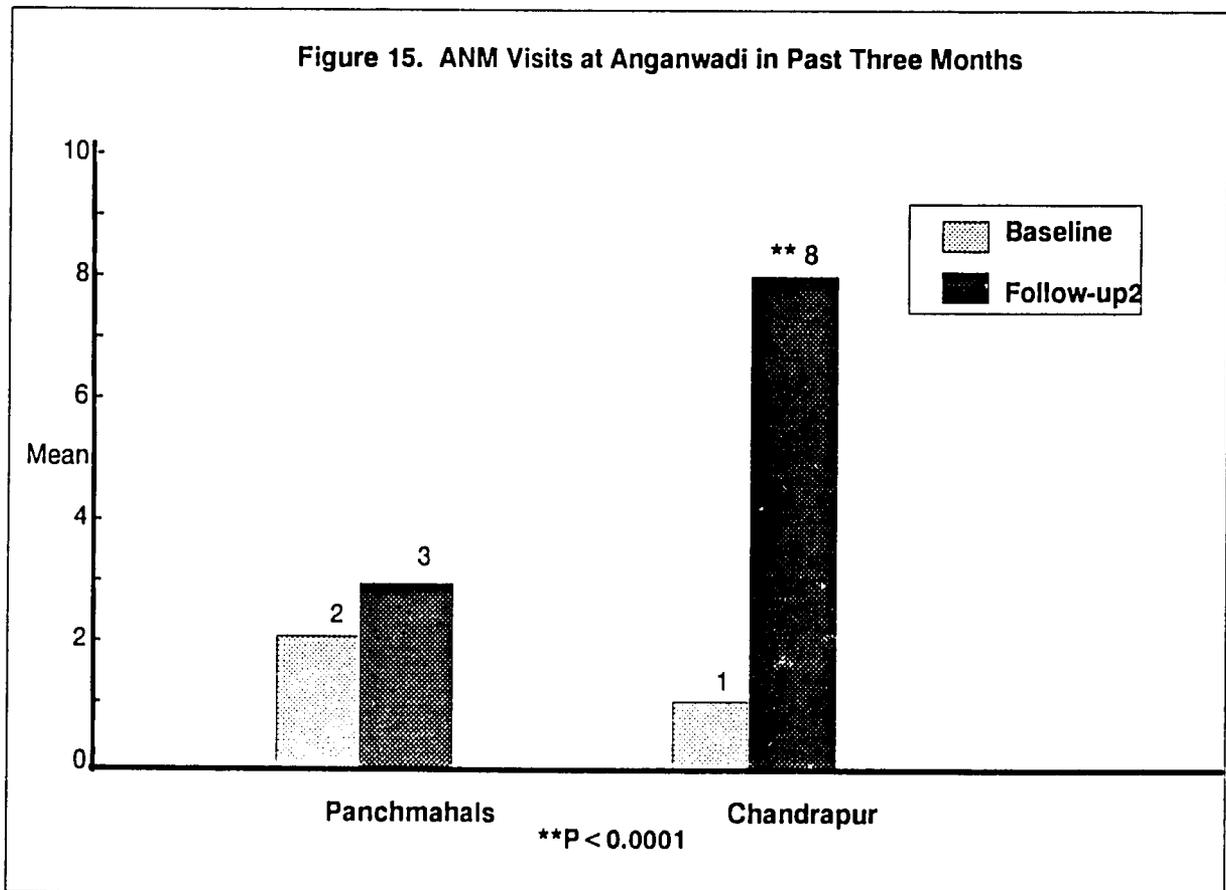
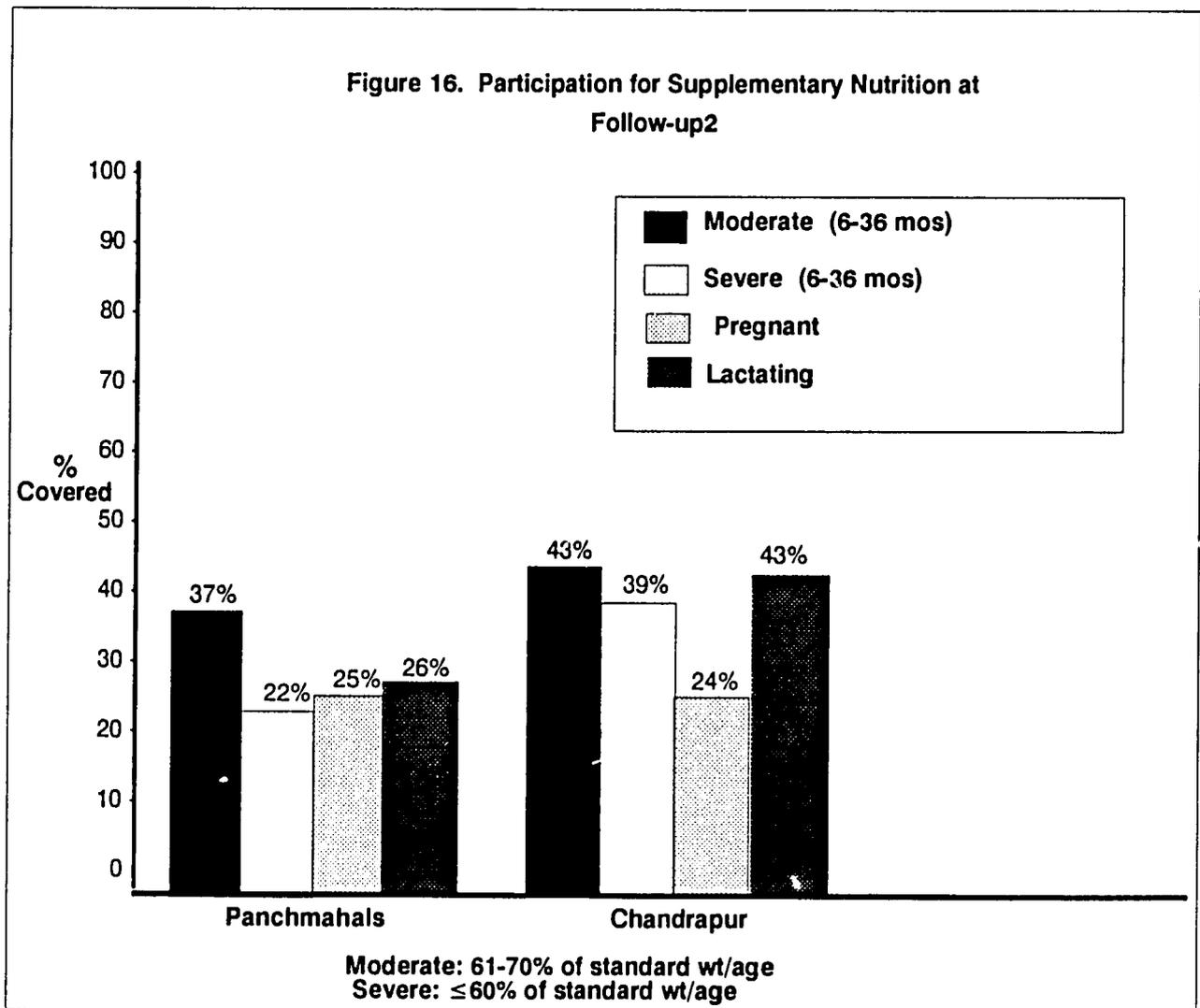


Figure 15. ANM Visits at Anganwadi in Past Three Months



It is evident that if the USAID assisted ICDS Project's sub-goal of reducing malnutrition in children under three years of age is to be met, then near universal supplementary nutrition coverage of moderately and severely malnourished children from 6-36 months of age and pregnant and nursing women (up to 6 months after delivery) will first have to be achieved. With this objective in mind, USAID and the government of India fixed a target of 85% supplementary nutrition coverage of these priority groups to be reached in the USAID assisted ICDS Project.

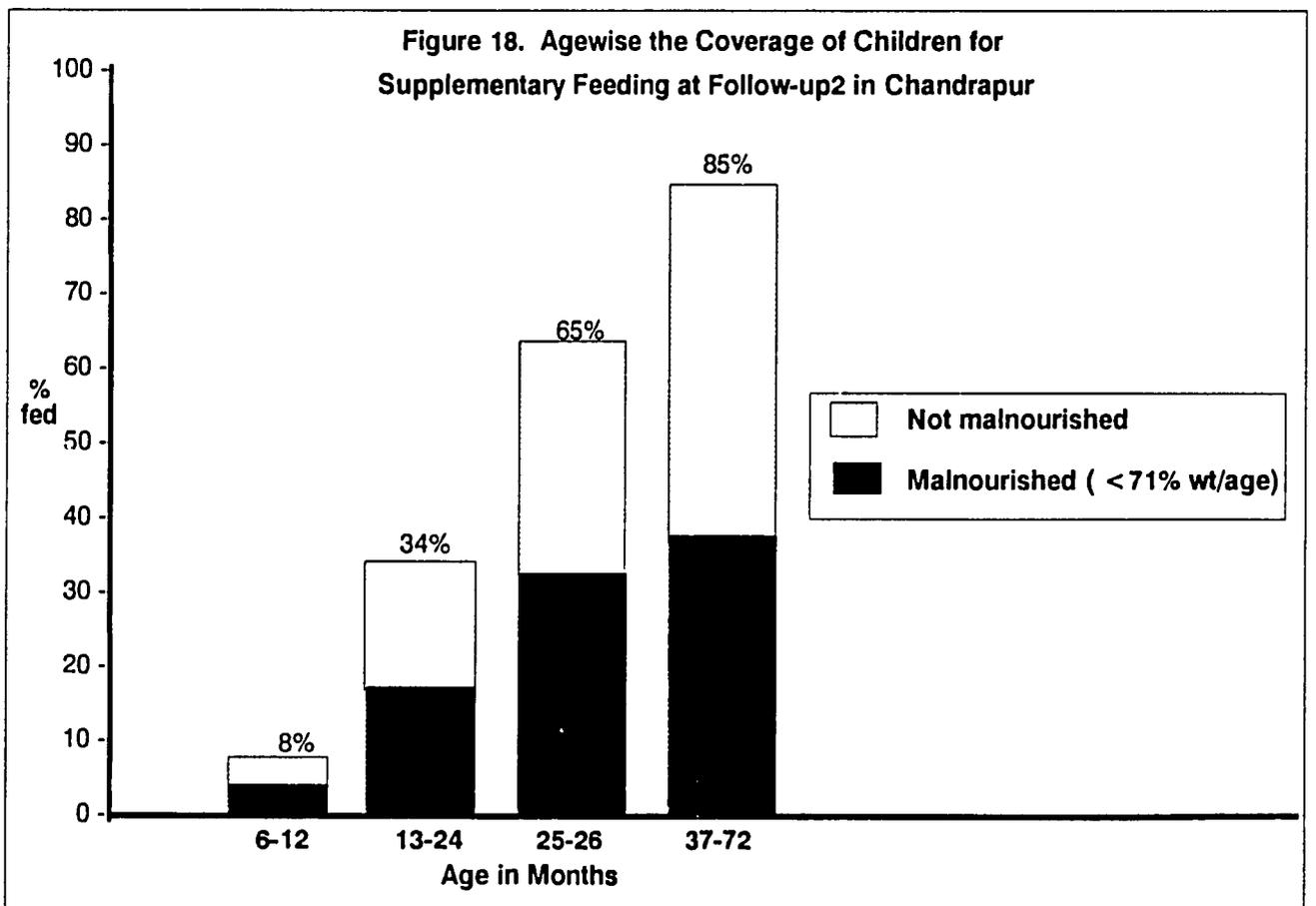
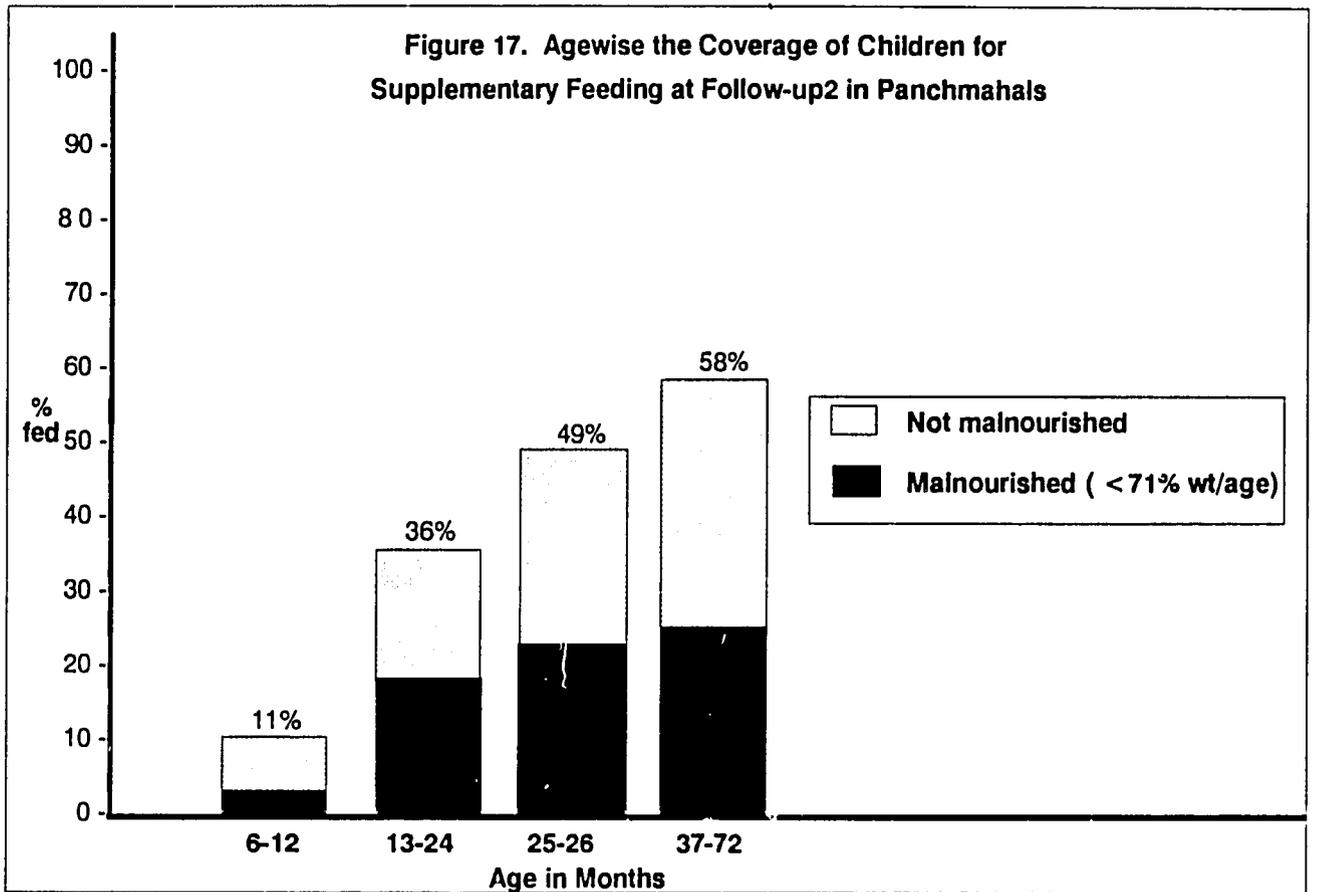
Figure 16 illustrates that the 85% supplementary nutrition coverage target was far from being fulfilled at F2 for either malnourished children under three years or pregnant and lactating women. Baseline data are not presented because there was no supplementary feeding at baseline in Chandrapur. However, in Panchmahals, the percentage of each of the priority groups covered at follow-up was essentially the same as at baseline. Most children who received food at the anganwadi had attended for 15 or more days in the past month, so the problem was more due to lack of enrollment of the right groups than due to irregular attendance once enrolled.



It is well known that these priority groups are the most difficult to reach and that supplementary nutrition coverage in ICDS improves with age of the preschool child, with children from 3 - 6 years of age being the predominant group in attendance. This relationship between age of the child and supplementary nutrition coverage is clearly displayed in Figures 17 and 18. These two figures also show the proportion of the supplementary nutrition beneficiaries in each age group who are moderately or severely malnourished (grades 2, 3 or 4 by weight for age) versus those who are not. It is apparent that there was no priority given in either district to targeting the food resource to malnourished children.

If a decision were made to pursue in earnest the 85% coverage target for malnourished children under three years of age and pregnant and nursing women, it could only be achieved with existing food resources by removing some of the well-nourished children from the program, particularly those over three years who are least nutritionally vulnerable. Table 2 presents the number and percent of children fed per anganwadi at F2 in the various age and nutritional status categories relative to the total number in the village. It can be seen that 45% of all preschool children and pregnant and lactating women were being supplemented in Panchmahals and 60% in Chandrapur at F2.

TABLE 2 SUPPLEMENTARY NUTRITION COVERAGE PER ANGANWADI AT FOLLOW-UP VERSUS TARGET*						
BENEFICIARY CATEGORY	PANCHMAHALS			CHANDRAPUR		
	No. Fed	Percent	Total No.	No. Fed	Percent	Total No.
Malnourished Children**						
Children 0-36 mos.	7	32	22	7	44	16
Children 37-72 mos.	10	53	19	13	76	17
Not Malnourished Children						
Children 0-36 mos.	11	44	25	8	44	18
Children 37-72 mos.	20	65	31	24	92	26
Pregnant Women	2	20	10	1	11	9
Nursing Women	3	30	10	4	44	9
TOTAL	53	45	117	57	60	95
* USAID Project Target = 85% coverage of all malnourished children 6-36 mos. of age, and pregnant or nursing women.						
** Malnourished = Grades 2, 3 or 4 or weight for age < 71% of reference median.						



The highest percent supplementary feeding coverage relative to the total number in that category in the village was for not malnourished children 37-72 months of age, 65% of whom were receiving food in Panchmahals and 92% of whom were receiving food in Chandrapur. The least covered were the priority groups of pregnant women, nursing women and malnourished children under three years, in that order.

Some innovative approaches will be required to overcome the difficulties of reaching very young children and women, most importantly a shift to a more convenient, weekly, take-home distribution for these groups instead of the daily, on-site approach now in place. Serious consideration should be given to the proposal to reduce the preschool component of ICDS to five days per week instead of six and to use the sixth day for delivery of MCH services and take-home food distribution to pregnant and nursing women and mothers of children under three years of age.

Certain socio-economic characteristics were significantly associated with supplementary nutrition participation by children under three years of age. Among participants, there were fewer landless families and more agricultural laborers in both districts. In Panchmahals, participating families tended to have better quality housing, whereas in Chandrapur the reverse was true. In Chandrapur, a greater proportion of mothers of the supplemented children were illiterate and gainfully employed, and fewer of the supplemented children had short birth intervals (24 months). In Panchmahals, there was a higher percentage of scheduled caste and a lower percentage of scheduled tribe children among participants versus non-participants. However, in Chandrapur, there was a lower representation of scheduled caste children in the supplemented group and more tribals and other castes participated. In general, it appears that the supplementary nutrition component was reaching poorer families, since the per capita income of the participants was lower than that of the non-participants in both districts.

There was an obvious convergence between participation of children 6 - 36 months of age in supplementary nutrition and receipt of other ICDS health and nutrition services. Children who received supplementary nutrition were much more likely to receive an integrated package with other beneficial services. Whereas the children left out for supplementary nutrition were neglected for other health and nutrition services as well. This is not surprising since supplemented children, who come to the anganwadi daily to eat, are a captive audience for conveniently delivering other services at the same time. Furthermore, it is probable that the food supplement serves as an attractive incentive to families to participate for other services.

In both districts, a greater proportion of the children who received supplementary nutrition had also received vitamin A supplements, health check-ups, oral rehydration packets and home

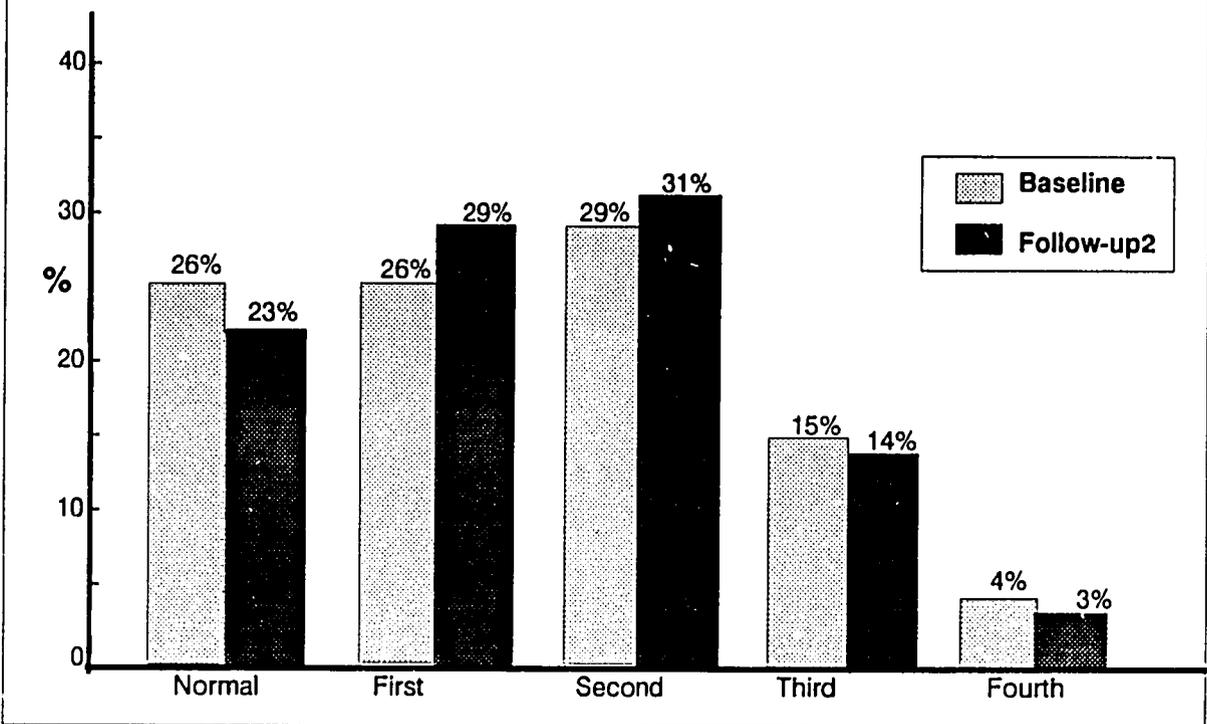
visits by the anganwadi worker. More of the supplemented children also had growth charts which were up to date and accurate, and the number of nutrition and health education classes attended by their mothers was also significantly greater compared to the not supplemented group. The immunization coverage of supplemented children was significantly better in Panchmahals, though in Chandrapur this improved coverage of supplemented children was observed only for BCG. The difference in the relationship between supplementary feeding and immunization in the two districts may be attributable to a conscious decision by district officials in Panchmahals to make the anganwadi the focal point for the Universal Immunization Programme.

Impact of ICDS and Drought on Nutritional Status of Children

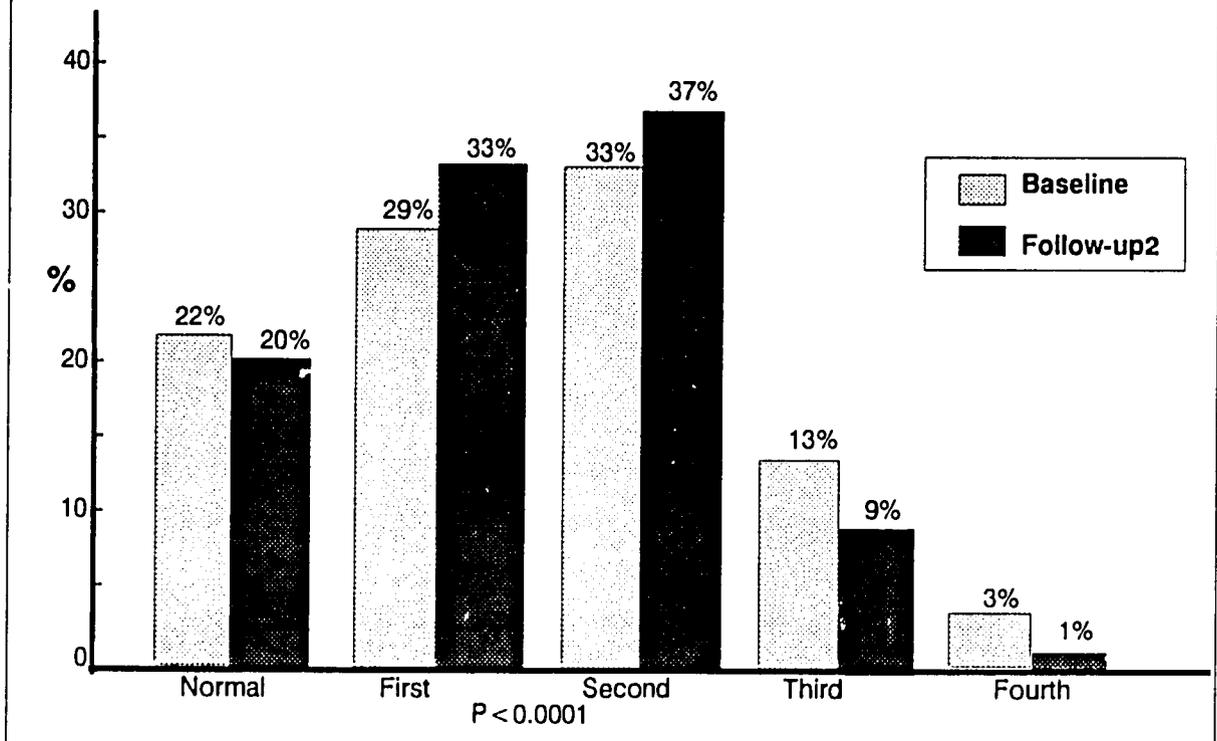
The USAID assisted ICDS Project has as its sub-goal "an average reduction of 50% in the prevalence of severe malnutrition (defined as <61% of reference median weight for age or grades 3 and 4) in children 0-36 months of age, and of 35% in severe plus moderate malnutrition (defined as <71% of reference median weight for age or grades 2, 3 and 4) in communities within four years after an anganwadi is established." The overall goal of the project, or broader objective to which the services are expected to contribute, is a reduction in mortality of infants (<12 months) and children 12-36 months. Although information was collected in the evaluation surveys on parent's recall of deaths of children under three years of age during the past year, the impact of the project on mortality cannot be accurately assessed from these data because: 1) there are many other factors which contribute to child survival beyond the ICDS services and attribution of impact is difficult, 2) an accurate vital events registration system which is essential for recording all births and deaths is non-existent in the project villages, and 3) due to the rareness of infant deaths, a much larger sample than covered by the evaluation surveys is required to reliably assess the statistical significance of changes in rates. Therefore, by design, the primary impact indicator of the USAID assisted ICDS Project is improvement in nutritional status of children which was quoted in the sub-goal above.

Figures 19 and 20 compare the nutritional status by weight for age of children from 0 - 36 months of age between B and F2 according to the Indian Academy of Pediatrics (IAP) classification. Severe malnutrition (third and fourth grades) declined by only 5% in Panchmahals during the three year period. This lower than expected change is probably due to the negative nutritional consequences of the drought, which reduced agricultural income and increased food prices and scarcity during the same time period. It is very likely that due to ICDS there was actually a slight decline in severe malnutrition and not the increase expected after three years of continuous, severe drought. By contrast, in Chandrapur, which was less affected by the drought, severe malnutrition was reduced by 37% over the three year period which statistically was a very

**Figure 19. Nutritional Status of Children (0-36 Months)
in Panchmahals IAP Classification**



**Figure 20. Nutritional Status of Children (0-36 Months)
in Chandrapur IAP Classification**



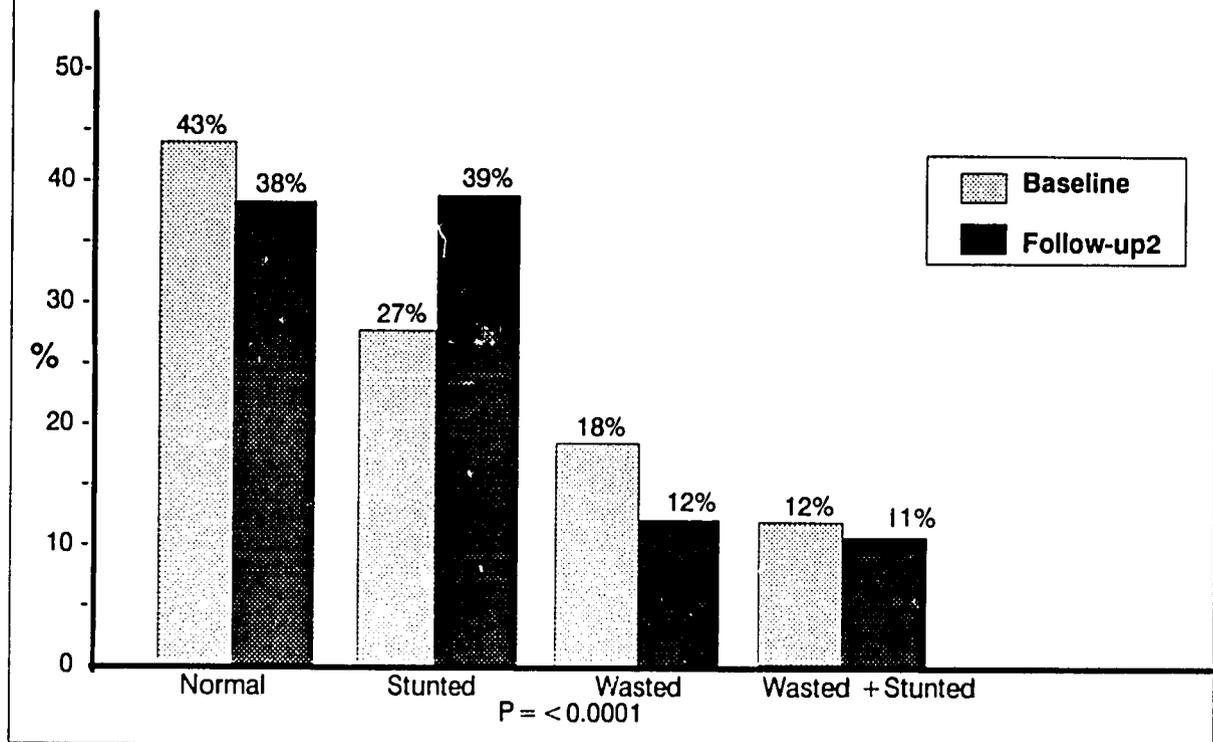
significant improvement. When moderate and severe malnutrition (second, third and fourth grades) are viewed together there was no significant change over the three years in either district. However, there was a disturbing decline in the percent of children in the normal category in both districts which may be attributed to drought.

Since some blocks within Panchmahals were worse affected by drought (i.e. Dahod and Jhalod) than others (i.e. Jambhugoda and Halol), it is useful to review the changes in nutritional status blockwise. When this is done for the hardest hit blocks, it is seen that severe malnutrition actually increased by 16% in Jhalod but declined by 9% in Dahod. In contrast, in the better off blocks, severe malnutrition was reduced by 46% in Jambhugoda and by 36% in Halol, which is likely attributable to the ICDS project. In Chandrapur, severe malnutrition was greatly reduced in all five blocks surveyed with the decline ranging from 31% to 49%, probably because the less severe drought situation was not able to negate the impact of ICDS.

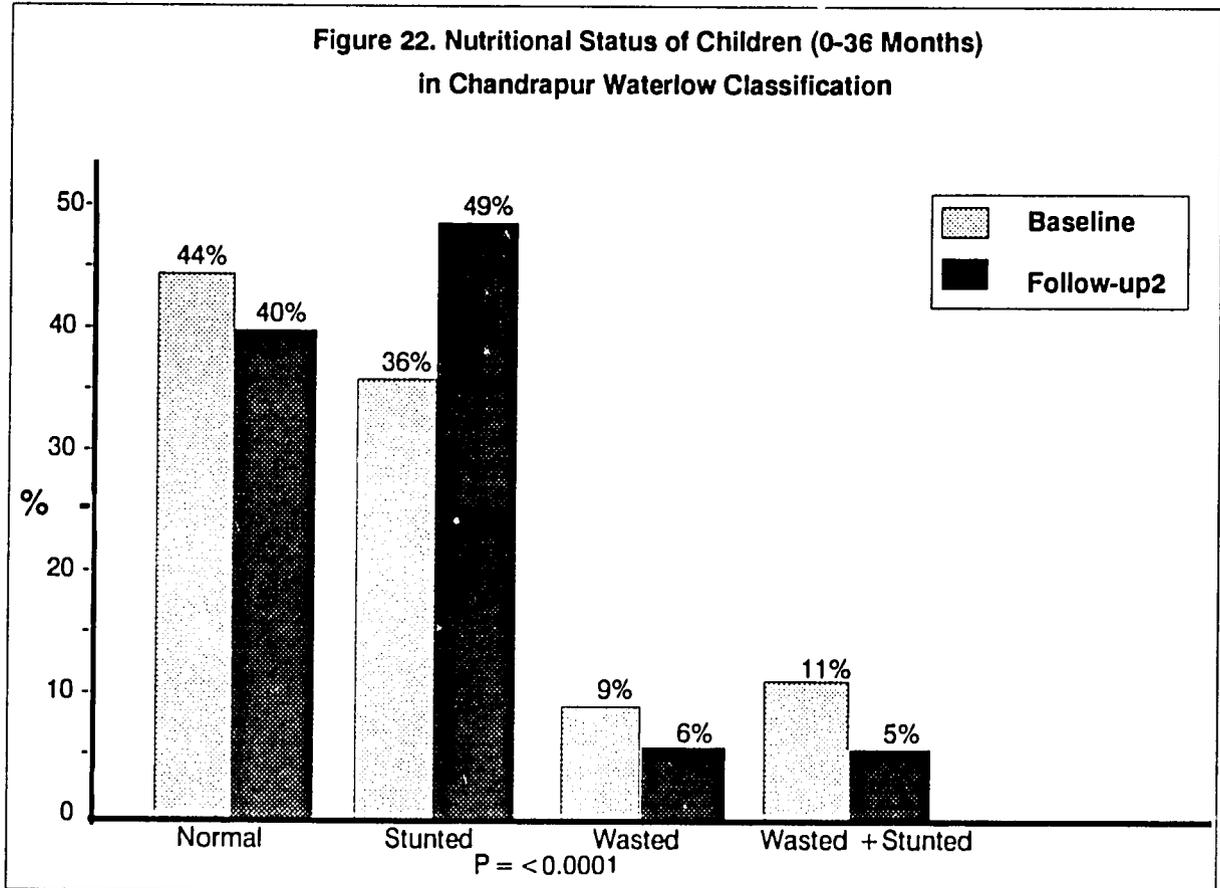
Nutritional status can also be looked at in terms of chronic malnutrition (low height for age or stunting) and current acute malnutrition (low weight for height or wasting) using the Waterlow classification as shown in Figures 21 and 22. The relevant definitions are: 1) normal is weight for height $\geq 80\%$ of reference median and height for age $\geq 90\%$ of reference median, 2) stunted is weight for height $\geq 80\%$ of reference median and height for age $< 90\%$ of reference median, 3) wasted is weight for height $< 80\%$ of reference median and height for age $\geq 90\%$ of reference median, and 4) wasted and stunted is weight for height $< 80\%$ of reference median and height for age $< 90\%$ of reference median.

The drought seems to have taken the biggest toll on children's height, with the rates of stunting having increased significantly in every block in both districts during the three year period. As depicted in Figures 21 and 22 there was an overall 44% increase in children in the stunted category in Panchmahals and a 36% increase in Chandrapur. This negative impact on linear growth is most likely the result of a decline in the quantity and quality of protein rich foods consumed during the drought, such as milk and pulses, which the ICDS supplementary nutrition component could not combat. Milk became scarce because of lack of fodder and water for dairy cattle, and the price of pulses, which are expensive relative to cereals even in normal times, soared. Food relief provided by the government was primarily cereals. The shift toward greater consumption of cereals and millets and reduced intake of milk and pulses during the drought has been documented by the National Institute of Nutrition in a 1987 study in five states including Gujarat. As seen in Figures 21 and 22, there was a decline in wasting or current acute malnutrition in both districts between B and F2, but since the achievement of proportional weight for height in the children was a corollary to the concurrent shortening of stature, it should not necessarily be seen as a favorable outcome.

**Figure 21. Nutritional Status of Children (0-36 Months)
in Panchmahals Waterlow Classification**



**Figure 22. Nutritional Status of Children (0-36 Months)
in Chandrapur Waterlow Classification**



Conclusions and Recommendations

- 1. The impact of services must be viewed against the backdrop of severe and continuous drought during the three years between B and F2 in Panchmahals, and less severe drought in 1987 in Chandrapur.
- 2. There were very impressive improvements in delivery of essential health and nutrition services, such as immunization, health check-ups, vitamin A and iron/folic acid supplementation and growth monitoring between B and F2. However, receipt of these services is still far from universal and more effort should be invested to solve any remaining obstacles in order to increase coverage.
- 3. Despite some improvement between B and F2, the coverage for all the antenatal services including maternal dietary supplementation, provision of iron/folic acid tablets, tetanus toxoid immunization and health check-ups remained very low. Nearly all women were found to be at high risk of delivering low birth weight babies. This component needs much more attention in order to improve maternal nutritional status and to prevent low birth weight with its sequelae of high mortality and lasting growth retardation.
- 4. Mothers and anganwadi workers need more training in the correct preparation of oral rehydration solution.
- 5. There was no increase between B and F2 in the supplementary nutrition coverage of malnourished children 6-36 months of age and pregnant and nursing women. The USAID project's explicit target of 85% coverage of these priority groups was far from being achieved. Therefore, it is doubtful that the project's sub-goal of reducing malnutrition can be met unless an all out effort is made to increase participation of these priority groups. This will require a change of the food delivery system to a more convenient, take-home approach plus other innovative strategies.
- 6. The enhanced nutrition and health education component must get started in the anganwadis immediately, if any positive change in mothers' nutrition knowledge, attitudes and practices is to be measurable by the end of the USAID assistance.
- 7. All services, not subject to the negative consequences of the drought, showed a major increase in coverage and a positive outcome between B and F2, and severe malnutrition was reduced substantially despite the drought. Therefore, assuming two years of post-drought recovery, it is probable that a greater improvement in nutritional status,

including a reduction in moderate malnutrition in addition to severe, will be observed in the final evaluation.

- 8. The positive impact of project components introduced after F2, such as mobile in-service training of the workers and enhanced NHED, plus any additional increases in coverage of key services, should also be reflected in greater nutritional status impact by the end of the USAID assistance.
- 9. The USAID assisted ICDS Project serves as a model of an effective, integrated approach to delivering all of the essential child survival interventions, and should be expanded.