CHAPTER IV

ANALYSIS OF THE DATA AND FINDINGS

The detailed descriptions of the sample and findings from the analysis of the data collected using (1) interview (2) observation and (3) simulation (laboratory method) tools are presented in this chapter. The descriptive data presentation is followed by a comparison of the merits and demerits of each of the techniques used in establishing time norms of household work. Based on the data, a desirable technique for establishing time norms of household work is suggested.

Technique I : Interview

Description of the Sample

The total sample consisted of 120 rural families. To get a clear picture of the chosen group, their similarities and differences in the socio-economic and situational characteristics were analysed.

Family Characterstics

Religion and Caste : The households belonged to two religions - Hinduism and Christinanity (Table 2). Hindus constituted 86.7 percent of the sample and Christians, the rest 13.3 percent.

TABLE 2

Distribution of the Households by their Caste and Religion

Caste groups	Religion				Total	
	Hindus		Christians			
	No.	percent	No.	percent	No.	percent
A. Dominating Castes						
Thevar/Kallar**	10	9.7	-	-	10	8.3
Vaniyar**	-	-	16	100	16	13.3
Gounder**	21	20.2	-	-	21	17.5
Vellala**	7	6.7	-	-	7	5.8
Konar*	13	12.5	-	-	13	10.8
Naidu/Reddiar*	20	19.2	-	-	20	16.7
B. Service Castes						
Kammalar**	6	5.8	-	-	6	5.0
Barber and dhobi**	7	6.7	-	-	7	5.8
Odar**	2	1.9	-	-	2	1.7
C. Scheduled Castes (Harijans)						
Madari, Pallan, Kuravan	18	17.3	-	-	18	15.0
Total	104	100	16	100	120	99.9

* Forward Caste

**Backward Caste.

Seventy two percent of the households belonged to six different dominating castes (Table 2). They constituted of Thevar/ Kallar caste, Vaniyars, Gounders, Vellalas, Konars and Naidu/Reddiar caste. These caste groups generally possessed wealth and/or position in the respective villages and hence were dominating in the chosen villages. The Christians, retained their ancestral caste identity as 'Vaniyars' and intermingled with the households in the other dominating castes. Because of the close interactions observed between families of each of the dominating castes, they were clubbed into the broad group.

Service Castes comprising artisan castes like Kammalars (Carpenter, Blacksmith and Goldsmith), Dhobi (Vannan or Washermen) and Odar (Mason) constituted one-eighth of the total group.

Scheduled Castes comprised three subgroups- Madari, Pallan and Kuravan. They constituted 15 percent of the total households. Along with the ancestral work of conversion of hides into footwear, playing drums at the funerals of higher caste groups, or guarding grave yard, the men and women in this group also worked as landless labourers. They were treated as untouchables and their residential localities were isolated from the rest of the households in all the eleven villages.

As per the Gazetteer publication of the Government of Tamil Nadu (1978), the Konar, Reddiar and Naidu castes belonged to forward class. All the others in the dominating caste and those in the service caste belonged to backward class.

TABLE 3

Distribution of the Households by Selected Socio-economic Characteristics

Socio-economic Characteristics	Households	
	Number	Percent
Type of Household		
Nuclear	85	70.8
Extended	35	29.2
Size of Household		
Small (2 - 5 members)	83	69.2
Large (6 -10 members)	37	30.8
Family Occupation		
Agriculture (own land cultivation)	42	35.0
Caste-bound work	14	11.7
Daily labour (landless)	37	30.8
Non-farm work.	27	22.5
Annual Family Income		
Less than Rs.2000	15	12.5
Rs.2001 - 5000	52	42.5
Rs.5001 -10000	32	26.7
Rs.10001 or more	21	18.3

Type of households: The families in this sample were mostly of nuclear type. Seven out of every ten households were of this type (Table 3). Extended households were roughly 30 percent.

Size of household: Majority of the households were small in size, having two to five members (Table 3). Such households constituted 69.2 percent of the sample. Nearly one-third of the households were large in size having 6 to 10 members. The average size of a household was 4.9.

Family occupation: Agriculture was found to be the main occupation of the households (Table 3). Thirty five percent of the households were farm families cultivating their own land and 30.8 percent were landless labourers, depending on daily wages from agricultural work. Twenty three percent of the households were engaged in non-farm work - business or industrial labour. The rest, constituting a little more than one-tenth of the households were dependent on caste-bound hereditary occupations.

Family income: The majority of the households were in the income bracket of Rs.2001 - 5000 per annum. One-eighth of the households were in the lowest income bracket of Rs.2000/- or less per annum. Both the groups together comprised 55.8 percent of the sample and were below the 'poverty line' as per Narottam Shah's ratings (1981). A little more than one-fourth of the households were in the income

bracket of Rs.5001 - 10,000 per annum. The households in the annual income range of Rs.10,001 and above were 17.5 percent.

Characteristics of the Main Worker

Main worker here refers to the homemaker - the individual performing the major role in household work management. It has been assigned to the women folk in almost all human societies since men started to practice a 'division of labour' (Hambling and Mathews, 1974). As time norms are to be established for the work of the homemaker, an understanding of her characteristics is felt necessary. Among the many personal variables proved to be influencing time-use on household work, the most commonly reported ones : age, education, occupation and hours of employment were looked into.

Age : About one half of the housewives were young and below 30 years of age (Table 4). Very few homemakers were above 50 years of age. Even among the extended households, where the aged mother or mother-in-law lived with young couple and their children, the younger woman always shouldered the responsibility of household work management. Fourty-three percent of the workers were between 31 and 50 years of age.

Education : The literacy level of the workers was found to

TABLE 4

Distribution of the Homemakers by their Age, Educational Status, and Employment Status.

Personal Characteristics	Homemakers	
	Number	Percent
Age in years		
30 and below	58	48.33
31 - 50	52	43.33
51 and over	10	8.34
Educational Status		
Illiterate	87	72.50
Upto 5th standard	14	11.67
6th standard to S.S.L.C.	17	14.17
Higher	2	1.66
Employment Status		
Employed	106	83.33
Not employed	14	16.67

be very low. Nearly three-fourths of the homemakers were illiterate. Among the literate homemakers, nearly one half had a very low level of formal education. Only two women had education above Secondary School Leaving Certificate level.

Occupation : Eighty three percent of the homemakers had been attending to some kind of productive work along with the regular attendance of their household chores. In 17 percent of the households, the homemakers attended to household chores only.

TABLE 5

Distribution of the Employed Homemakers by their Occupation (Voluntary and/or paid) and the Hours of Work

Occupation	Hours of Work per day							
	1 - 4		5 - 8		9 - 10		Total	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Family Occupation	6	50.00	1	1.25	1	7.14	8	7.56
Family Occupation and care of livestock	-	-	18	22.50	3	21.43	21	19.81
Daily labour and care of livestock	-	-	14	17.50	10	71.43	24	22.64
Daily labour	-	-	19	23.75	-	-	19	17.92
Family Occupation, daily labour and care of livestock	-	-	10	12.50	-	-	10	9.43
Care of livestock	6	50.00	17	21.25	-	-	23	21.70
Self employment	-	-	1	1.25	-	-	1	0.94
Total	12	100.00	80	100.00	14	100.00	106	100.00

The productive jobs of the homemakers were either voluntary (unpaid) or paid ones. Of the 106 homemakers engaged in productive work, 39 workers reported to be rendering assistance to the menfolk in their family occupation - agriculture, business or caste-bound service (Table 5). Of these 39 women, 10 were supporting their families with additional daily wages from farm/nonfarm work. A group of 44.17 percent of the workers were supplementing their families' income through irregular employment on daily wages of Rs.2.50 to 3.50 per day . One worker reported that she was supporting her family with the income received from tailoring.

In addition to the above mentioned work, two-thirds of the homemakers were fully or partly engaged in taking care of the livestock. Cows, buffaloes, bullocks sheep or poultry were the livestock reared for supplementing their family income. Animals demanded regular care and so required fixed hours of the members of the households for grazing, feeding, milking, cleaning, penning and such chores. It is because of this demand on time, a majority of the daily wage earners did not maintain livestock at home.

Hours of work : Of the 106 women attending to productive work 75.47 percent had spent 5 to 8 hours a day on productive tasks. Thirteen percent of them spent 1 to 4 hours while 11 percent of them spent 9 to 10 hours a day.

On an average the homemakers spent 5.6 hours a day on income generating tasks.

Housing Conditions and other Amenities

It is necessary to have an idea of the type of house in which the families lived and the other physical amenities available to them as these environmental factors do influence the time demands of household work.

Type of House: The findings showed that one-eighth of the houses were hutments with plinth and walls of mud and thatched roof (Table 6). A typical house of this type had a hall and an open verandah, 4.5 feet to 6.5 feet wide at the entrance (Figure 3). The floor area of a typical house ranged between 130 to 300 sq.ft. Kitchen could be identified only by the presence of a hearth which was located at one side of the verandah. This area was partly covered with thatched leaves for improving privacy and protection of the hearth from wind. No additional physical space except for the livestock had been provided for these type of houses.

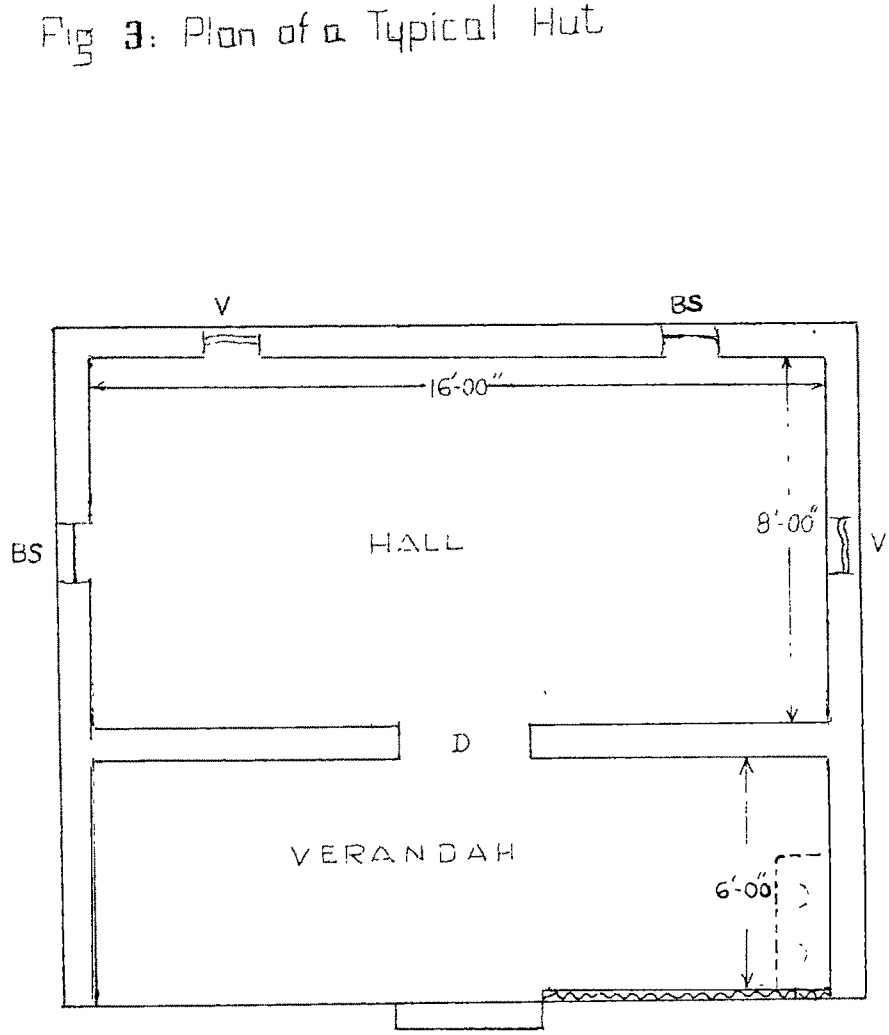
The kutcha construction of the houses seemed to be typical of the whole group. Fortyfive percent of the houses were of kutcha type. In these cases, the plinth was made of bricks and mud mortar and walls of mud and the roof was tiled. The houses had a floor area ranging from 165 - 490 sq.ft. A typical house of this type also had one hall and a verandah similar to the previously

TABLE 6

Distribution of the Households by their Housing Conditions and Amenities

Housing conditions	Number	Percent
Type of House		
Hut	15	12.50
Kutcha construction	54	45.00
Pucca construction.	51	42.50
Floor Area		
Less than 150 sq.ft.	32	26.67
151 to 300 sq.ft.	56	46.67
301 to 800 sq.ft.	30	25.00
801 to 1000 sq.ft.	2	1.67
Type of Kitchen		
Type I	1	0.83
Type II	69	57.50
Type III	41	37.50
Type IV	5	4.17
Domestic Water Supply		
Public well	88	73.33
Public tap	29	24.17
Private tap (Hand Pump)	3	2.50
Electrification of the House		
Electrified	36	30.00
Not electrified	84	70.00

Fig 3: Plan of a Typical Hut



SCALE 1" = 4'-00"

D - DOOR
V - VENTILATOR
BS - BUILT-IN SHELF

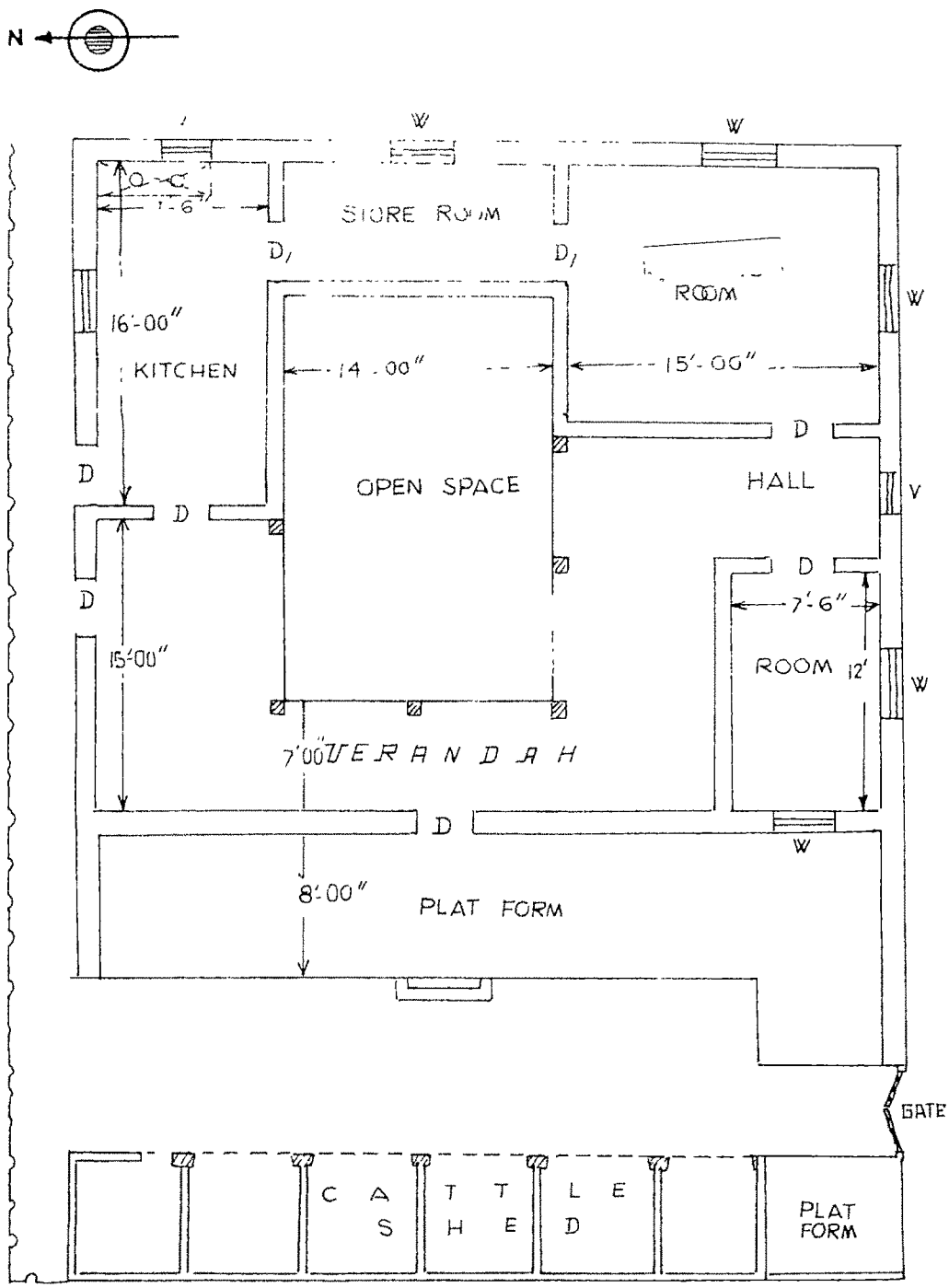
described type. The entrance verandah had been in many cases used as a kitchen. In the bigger type of houses they had an additional room used as a store.

The pucca houses were of different sizes and styles. Only 42.5 percent of the houses were of pucca type. They were made of strong building materials. The size of pucca houses ranged from 144 sq.ft. to 900 sq.ft. and the number of rooms from one to six. A typical house had two or three rooms, one kitchen, a hall and a store room right inside with a verandah at the entrance.

The typical house of agricultural households especially of the big farmers was entirely of a different style as shown in the plan (Figure 4). The houses had a courtyard - an open space in-side the house. This provided adequate light and ventilation to the open verandahs built around it. The houses had only three or four rooms of which one was a kitchen, another a store and the third one a prayer cum multipurpose room. The open verandahs encircling the open space called 'thazhvaram' was used for multiple purposes. A portion was used as a work centre during the peak days of agricultural work and another portion for dining, sleeping, entertaining guests and relaxation. A typical house of this type had even provisions for penning livestock right inside the house. The floors of some of these traditional houses were cow-dung coated and in these

Fig. 4

Plan of the house of an AGRICULTURAL FAMILY



D	DOOR PANNELED	3'x6' - 6	Nos
D1	DOOR PANNELED	2'-6"x 6'-2	Nos
W	WINDOW PANNELED	2'-6"x4'6	Nos
V	VENTILATOR	2' x 1'-6" 2	Nos

Scale 1" = 8'-00"

cases the weekly maintenance was difficult. Only a few houses of this sort had been cemented. The kitchen in many of these houses were of type III with wooden planks fixed on the walls for storage.

Almost all the houses were lacking in facilities such as a lavatory and a bath room.

As meal preparation is found to be the most time consuming household activity carried out in every house twice or thrice daily, the amenities provided in the kitchen need more attention. Majority of the kitchens were of type II with two single hearths set side by side in one corner of the house. Both work space and storage amenities were also found to be inadequate in these kitchens. More than one-third of the kitchens were of type III. These kitchens were little improved over type II in provision of amenities for work. Only six kitchens were of type IV having adequate work space and storage facilities. Even the high income group households were having either type II or type III kitchens.

Water Supply: Arrangements for adequate water supply were made in every village by the respective Panchayats. The arrangement was normally one well each for the dominating and service castes and another one for Harijans in each village. Only in two villages arrangements had been made for protected water supply through taps. So for the household use, majority of the households had to lift water

from the public well (Table 6).

Electricity : All the villages had electricity, but seventy percent of the houses had not been electrified (Table 6). They were using kerosene oil lamps.

Thus, eventhough, amenities had been made available to the villages, the households directly benefited by the same were very few as was the case with electricity.

Description of Household Work

Keeping in mind the definition of household work as the daily chores and periodic tasks performed by the members of a household in order to meet various physical and basic needs of its members, an attempt was made to identify the tasks performed by the group and examine the nature of their performance in details. The tasks were broadly categorised into eight groups : food preparation, fetching water for domestic use, care of utensils and equipment, care of house, care of clothing, physical care of family members, shopping and finance management and collection of firewood for fuel purposes.

Food Preparation

Food preparation comprised pre-preparational tasks like cleaning and processing of food stuffs, actual cooking and post-cooking tasks like cleaning of work space

and equipment. The staple grains used by the households were mostly cereals-jowar, bajra and rice. For more than fifty percent of the meals jowar/bajra was used. These grains needed cleaning, hulling, breaking and sorting prior to its cooking. Similarly for preparations like iddli and dosai, the ingredients - cereal and black gram dhal had to be soaked and ground into a paste of desirable texture and consistency. These pre-preparational tasks demanded specific quantum of time before each meal preparation. The respondents performing the same were in a position to state its time demands with precision because of the regularity of performance of these tasks without much dovetailing with other tasks.

Cooking time meant the time taken for preparing the dish. The main dishes prepared by the households were 'kali' a thick gruel or porridge prepared out of broken jowar or bajra, the widely grown millets of this area, plain rice prepared out of parboiled rice and iddli, dosai and uppuma. The popular side dishes were 'sambar', 'tamarind gravy', 'rasam', dhal gravy, 'keerai massial', 'kootu', 'poriyal', 'thuvayal' and chutney. Coffee was the only beverage served at home either with breakfast or at 4 p.m. Only fifteen households reported preparation of coffee once or twice a day; indicated that the consumption and preparation of coffee was not very typical of this group.

Type of meals prepared : Type 1 meal consisting of 'kali' / 'kali' with 'thuvayal' / plain rice / uppuma was prepared 62 times while more than double the number of times type II meals were prepared by the group(Table 7). The type II meal consisted of 'kali' with one gravy/ 'kali' with one gravy and a 'thuvayal'/rice with one gravy. On the whole, 52.0 percent of the meals were of type II. The type III meals were prepared by only a minority of the households. Preparation of two side dishes with a meal was noticed only for 14 percent of the meals.

Iddli or dosai with chutney or sambar was popular only among the high income group families. Only 6 percent of the meals comprised these dishes. In one family, jowar was used for preparing dosai while the rest used rice as the main ingredient.

Type V meal i.e. rice with three side dishes was very rare as a meal. Only 3.30 percent of the households prepared meals of this type. Rice, 'sambar','rasam' and 'poriyal' were the most popular combinations in this type of meal.

The diet of one-tenth of the households was very simple and comprised of type I or type II meals prepared once a day (Table 8). The simplicity of the preparation-process together with the single time cooking

TABLE 7

Meal Pattern of the Households according to its Type and Frequency of Preparation

Meal Preparations	Frequency of preparation			
	Once		Twice	
	number	percent	number	percent
Type I				
'Kali'	28	23.33	-	-
'Kali' with 'thuvayal'	19	15.83	-	-
Plain rice	14	11.67	-	-
Uppuma	1	0.83	-	-
Type II				
'Kali' with one gravy	57	47.50	6	5.00
'Kali' with a gravy and 'thuvayal'	8	6.67	-	-
Rice with a gravy	37	30.83	7	5.83
Type III				
'Kali' with two side dishes	1	0.83	-	-
Rice with two side dishes	27	22.50	3	2.50
Type IV				
Iddli/dosai with chutney/ sambar	10	8.30	3	2.50
Type V				
Rice with three side dishes	3	2.50	1	0.83

TABLE 8

Distribution of the Households by the Complexity of their Meals and Frequency of Preparation

Day's Meal Preparation	Frequency of cooking							
	Once		Twice		Thrice		Total	
	No.	Percent	NO.	Percent	No.	Percent	No.	Percent
Very simple	11	9.2	-	-	-	-	11	9.2
Simple	-	-	78	65.0	-	-	78	65.0
Elaborate	-	-	15	12.5	16	13.3	31	25.8
Total	11	9.2	93	77.5	16	13.3	120	100.0

pattern made the whole day's food preparation task very simple.

The daily meal preparation was simple in nearly two-thirds of the households. In these cases, a meal comprised three to four items and the dishes were prepared twice daily. Rice with two side dishes was found to be the most elaborate meal preparation amongst this category.

About twenty six percent of the households' meal preparation task was elaborate. The meals in these cases comprised a minimum of five dishes. Half of these households used to prepare meals twice while the rest of them prepared it thrice daily.

The pre-preparation tasks included grinding the ingredients for making iddli or dosai batter, hand pounding of paddy and preparing cholam or bajra for 'kali' by hulling, cleaning, winnowing, pounding, breaking and sorting of the product. In the case of 'kali', these tasks were performed just before every meal preparation. These cereals could not be processed in bulk for fear of souring of the product, which in the respondents' opinion affected the acceptability of the dish. A total of 78.33 percent households reported these pre-preparatory tasks. For dosai and iddli as the products had to be fermented, the pre-preparation tasks-soaking, cleaning and grinding

of dhal and cereals were performed 6 to 8 hours ahead of cooking.

Twelve percent of the households reported of their time demands for specific periodic tasks like preparation of pickles, masala powders and/parboiling of rice. These tasks were usually performed either once in two or three months and hence their time demands could not be ascertained through enquiry, and were not included under the routine food preparation task.

Post-cooking tasks were very simple for the households. Cleaning of the work area, and the utensils used were the main tasks performed in every household. Most of them performed these post-cooking clean up alongwith cooking and so the respondents could not state the seperate time demands of the same.

Fetching the Water

Fetching the water had to be treated as a routine household task, on account of the time and strain demanded in collecting the required quantity of water for domestic use. As the potable water supply was normally from two wells in a village, some of the members had to walk a long distance to avail themselves of this facility. Cleaning of water containers, drawing water from well, collecting it from the tap and carrying the filled up containers back to the house were the major operations reported in this task. The delay

cleaning and finishing of the yards by sprinkling cowdung water mixture and sweeping the ground. Except five households, none reported entrance floor decoration of the yard with 'kolam', a rhythmic design made with white powder of lime stone every morning after cleaning and levelling of the yard. Except three households all others reported regular daily as well as weekly care of the house.

Care of Clothing

Care of clothing meant only washing of clothes. The respondents could state the time taken to get the clothes washed and spread out for drying.

Physical Care of Family Members

Physical care of family members comprised two categories of tasks: (1) Special care of children and (2) Care of family members in general. The main tasks under the former category were bathing, dressing and feeding of children. The tasks included under the latter group were serving meals to the members of the family, carrying food to the work place, especially the farm, and keeping water ready for bathing and washing.

Shopping and Finance Management

Getting groceries and other essentials from the market was a regular practice for all households as the fair price

shops selling daily requirements were not in the vicinity of their dwellings. Often the housewife used to go to the market to get the requirements. Only in 19.2 percent of the households, the male members used to purchase the supplies for the home. This was mostly a weekly task as the market day in the nearby market was the shopping day for the households.

Collection of Firewood

Collection of firewood was performed as a routine task by seventy percent of the households. Either from public place or from their own land, thorny bushes and dried-up plants were cut and carried back home. Firewood picking, or collection of portions of trees and plants, cutting them into pieces of desirable size, and carrying the bundles to their residences were the tasks involved. Children were widely engaged in this task and the housewives mostly used their free time for the same.

Frequency of Performance of Household Tasks

The frequency of performance of the eight tasks under household work, was examined carefully to have a clear idea of their performance pattern (Table 9). Food preparation, fetching water for domestic use and care of utensils were reported unanimously as the daily tasks.

TABLE 9

Distribution of the Households by the Frequency of Performance of Household Tasks

Tasks	Frequency of Performance				
	Daily	Weekly	Daily and weekly	Monthly	Irregularly
Food Preparation	120	-	-	-	-
Fetching water	120	-	-	-	-
Care of utensils	120	-	-	-	-
Care of house	3	-	117	-	-
Physical care of family members	82	-	38	-	-
Care of clothing	9	47	-	-	64
Shopping and finance management	-	80	4	4	32
Collecting firewood	63	-	20	1	36

Varying proportions of households performed these tasks once/twice or thrice daily. Around 80 percent of the households prepared their meals twice daily, while one-tenth of the households did it thrice a day and another one-tenth only once a day. Fetching of water from a well or water tap was carried out twice - once in the morning and again in the evening by one-half. of the households while the others did it only once a day. Dish washing was also performed by around one half of the households once a day and by the rest twice daily.

The task of cleaning and care of house was carried out regularly with the major portion of the task performed daily and the rest only once a week. Only 3 households reported the practice of daily cleaning of the house and its yards. The rest of them did mopping or cow dung coating of the floor and the hearth every week and sweeping the rooms and yards daily.

Every family had to spare some time daily attending to the physical comforts and needs of the members of the household. Thirty eight households reported additional work once a week in giving oil bath to the children.

The remaining three activities-care of clothing, shopping and finance management and collection of firewood were performed regularly by quite a few households. It was unusual to notice that more than 50 percent of the households did not bother to wash and take care of their clothing at home as they were quite used to the traditional habit of getting their clothes washed by the village washerman. The washermen were being paid annually or once in six months, some fixed wages normally in kind, according to the number of pieces washed. So very little washing was done at home. The families used to give their clothes to the dhobi twice a month.

Seventy percent of the households carried out, almost regularly, the purchasing of groceries and other household requirements on the market days - Thursday from the market

at Thadikkombu at about 4 to 8 kilometres distance and occasionally from Dindigul a town having a regular market at 10 to 16 kilometers' distance. As the places were far off, the activity demanded much time. Only 4 households reported occasional purchase of groceries from the local shops. Thirty two households however did not buy regularly and hence had no fixed schedule for this task performance.

Except the collection of firewood, all other tasks have been reported as household chores in the time management studies conducted in India (Sandhu,1975; Saraswathi, 1962; Prafullakumari,1963; Chauhan,1981;Adaviappa,1976). The study conducted by Thomas(1979) alone had reported collecting firewood as a household task performed by the tribal homemakers of Bihar. Thus probably this task might be typical only of rural and tribal areas where facilities prevailed around residential localities for collecting firewood free of cost. Thus, the most typical household work of these households comprised only seven major tasks - food preparation, fetching water for household use, care of utensils, care of house, physical care of family members, shopping and collection of firewood. Care of clothing was not very typical of the group studied because in more than one-half of the households, it was not performed by any of the members. None being in the habit of maintaining financial records and planning family budgets, the financial management task also

seemed to be irrelevant for the group as a component of household work.

Pattern of Time-use in Household Work

A detailed analysis of the time-use on household tasks and the activity in total is done to establish the group's time norms. Further, the analysis of the data points to the factors contributing to variability in time-use by different subgroups, thus revealing the need for establising different norms for heterogeneous groups.

Hours of total Household Work

The household work week of a family in the group ranged from 30.5 hours to 114.5 hours (Table 10). Only 5 percent of the families had spent more than 90 hours a week in household work. At the same time, about 12 percent of the households were spending 31-40 hours a week. This revealed a skewness of the distribution of households towards the right on the positive side with reference to time-use on household work.

The mean time spent by a family on household work was 60.83 hours a week. The median also fell near to it, in the modal class of 61-70 hours a week. Thus the measures of central tendency indicated that the average time referred here is quite typical and representative of the group's time-use.

TABLE 10

Distribution of the Households by the Time Reported for Performing Household Work

Hours/week	Households	
	Frequency	Percent
31 - 40	14	11.67
41 - 50	19	15.83
51 - 60	27	22.50
61 - 70	31	25.83
71 - 80	14	11.67
81 - 90	9	7.50
91 -100	2	1.67
101 -110	1	0.83
111 -120	3	2.50
Total	120	100.00

Range : 30.5 - 114.5
$\bar{X}$: 60.83
Median : 60.55
Modal Class : 61-70
s.d. : 17.49

Variables Affecting Total Household Work Duration

The comparison of the mean number of hours of household work of the three broader categories of castes revealed the highest time-use by dominacting castes followed by

Harijan households and lastly by service castes (Table 11). A difference of 11.6 hours a week was observed in the groups' averages. The difference in the means was found to be significant at 5 percent level. Probably because caste is associated with the occupation of the households of the sample and thereby their economic status and life style in total, a significant difference is noticed in the household work timings of each caste group.

The single and extended households in the sample showed a difference of 14.3 hours between their average time-use on household work.

The mean difference was significant at .01 level. The high average of 71.3 hours a week for extended households might be partly due to the large size of these households. Sixty three percent of the extended households were large sized whereas among nuclear households only eighteen percent were large sized.

An increase in the homemaker's time-use on household work according to rise in family size has been revealed by Indian as well as American studies(Weigand,1952; Cowles,1956, Saraswathi, 1962; Kumari,1963, Walker, 1969; Hall,1970; Sandhu, 1975 and Adaviyappa,1976). This analysis was therefore found to be apt for the present study too. There was a marked difference in the average time-use of households of different sizes on total household work. The small sized (2-5 members)

TABLE 11

Average Hours of Household Work related to specific Background Variables of the Households

Family background Characteristics	number of house-holds	Mean no. of hours per week	Standard deviation	F values
Caste groups				4.73*
Dominating castes	87	63.5	17.34	
Service castes	15	51.9	16.17	
Scheduled castes	18	54.9	13.82	
Type of Household				19.22**
Nuclear	85	57.0	14.76	
Extended	35	71.3	19.02	
Family size				5.04**
Small	83	57.4	15.85	
Large	37	69.6	17.69	
No.of children in the household				2.97*
None	17	50.5	17.2	
One	28	59.8	18.7	
Two	38	62.3	11.6	
Three	23	67.2	19.5	
Four	14	65.2	14.0	
Family income				5.06**
Very low	15	50.8	15.5	
Low	52	58.6	16.3	
Middle	32	63.6	14.0	
High	21	71.1	20.0	

TABLE 11 (Contd.)

Family background Characteristics	Number of house-holds	Mean No. of hours per week	Standard deviation	F values
Family income				5.06**
Very low	15	50.8	15.5	
Low	52	58.6	16.3	
Middle	32	63.6	14.0	
High	21	71.1	20.0	
Occupation of the Household				3.67*
Agriculture(own land cultivation)	42	61.3	17.2	
Caste bound work	14	50.7	16.1	
Daily labour	37	59.4	14.6	
Non farm work	27	68.6	18.3	
Age of the Homemaker				2.81 N.S.
30 years and below	58	64.3	16.3	
31 - 50 years	52	59.3	17.6	
51 years and above	10	52.6	18.4	
Employment status of the Homemaker				0.16 N.S.
Employed	106	61.4	15.8	
Non-employed	14	59.4	26.1	
Hours of Gainful Work of the Homemaker.				0.12 N.S.
0	14	59.4	26.1	
1 - 4	12	63.3	20.5	
5 - 8	80	60.9	15.4	
9.-10	14	62.2	15.5	
All Households	120	61.2	17.5	

* Significant at .05 level
** Significant at .01 level
NS Not significant.

households, on an average spent 12.2 hours less per week when compared to the large sized households. A steady rise in average time-use on total household work could be observed as the size of the households increased from two to eight and more members. The F-values confirmed that the difference in the means of small and large sized families was significant at .01 level.

The correlation coefficient estimated for the two variables-family size and time used for household work was 0.42 . This indicated that the factors were associated with at .01 level and 16 percent of the variations in time-use on household work could be attributed to variations in family size.

The childless households reported an average use of 50.5 hours a week on household work while those with three children reported 67.2 hours a week i.e. an additional work for 16.7 hours a week. The increase in average timings was consistent for households having 0, 1, 2 and 3 children, but there again a decrease of 4 hours was noticed for those with 4 or more children.

The difference can be partly due to the independency inculcated in children as their number increased in a family. Another factor might be the low economic status associated with families having more children. Fifty percent of the households having more than 4 children belonged either to a very low or low income group and in these cases even the

children were earning and demanding less attention.

The lower the income status of the households, the lower was their average time-use on household work. The average time-use ranged from the lowest value of 50.8 hours a week for the lowest income group households to 71.1 hours a week for the highest income group households. The means were significantly different at .01 level. The correlation coefficient estimated for the two variables was 0.38 and was significant at .01 level. So 9 percent of the variance in time-use in household work could be associated with variance in family income. The lower income groups on the whole had smaller houses to care for, simpler meals to prepare daily and less number of utensils and clothes to be washed and hence probably a reduction in their average time-use on the total household work.

The income of a household was closely linked with family occupation. In the present sample, 64 percent of the farming families and 67 percent of the nonfarm workers' households were in the higher income brackets while 85 percent of the caste bound workers' households were in the lowest two income brackets. So probably, because of this difference, occupation had shown a significant difference in the average time-use of the households in the sample. Moreover, the meal preparation timings and meal timings and other activities were linked with the occupational

demands of the household members especially the earners. The households engaged in caste-bound work had reported the lowest average time-use while their counterparts engaged in non-farm work - business and service on regular salary reported the highest average time-use on household chores followed by agricultural households. The difference in means was significant at .05 level.

None of the personal characteristics of the homemakers revealed a significant difference in the average time-use of households on household work. Probably, if we had taken into consideration, the homemakers' time-use instead of the total time-use on household work, the personal factors studied - age, educational status and hours of gainful work of the homemaker would have shown significant differences in the time-use on household work.

Thus the analysis revealed that total time-use of households on household work varied greatly from house to house. It varied significantly according to socio-economic variables like caste, family type, income and occupation of the household and the demographic variables like family size and number of children (below 15 years) in the household.

Time-use in Household Tasks

The taskwise apportioning of the group's time-use on household work indicated that food preparation was the

most time consuming one (Table 12). It took away 39 percent of the total household work time. The results of all time budget studies irrespective of the social and cultural characteristics of the groups studied, have shown that food preparation is the most time consuming household task. (Bureau of Home Economics, 1920; Weigand, 1954; Cowles and Dietz, 1956; Steidl, 1958; Manning, 1968; Adaviyappa, 1976; Chauhan, 1981). Next in the order of time demand fell physical care of family members taking away nearly one fourth of the average household work time.

The third time consuming task for the group was fetching water for domestic use. About one hour a day was the group average for this task. Next in the descending order of average time-use were the tasks - care of house, collection of firewood, care of utensils, shopping and lastly care of clothing ~~in a descending order~~. In none of the available studies, fetching water for domestic use had been mentioned as a task by itself probably because of easy availability of water within the urban homes and the negligible quantum of time spared daily for the same by the homemaker or her helpers.

On an average, the collection of firewood, another typical task of these rural households different from that of the urban as well as the rural samples studied so far, consumed 6.7 percent of the total household work time.

Four hours a week for this task was a considerable amount of time when compared to the other tasks performed daily. Care of clothing took hardly one hour a week for the group. The accepted social norms of the group for reliance on dhobi contributed to the low time-use of households on this task. Shopping took away upto six hours a week and the group average was 2 hours a week.

The range of time spent in different tasks indicated a wide dispersion in time-use of households on all tasks except care of house and care of utensils. The wide dispersion of time-use on majority of the tasks indicated the need for a detailed analysis of the group's taskwise time-use with reference to associated variables.

Time spent in Food Preparation

The time reported for food preparation activities ranged between 7.0 and 50.4 hours a week and the average time used was 23.9 hours a week i.e. 3.4 hours a day (Table 12).

The comparison of the time used by the households for preparing the five different types of meals revealed that the time taken for preparing each meal varied(Table 13). There had been a consistent rise in the reported time-use on type I,II,III and IV meals. Type IV meal which comprised entirely different preparations took

TABLE 12

Time spent in Various Household Tasks

Tasks	Hours/Week Mean		Standard deviation	Median
Food preparation	23.9	(39.05)	8.02	23.42
Fetching water	6.9	(11.27)	4.05	6.31
Care of utensils	3.0	(4.90)	1.20	2.91
Care of house	5.5	(8.99)	1.61	5.13
Care of clothing	0.9	(1.47)	4.35	0.00
Physical care of family members	14.4	(23.53)	7.67	11.87
Shopping and finance management	2.5	(4.09)	1.79	1.25
Collecting firewood	4.1	(6.70)	3.73	1.83
All tasks	61.2	(100.00)	17.49	60.55

Figures in brackets indicate percentage of time

on an average 1.3 hours, the lowest time, eventhough the range indicated a higher time-use upto 3.0 hours by some households.

Variables affecting Time-use in Food Preparation

The households preparing food once, twice and thrice a day reported an average time-use of 1.9, 3.4 and 5.0 hours a day respectively on this task. This revealed a rising trend in time-use on food preparation according to increase in the frequency of performance of the task (Table 14). More than three-fourths of the households used

TABLE 13

Average Time Reported for Preparing Each Type of Meal

Meal type and menu	Number of times reported	Average time in hours	Median	Range
Type I				
Plain rice/uppuma with or without chutney/rasam	15	1.3	1.5	0.5-2.5
'Kali' with or without chutney/ rasam	47	1.5	1.5	1.0-2.8
Type II				
Rice with a side dish	51	1.4	1.3	0.8-3.8
'Kali' with a side dish	77	1.9	2.0	1.0-1.5
Type III				
Rice/'Kali' with 2 side dishes	34	1.8	1.8	1.0-3.0
Type IV				
Iddli/dosai with a side dish	16	1.3	1.1	0.5-3.0
Type V				
Rice with 3 side dishes	5	2.3	2.5	1.8-2.5

to prepare their meals twice a day and their average time-use on the task was the same as the group's average. The difference in means was significant at .01 level($F_{.01} = 38.89 > F_{.01}$ level, d.f.= 2,117).

The correlation coefficient estimated of the variables - frequency of meal preparation and time-use on the task (r = 0.63) was also highly significant. So the factors were positively associated with and 36 percent of the variations in time-use on this task could be associated with the frequency of performance of the task. Examination of the pattern of time spending of the households on food preparation, further revealed that 78.33 percent of the households were spending 0.5 to 2.5 hours a day on processing of grains by pounding and/ or grinding cereals using simple mechanical gadget and tools like 'ural' and 'ulakkai','attukal','ammikkal' and/ or 'thirukai', different forms of mortar and pestle. These pre-preparational tasks lengthened the preparation time of even the simplest dish and on the whole made the whole cooking process more elaborate, eventhough the menu comprised only one or two simple boiled preparations. Forty six families reported hand pounding or manual grinding of cereals twice a day i.e. before each meal preparation. The more the number of times the task was repeated, higher was the range of time spent on these tasks. The group on an average spent an hour a day on these pre-preparational tasks.

Walker (1955) has stated number of causes for variability in the time-use of families on food

preparation - the number of persons for whom the meals were prepared, the type of meal prepared and the income of the household. Of these, complexity of the meal, represented by the number of dishes in the meal and the degree of manipulations that the various preparations required, was proved by her as the factor that had profound influence in time-use. Her generalisation was based on studies among American households. Based on the reasoning behind the association of the variables, a testing of similar association in the present sample was felt necessary and useful. Hence an attempt was made to study the time-use of households on each type of menu.

TABLE 14

Distribution of the Households by Frequency of Cooking and the Reported Time-use in Food Preparation

Hours spent per day per household	Frequency of cooking per day			
	Once	Twice	Thrice	All
0 - 1.4	2	-	-	2
1.5 - 2.9	9	35	1	45
3.0 - 4.4	-	44	5	49
4.5 - 5.9	-	13	5	6
6.0 - 7.4	-	1	5	6
Total	11	93	16	120
Mean number of hours	1.7	3.3	5.0	3.5
Standard deviation.	0.5	0.9	1.3	1.0

$F = 38.89 > .01$ level, $df = 2,117$

A time-use of 2.9 hours and less was reported by the households for preparing a day's very simple menu while a higher range of timings was reported for menus with more elaborate preparations and/or with the frequency of cooking being twice or higher (Table 15). As the day's preparations became more elaborate, the cooking time increased upto 7.4 hours a day. The mean number of hours reported in the table against each type of menu indicated the wide disparity in time-use of households according to the type of menus they had. The difference in means was significant at .01 level ($F = 25.979 > .01$ level, d.f.=2,117).

The mean of 4.13 hours per day reported for preparing the elaborate meals is much lower than the average time-use of 6.85 hours a day reported for the urban households of Baroda, Gujarat (Wells,1967). This indicates that there is a vast difference in time-use of households in food preparation based on their rural - urban residential background. The food habits of the samples differed entirely and hence their meal preparation timings also varied.

Small families on an average reported 3.2 hours a day for preparing their food while large households with 6 to 10 members reported 3.8 hours (Table 16). The analysis of variance test indicated a significant differene in time-use at .01 level ($F=6.57 > .01$ level, d.f.= 1,118).

The correlation coefficient was 0.28, and indicated a significant association of family size or the number of persons for whom the meals were prepared with time-use on food preparation.

TABLE 15

Distribution of the Households by the Type of Menu and the Time reported for Food preparation

Hours/day/ Household	The day's menu preparation							
	Very simple		Simple		Elaborate		All	
	No.	percent	No.	Percent	No.	Percent	No.	per-cent
0.0- 1.4	4	36.36	-	-	-	-	4	3.33
1.5 - 2.9	7	63.64	29	37.18	7	22.58	43	35.83
3.0 - 4.4	-	-	37	47.44	12	38.71	49	40.83
4.5 - 5.9	-	-	11	14.10	7	22.58	18	15.00
6.0 - 7.4	-	-	1	1.28	2	16.13	6	5.00
Mean Number of hours	1.66		3.34		4.13		3.44	
Standard deviation	0.52		0.93		1.40		1.05	

$F = 25.979 > .01$ level, d.f. = 2,117

The average time-use of the households of the four different income categories showed an ascending trend in time-use on food preparation along with rise in the income status of the households. The difference in means was

TABLE 16

Mean Time Taken for Food Preparation by Selected Socioeconomic Variables of the Households

Variables	Number of households.	Average hours/day/ household.	Standard deviation.	F value
Size of household				6.57*
Small	83	3.2	1.1	
Large	37	3.8	1.4	
Family income				5.09**
Very low	15	2.9	1.2	
Low	52	3.1	1.0	
Middle	32	3.6	1.0	
High	21	4.2	1.5	
Type of household				15.62**
Nuclear	85	3.1	0.9	
Extended	35	4.0	1.4	
Occupation of the household				17.01**
Agriculture	42	3.3	1.2	
Caste bound work	14	2.6	1.3	
Daily labour	37	3.2	0.5	
Non-farm work	27	4.0	1.4	
Total	120	3.4	1.2	

* Significant at .05 level

** Significant at .01 level

significant as F = 5.09 > .01 level, d.f. = 3,116. The correlation coefficient estimated of the two variables - family income and time-use in food preparation was 0.37 and indicated a significant association of the two variables at .01 level.

The nuclear households of this sample had reported a lower time-use on food preparation compared to their counterparts having extended households. The average time-use of nuclear households was 3.1 hours per day as against 4.0 hours of extended households. The difference in means was significant at .01 level (F = 15.62 > .01 level, d.f.= 1,118).

The households with caste bound occupation spent on an average 2.6 hours per day as against 3.2 to 4.0 hours a day by the other groups. The simple meal pattern of the households of service caste represented by(1) none preparing meals thrice a day and(2) extensive use of rice that required no processing prior to its cooking by 50 percent of the households either for one meal or both the meals might have contributed to this variation. The elaborate meal preparation among other caste groups characterised by the extensive use of millets requiring much of pre-preparatory processing, repetition of the cooking task and/or increase in the number of dishes prepared, added to their work load of food preparation.

The difference in the mean time-use of households of different occupational groups was significant at .01 level ($F = 17.01 > .01$ level, d.f. = 3,116).

The types of kitchen in which the households prepared their food, produced no significant difference in the average time used on food preparation ($F = 2.65 < .05$ level, d.f. = 2,117), probably because of the multitude of variables influencing the time-use in food preparation in a normal home setting. Only by laboratory experiments can this type of association be tested and that too with standardised menus and method of preparation.

Based on the analysis of the factors associated with time-use on food preparation, it could be concluded that the complexity of meal preparation, determined by the (1) frequency of meal preparation in a day (2) type of meals prepared and (3) elaboration of the cooking process, was the main factor causing variability in time-use on the task. Variations in time-use on this work were also found on the basis of family size, income, type and occupational status of the households.

Time spent in Fetching Water

The households reported a time-use of 1.4 hours to 21.0 hours with a mean of 6.9 hours a week for fetching water for domestic use (Table 12). This high dispersion in time-use on the task directs the need for a search into

the factors associated with the task timings.

Water brought to the house was used for all domestic needs - drinking, washing of utensils, bathing and in very few cases for feeding the livestock and washing of clothes. The analysis revealed that of the 75 households having cattle, hardly 10 had reported fetching water from the domestic well for cattle. Theyrelied mainly on agricultural wells. The cattle were taken usually to the well while the electric motors operated and so hardly the livestock at home influenced the duration of time used for fetching water. Even for the few, using the drinking water source for livestock feeding, the quantity collected for the same and the time taken for bringing home that much amount of water was verified and reduced from the total time taken for the task.

Source of water supply, its nearness to the house and the quantity consumed were some of the main variables assumed to be linked with this task performance. Hence their associations with time-use on the task were tested (Table 17). Households collecting water from different sources - well, the primary source and tap, the secondary source showed a significant difference in their time-use on the task.Those fetching water from tap had spent on an average 5.1 hours while those collecting it from wells spent 7.6 hours a week. The difference in means was significant at .01 level ($F = 11.85 > .01$ level, d.f. = 1,118). The chi-square value

TABLE 17

Average Time Reported for Fetching Water as Related to Specific Variables

Variables	Number of households	Mean Number of hours/ week.	Standard deviation	F Value
Source of Water Supply				11.85**
Tap	32	5.1	2.9	
Well	88	7.6	3.7	
Distance between the House and the Source				2.73 N.S.
Very near (within 100 ft)	81	6.4	3.5	
Near (101 - 200 feet).	26	8.1	3.8	
Far (Beyond 200 feet)	13	7.9	3.3	
Quantity of Water Collected/day				34.63**
100 ltr.& less	41	4.8	2.0	
101 to 200 ltrs.	49	6.4	2.6	
201 to 300 ltrs.	19	9.1	3.1	
301 and more ltrs.	11	13.6	3.9	
Size of Family				13.72**
Small	83	6.1	2.9	
Large	37	8.7	5.4	
Total	120	6.9	3.7	

** Significant at .01 level

N.S.Not significant

(χ^2 = 6.210 > .05 level, d.f. = 2) was also significant and confirmed the association of the source of supply with time-use in fetching water for domestic use. Tasks like cleaning of the bucket and rope, setting the implements for drawing water from the well, drawing water from 60 - 80 ft. deep wells and dismantling the implements after use were the tasks involved when well was used as the source of water supply and hence their time demands also were high. Owing to curtailing of the hours of water supply through taps, the households had to wait for the supply from the taps. To an extent, this waiting before taps was replaced by an array of water pitchers. In spite of this, a considerable reduction in time-use on this task was reported by the households enjoying tap facility.

The distance between the source of domestic water supply and the houses did not produce any significant difference in the household's time-use on this task. The chi-square was also not significant (χ^2 = 2.11 < .05 level, d.f. = 2). Probably, when distance increased, families tried to economise its consumption at home which in turn might have reduced the time-use and vice-versa.

Quantity of water consumed by the households showed a significant association with time used in fetching water (χ^2 = 36.518 > .01 level, d.f. =3). The means difference within the group was also significant (F=34.63 >.01 level,d.f. = 3,116).

Quantity of water consumed by a household was linked to family size and so the difference in average time-use of small and large size households were computed and compared. Large households had reported an average time-use of 8.5 hours a week as against 6.3 hours by small households. The mean difference was significant at .01 level, indicating that there was a difference in time-use of small sized and large sized households in fetching water for domestic use.

Thus it was evident that time norms of fetching water varied according to the source of water supply or in other words with the ease of collecting the same and secondly the quantity of water consumed daily. Family size being directly linked to water requirement of the family, had shown an association with the task's time-use.

Time spent in Care of Utensils

The households reported an average of 3.0 hours per week for performing this routine task. Time-use on this task did not differ much according to the frequency of performance of the task. Observations in daily life have shown that the time used for dish washing depended on the number of utensils washed, the base material of the utensils, the standards of performance of the task, the worker's speed, environmental facilities for performing the task and the type of soiling on the

utensils to be cleaned. With the survey data, except the number of utensils washed daily, none of these factors could be reliably identified and measured. Even the factor - the number of utensils washed did not show any significant difference in the average time-use on the task ($F = 1.17 < .05$ level, d.f. = 1,118). Owing to the low dispersion of the work duration of the group on this specific task, the group mean could be accepted as the time norm of the task.

Time spent in Care of House

The selected households spent on an average 5.5 hours a week on regular care of house and its surroundings.

Variables Affecting Time-use in Care of House

Hall and Schroeder (1970) have reported an increase in the area of the dwelling linked with the time demands on this task, while Morgan (1966) has related this to the increase in the number of rooms in the dwelling. Owing to lack of standard size and structure for the rooms in each dwelling, no justifiable comparison could be made based on the data on the number of rooms in each of the houses of the study sample. Hence the total floor area was used as the yardstick for space measurement of each house. This was then tested for

association with the time-use of households in its care.

The average time-use of households occupying large houses was 6.0 hours / week as against 5.0 hours for average sized houses and 5.6 hours for small sized houses(Table 18). The difference in means was significant ($F = 6.04 > .01$ level, d.f. = 2,117). About 90 percent of the households occupying large houses with floor area of 501 sq.ft. or larger reported the time-use of more than 5.5 hours a week while 61 percent of the households occupying smaller houses reported 5.4 hours or less per week on its care (Table 20).

Another typical difference noticed in the houses of this area was in the construction materials. The houses could be categorised into huts, kutcha buildings and pucca ones. The households living in huts reported a higher average time-use on care of their house compared to those residing in other types of houses. The difference in means was also significant ($F = 5.58 > .01$ level, d.f. = 2,117). The huts, even though had a floor space of less than 300 square feet needed weekly coating with cowdung paste. This demanded a considerable amount of time from 0.5 to 1 hour a week. Besides this due to the penning of livestock near the house, the yards and varandahs needed thorough and frequent cleaning daily. These might be the reasons for

TABLE 18

Relationship between the Area and Type of House and the Time Spent in Care of House

Variables	Number of house-holds.	Average hours per week per household	Standard deviation	F Value
Area of the House (Square feet)				6.04**
150 and less	32	5.6	1.8	
151 - 300	56	5.0	1.3	
301 - and above	32	6.0	1.4	
Type of House				5.58**
Hut	15	6.7	1.8	
Kutcha	54	5.1	1.3	
Pucca	51	5.5	1.5	
Total	120	5.5	1.6	

** Significant at .01 level

higher time-use by households living in huts on care of house. The kutcha houses were having a floor space of less than 500 sq.ft. and required mostly less than 8.4 hours a week for its care. Cement flooring in a few of the houses had lessened the work load on its care. Among pucca houses, 50 percent had a floor space of less than 300 sq.ft. Around 20 percent of them were having a floor space of more than 500 sq.ft. Thus the comparatively large floor space associated with pucca houses might be contributing to a higher time-use on their care compared to that of kutcha houses.

Observations revealed that the type of houses, its area, the activities held in and around the houses, the number of persons moving around, cultural practices of the group and the seasonal variations contributed to variability in time-use on cleaning and care of house. However, on account of a low dispersion of the time reported by the households, the group average of 5.5 hours a week could be referred to as the group's time norm for the task.

Time spent in Physical Care of the Family Members

For the households, this task consumed around one fourth of the total household work time. On an average every household spent 14.4 hours (Table 12).

The time range of 1.4 to 33.5 hours a week on this specific task denoted the wide variability in its duration from house to house.

Variables affecting Time-use in Physical Care of Family Members

In order to account for the variability of the group's time-use on the task, a comparison of the mean time-use of different subgroups was done. Income, type of household, family size, number of children in the household and age of the youngest child were the factors chosen for this analysis.

The lower the income of the household, the less was their average time-use on physical care of family members and vice-versa(Table 19). The highest income group reported on an average 16.7 hours per week while the lowest income group reported roughly half of this time - 8.8 hours a week as being spent on this task. The difference in means was significant ($F=4.49 > .01$ level, d.f.3,116).

A significant difference at .01 level was noticed in the average time-use of extended and nuclear households ($F = 8.83 > .01$ level, d.f.=1,118). The nuclear households reported 13.1 hours and the extended households 17.5 hours a week on this task. The difference might be partly due to the self dependency inculcated in the members of nuclear families to meet their own needs themselves and the

possibility for the members to deviate from the accepted norms of the society.

As size of the family rose from 2 to 7, a steady rise in their average time-use on physical care of family could be noticed. Thereafter, the rise was not regular, Households with eight or more members had reported on an average a time-use of 14.3 hours as against 18.1 hours reported by households with seven members. The larger the size of the family the higher was the need for satisfying one's need by oneself and hence their time-use on care of others reduced. Small families spent less time on this because of the lower number of members to be attended to . The difference in the mean time-use of households of different sizes was significant ($F = 4.46 > .01$ level, d.f.=6,113).

Children required more time in a house when compared to adults. Feeding, bathing, dressing, putting the child to sleep, and attending to his other basic needs demanded other's time and attention. Hence a rise in time-use on physical care of family members was assumed according to increase in the number of children in each family. The childless households reported a weekly time-use of 8.7 hours as against 13.5 hours by households with single child and 17.4 hours by households with three children. The households with more than three children reported a lower time-use compared to those with three

TABLE 19

Average Time reported for Physical Care of Family Members as related to Selected Background Variables of the Households

Variables	Number of household	Average hours/ week/ household	Standard deviation	F value
Income group				4.49**
Very low	15	8.8	5.4	
Low	52	13.9	7.4	
Middle	32	16.2	6.4	
High	21	16.7	8.2	
Type of household				8.83**
Single	85	13.1	7.3	
Extended	35	17.5	7.1	
Family size				4.46**
Two	10	7.2	3.3	
Three	17	10.7	5.3	
Four	26	13.5	7.7	
Five	30	17.7	7.6	
Six	15	15.3	7.0	
Seven	13	18.1	7.2	
Eight and more	9	14.3	3.8	

TABLE 19 (Cont'd)

	Number of household	Average hours/ week/ household	Standard deviation	F value
Number of children in the household				4.15**
None	17	8.7	4.5	
One	28	13.5	7.1	
Two	38	15.2	8.2	
Three	23	17.4	6.4	
Four and more	14	16.1	6.5	
Total	120	14.4	7.5	
Age of the youngest child (in years)				9.80**
Upto one	15	23.4	4.2	
One to two	21	17.2	7.5	
3 - 5	25	14.7	6.9	
6 - 10	26	13.1	6.8	
10 - 15	16	10.1	3.3	
Total	103	15.4	6.9	

** Significant at .01 level

children. Probably the early self dependency encouraged in older children in larger families had created this reduction in time-use on this task. The difference in means was significant ($F = 4.15 > .01$ level, d.f. = 4,115).

The lower the age of the youngest child, the higher was the time reported by a household on care of its family members. As the age of the youngest child increased, the time-use on the task decreased. The households with the youngest child below one year reported an average time-use of 23.4 hours a week as against 10.1 hours by the households with the youngest child in the age range of 10-15. Beyond 10 years of age hardly, did any of the households spend much time for the child's care except for serving his food. The difference in means was significant ($F = 9.80 > .01$ level, d.f. = 4, 98).

Time Spent in Care of Clothing

Care of clothing consumed the lowest proportion of household work duration mainly because 52.5 percent of the households were not attending to this task at home. So the mode and median of the group's time-use on this task were zero. The group mean of 0.78 hours a week, therefore did not represent the group behaviour eventhough, it denoted a trend for sparing very little time on this task.

Variables affecting Time-use in Care of Clothing

The average time-use of households belonging to dominating caste, service caste and Harijans were 1.0, 0.3 and 0.7 hours per week respectively but the analysis of the data by F-test revealed no significant difference in the group's time-use ($F=2.87 < .05$ level, d.f. = 2,117). Thus the low time-use or no time-use on care of clothing can only be attributed to the cultural practice of the group. The families, deviating from the cultural norms of the group have slowly switched over to home washing and care of clothes. In none of the households, except in one, stitching or mending of clothes was done owing to lack of training of this skill. Thus the dependency on different service agencies was maximum for this job.

Time Spent in Shopping

Purchasing household requirements once a week or once a fortnight from the market was a practice of 73.3 percent of the households and the market being considerably away from the residential areas, consumed an average of 1.0 - 6.0 hours a week. The group's average time-use on the task, on account of a good proportion of households not performing it, was only 2.45 hours a week, eventhough the households performing the work spent on an average 3.35 hours a week. Thus the group's average is much different from the actual average time-use

of households. The median and mode in the distribution were 3.0 hours which seemed to be more representative of the task's time-use than the average of 2.45 hours a week.

Variables Affecting Time-use in Marketing

Further analysis of the data with background variables revealed that roughly one-third reduction in time-use for travel was reported by households using a bicycle compared to those who walked to the market from the same village. Bus being used for visiting the main market, 10 to 16 kilometres distant from the village, consumed even more time in many of the cases than that normally spent to get things by walking from the nearest village market at 4 to 8 kilometres distance. None of the variables indicated significant differences in the mean time-use on this task.

Among the thirty two households who reported no specific time-use on household purchases, twenty four had reported combining of the task with their occupational visits to the market for purchase or sale of commodities. The time-use could not be specifically identified for household purchases because such visits were too frequent and done by the menfolk - father or son.

Time Spent in Collection of Firewood

Collection of firewood consumed, on an average 4.1 hours a week (Table 12). Thirty six households did not spend any specific time for the task within a month's period. Among the rest, devoting time daily or weekly or once a fortnight to this task, 7.0 hours a week was the modal time. The group's median was 3.0 hours a week, much below the median.

Variables Affecting Time-use in Collection of Firewood

The average time-use of the very low, low, middle and high income group households on collection of firewood was 6.0, 4.6, 3.6 and 2.5 hours a week respectively. Eventhough the means showed a decreasing trend in time-use according to rise in the household's income status, the difference was not statistically significant. About 62 percent of the high income group households did not spend any time on this task, while 87 percent of the households of the lowest income category spent 3.5 to 28.0 hours a week on collection of firewood. Those reported no time-use on the task were mainly big farmers, non-farm workers and the kammalars.

Summary of the Variables Affecting Time-use of Rural Families in Household Work

The socio-economic and demographic variables associated with time-use of rural families in household work were size of family, type of family, income level of the household, family occupation and caste(Table 11). Of these, occupation and caste were found to be significant only at .05 level and the rest were significant at .01 level. Further, comparison of the estimated values with the corresponding table values indicated that the differences between the same were very high (three times that of table values) for the different types of households and nearly double for households of different sizes but with the remaining variables, the differences were marginal. So among the variables producing high variability in time-use, type of family ranked first and size of the family the next.

The variables-size of the family, type of family, income level and family occupation had shown sifnificant differences in time-use on food preparation task(Table 16). In this case the table values and estimated values varied much for the occupational categories and the two types of households. Income-wise also the differences were significant. These might be due to similarities in the

meal preparation pattern and meal types of the sub-groups in each category.

Also the second time consuming task - physical care of family members had required significantly different timings for different sub-groups. Of the variables, the age of the youngest child had shown very high association with time-use (Table 19).

Time-use in fetching water was associated with the size of the household (Table 17). The difference between the table values and estimated values was also very high for this variable.

These factors, in general, indicates the need for proper stratification of the sample when data on time-use in household work are to be collected from a larger population. The single and extended households may have to be treated differently. Other variables can be adequately represented in the sample through choice of a representative sample from the population.

The situational factors allied to time-use on each task indicated the necessity for looking into the same in depth while collecting time-use data on the specific task. The quantum of specific work can be determined, only if this data are collected properly. Further, while establishing time norms of each task, it would also be beneficial and necessary to state specifically the work load or the amount of work performed

with reference to the time spent like the type of meal in relation to the time norms established.

The two factors - complexity of the meal and the number of times meals prepared had shown significant differences in time-use on the task (Tables 14 and 15). Further, the table values at .01 level and the estimated values were also highly varying. Similarly the estimated F values of time-use on fetching water in accordance with the quantity of water consumed was very high compared to the corresponding table value. The type of house, floor area of the house and source of water supply had played a role in bringing variations in time-use on the respective tasks(Tables 17 and 18).

The association of situational factors indicated that one has to look into these details while collecting data for establishing time norms of household tasks and the work in total. It would enable the researcher to state specifically the average time demands in relation to the amount of work performed.

Technique II : Observation

The data collected through observation of household work performed in the 39 families chosen from the first lot of 120 were analysed to identify the time-use of households on each task with precision to clock timings. The pattern of time-use in each household

activity, the extent of time-use and its variability within the group were the major areas looked into.

Description of the Sample

The sub-sample was a representative one of the main sample of 120 households as far as religion, caste, income and family occupations were concerned (Appendix XI). Only very little variations in the proportion of households of different types and sizes were noticed.

Description of Household Work

The daily tasks performed by the households were those related to food preparation, fetching water, care of utensils, care of house and physical care of family members (Table 20). Of these, the latter three tasks were found to be performed weekly also. In the case of care of utensils, the weekly tasks were washing of pooja room equipment, cleaning of water tubs and pitchers, cow dung coating of baskets, winnowing pan, and similar items, and cleaning of lamps used for lighting the house. Friday was earmarked by these households for this weekly task. Nearly one fourth of the households performed this every week.

In addition to the regular sweeping and cleaning of rooms and yards, almost all except 5.13 percent of the households, had attended to the weekly cleaning or

TABLE 20

Frequency of Performance of Household Tasks

Tasks	Frequency of performance									
	Daily		Daily and occasional weekly		Weekly		Monthly		Irregularly	
	no.	percent	no.	percent	no.	percent	no.	percent	no.	percent
Food preparation	39	100	-	-	-	-	-	-	-	-
Fetching water	39	100	-	-	-	-	-	-	-	-
Care of children	30	76.92	9	23.07	-	-	-	-	-	-
Care of house	2	5.13	37	94.87	-	-	-	-	-	-
Physical care of family members	28	71.79	11	28.21	-	-	-	-	-	-
Care of clothing	16	41.03	-	-	19	48.72	-	-	4	10.25
Shopping	2	5.13	-	-	24	61.54	6	15.38	7	17.95
Firewood Collection	7	17.95	-	-	18	46.15	-	-	14	35.90

maintenance task of mopping and/or cowdung coating of the floor. These families were regular in applying a coating of cowdung and water paste on the mud cooking range as a maintenance measure. These weekly tasks were performed once a week mostly on Fridays by 76.92 percent of the households. The rest, 17.95 percent of the households, did it twice a week on Fridays and Tuesdays.

Physical care of the family members consisted of food service to the members of the household, feeding, bathing, dressing and taking children to school and further putting them to sleep. In a few of the households, carrying food to the fields or work place for the working members of the households was a routined work. The weekly task of giving oil-bath to the children and/or preparing 'shikkai' (a suponifying fruit), the home made shampoo for washing hair by grinding the seed pods into a thin paste was carried out by 28.21 percent of the households.

Care of clothing was a daily task for 41.02 percent of the households while for 48.72 percent of them, it was a weekly task. On keen observation one tenth of the households were found to be not performing this task regularly.

Shopping was done almost daily by 5.13 percent of the households. Nearly two-thirds of the households purchased their household supplies once a week.

A fewer households had a monthly purchasing schedule. Only 17.95 percent of the households did not follow any time schedule for performing this task.

Collection of firewood from open land around the residential areas was a daily task for 17.95 percent of the households. Nearly one-half of the households attended to this work twice or thrice a week. One-third of the households did not have any specific schedule for this task as they used to store the firewood for several months together or purchase it as and when needed from the local sellers.

Considering the frequency of tasks performed by the households, all tasks mentioned in Table 20 could be confirmed as typical household tasks of the group. Tasks allied to finance management like budgeting and record keeping were not performed in any of the households.

Shopping was the only task performed by menfolk. In 51.28 percent of the households, this was done by menfolk while in the other families it was attended by the housewife only. In 41.02 percent families, boys and girls above 5 years of age helped in the collection of firewood. Cleaning of utensils, fetching of water from the water source, pounding and dehusking of cereals and attending to the physical needs of the younger ones

were the household tasks entrusted to girls above 10 years of age. In all the ten households the homemakers received assistance from their daughters who were over 10 years of age. Only in 5.13 percent of the households, sons were found to be assisting their mothers in feeding fuel into the hearth, fetching water from the source of supply and cleaning of utensils. Among the extended households all those having adult females other than the homemakers - (77.7 percent of the extended households) received only a nominal assistance from the mother-in-law and/or the sister-in-law. As the other members had been pre-occupied with care of livestock or family occupation, the responsibility of housekeeping fell normally on the homemaker. Help was rendered in these cases, only for cleaning of house, fetching water and care of children. None of the households had employed servants to attend to the household chores. As such, the housewife and her daughter above 10 years of age were found to be the main members performing household chores.

The hours of household work were found to be uniformly distributed between 6 a.m. to 8.30 a.m. and 5.30 p.m. to 8 p.m. The morning schedule was tight in all the houses mainly because the tasks were organised around the occupational schedule of the members of the household. By 9 a.m. at the latest, those engaged in family occupation or employed work used to be at their

job. About one-third of the homemakers used to attend to a portion of some of the pending tasks like fetching water and cleaning of utensils during their rest hours between 1 p.m. and 3 p.m. Three of the homemakers used these hours for pounding grains for evening meals. The homemakers were seen around their houses during these early afternoon hours to enable the milkman to milk the cattle. Evening work schedule also remained tight because every one was hungry and the children had to be fed before falling asleep. In the lower income group households, comparatively elaborate cooking was done in the evenings. A tendency to economise on the burning of oil lamps was found among them and reported as one of the reasons for hurrying up the evening meal preparation. By around 8 p.m. the household work day got over for all the households, unless otherwise forced by special circumstances.

Time spent in Household Tasks

Food Preparation

The households spent 7.7 to 37.8 hours a week in food preparation tasks (Table 21). On an average, it took 23.3 hours per week per household. This was estimated as 43.5 percent of a household's total household work time (Table 22). The percentage of time spent by the

households in attending to the food preparation tasks ranged from 21.7 to 57.8 with a median of 44.3 . The modal class with a frequency of 18 households had an interval of 41 percent to 50 percent. Thus it was evident that the households on an average spent around 44 percent of their total household work duration on this major time consuming task.

Fetching Water

To fetch water from the nearest source of supply, the households spent 2.1 to 9.1 hours with a mean of 4.7 hours a week (Table 21). The percentage of time spent on the task ranged from 3.8 to 15.5 with a mean of 8.9 (Table 22). The median values also were nearing the average values.

Care of Utensils

The time spent in this task ranged from 2.6 to 10.5 percent of the total household work hours of the households with a mean of 6.5 percent (Table 22). The average time-use per family was 3.4 hours a week (Table 21).

Care of house

The regular cleaning and care of house consumed 1.9 to 7.1 hours of the household's work week(Table 21). The average time spent in the task was 4.4 hours per week per household. Fifty percent of the households

TABLE 21

Average Time spent in different Household Tasks

Household task	Range	Hours per week Mean	Standard deviation	Median
Food preparation	7.7-37.8	23.3	5.96	23.8
Fetching water for domestic use	2.1-9.1	4.7	1.97	4.2
Care of utensils	1.4-6.5	3.4	1.45	3.0
Care of House	1.9-7.1	4.4	1.43	4.0
Physical care of family members	4.2-28.0	10.7	5.89	9.8
Care of clothing	0.0- 7.0	2.0	3.38	1.2
Shopping	0.0- 5.6	2.5	3.04	3.0
Collection of firewood	0.0- 7.0	2.4	4.74	2.1
All tasks	35.0-84.6	53.4	11.16	53.4

spent only less than 4 hours a week on this task.

The percentage distribution of household work hours on the task ranged from 3.8 to 14.6 with a mean of 8.2 (Table 22). The variability in values was comparatively less for this task. The median values were also closer to the average values and indicated that the mean was a representative estimate of group's time-use on the task.

TABLE 22

Percentage of Household work Hours spent in different Household Tasks

Household Task	Percentage of time spent Mean	Median
Food preparation	43.5	44.3
Fetching the water	8.9	8.8
Care of utensils	6.5	5.8
Care of house	8.2	8.0
Physical care of family members	20.1	17.8
Care of clothing	3.7	2.3
Shopping	4.7	5.5
Firewood collection	4.4	4.1

Physical Care of Family Members

The pattern of distribution of time on household work revealed that physical care of family members was the second most time consuming household task(Table 21). The households' time-use in the task ranged from 4.2 to 28.0 hours a week with an estimated mean of 10.7 hours. The broad range of 23.9 hours a week and the high standard deviation value indicated that the time-use in the task varied a lot among households. Fifty percent

of the households had spent 9.8 hours or less time per week on this task.

The time distribution for the task ranged from 9.3 to 41.5 percent of the total household work week (Table 22). The average time apportioned for the task was 20.1 percent of the total household work hours. More than sixty percent of the households spent less than the average of 20.1 percent of the total household work hours on this task.

Care of Clothing

One-tenth of the households did not spend any specific time on this task. So the households' time-use ranged from 0 to 7 hours with a mean of 2.0 hours a week (Table 21). The time apportioned for the task ranged from 0 to 16 percent of the total household work duration (Table 22). Only a little more than one half of the households had spent less than the average hours on this task. The average figures indicated that this was the least time demanding task for the households. About two-thirds of the households had spent less than the average duration of 3.7 percent of the household work hours on this task.

The reasons contributing to low time-use on care of clothing were (1) the traditional practice of getting clothes washed by the dhobi (washerman) (2) the comparatively small number of garments worn by the adults

and children or the simplicity in their dressing (3) the few number of garments possessed by a household and (4) the habit of individual members washing their clothes themselves in about one-third of the houses. In many cases, the women had just two sets of dresses, of which one used to be with the dhobi while the other one was being worn by the individual. At the time of observation, the family that reported a time-use of one hour a day on which was estimated to be around twenty percent of their total household work timings had a new born infant and hence their time-use on washing of clothes was much higher than that of the others. The rest of the households had spent only less than 7.8 percent of their household work timings on this task.

Shopping

In 17.95 percent of the households marketing was not performed regularly. The rest of the households spent 1.0 to 5.6 hours a week on this task. As the household supplies were not available in the village or in its vicinity, the family members had to walk a long distance or go by bicycle or bus to get the supplies from the markets located at 4 to 16 kilo meters distance. One-third of the households reported clubbing of the task with the family members' visits to the markets in connection with their occupational work. So in these cases, the time

additionally spent for making the purchases alone could not be accounted for. This was the reason for a low time-use on this task by a few households. The average time-use on the task, which was much less than the median value, was 2.5 hours a week i.e. 4.7 percent of the total household work time.

Collection of Firewood

Two-thirds of the households had been attending to this task regularly. The time spent on this task ranged from one to seven hours a week for these households (Table 21). On an average, the households spent 2.4 hours a week on this task. The task with a range of 0 to 13.2 percent of the total household work hours, consumed on an average 4.4 percent of the total household work hours of a family (Table 22). In spite of 36 percent of households not performing this task regularly, the group average was higher than that spent on care of clothing.

All Household Tasks

For the chosen families, the total household work hours ranged from 35.0 to 84.6 hours a week (Table 21). The average time spent by a household was 53.4 hours a week i.e. 7.6 hours per day. The median was very near to the average values and so the average referred here was typical and representing the group's time-use.

The variations in the households' time-use on household work were very high. The range of 49.7 hours a week and the standard deviation of 11.16 indicated this characteristic of household work and posed the need for looking for the factors directly associated with this task timings and come up with a closer homogenous group. Such groups, if found, the average can be validly referred to as their norm for the task.

Variables Affecting Time-Use in Household work

The variables chosen for testing the differences in the average time-use of households on household tasks were the same as those examined with the interview data. Among the socio-economic variables only family size and type had shown significant differences in the time-use of households on household work (Table 23). The nuclear households spent less time on household work compared to the extended households. Similarly the small sized households spent less time compared to the large sized ones. Further examination of the time used by small and large sized nuclear as well as extended households revealed that the large sized extended households spent the highest time on household work followed by small sized extended households and then the large sized nuclear households. The small sized nuclear households spent on an average

TABLE 23

Average Time Spent in Household Work as related to specific Variables[†]

Variables	No.of house-holds.	Mean hours per week.	Standard deviation.	F. Value
Caste:				0.53 NS
Dominating castes	28	54.8	12.3	
Service castes	5	51.6	6.9	
Scheduled castes	6	49.6	5.9	
Type of household:				4.32*
Nuclear	30	51.5	8.9	
Extended	9	60.0	14.7	
Size of household:				5.37*
Small (2-5 members)	29	51.4	10.4	
Large (6-10members)	10	59.2	11.2	
Occupation:				0.66 N.S.
Agriculture	14	56.1	7.9	
Caste bound work	4	52.3	7.7	
Daily labour	13	50.1	11.0	
Non farm work	8	54.8	14.4	
Income:				0.66 N.S.
Very low	7	49.0	6.1	
Low	17	51.1	11.9	
Middle	8	55.5	7.8	
High	7	61.2	12.1	
All Households	39	53.4	11.2	

N.S. not significant * Significant at .05 level

[†] Worker variables did not reveal any significant association with time used in household work.

50.9 hours a week on household work as against 64.3 hours a week by large sized extended households.

Comparison of the average time-use of families by different income groups revealed a higher time-use by those in higher income stratum and a lower time-use by those in the lower income stratum. An obvious explanation is that low income groups had less money for consumption activities and hence less time was needed for household work. Among the occupational groups, the land owning families had the highest average timings while the daily labourers' households had the lowest. However, with reference to these variables, the difference in the means was not significant.

Variables Affecting Time-use in Food Preparation

The average time spent by the nuclear and extended households in preparing their meals differed significantly ($F = 6.38 > .01$ level, d.f. = 137). The nuclear households on an average spent 22.1 hours while the extended households spent 27.2 hours a week on this task (Table 24). The other variables did not indicate any significant differences in the households' average time-use in performing food preparation tasks.

The percentage of household work time spent in performing food preparation tasks varied for different

TABLE 24

Average Time-use of Households in Food Preparation as Related to Specific Variables

Variables	Number of households	Mean hours/ week	Standard deviation	F. Value
Caste:				0.18 N.S.
Dominating	28	23.2(42.4)	6.0	
Service	5	24.6(47.8)	3.3	
Scheduled	6	22.6(45.6)	4.8	
Type of Household:				6.38*
Nuclear	30	22.1(42.9)	4.8	
Extended	9	27.2(45.4)	6.4	
Size of Household:				3.99 N.S.
Small	29	22.2(43.2)	5.5	
Large	10	26.3(44.3)	5.0	
Occupation:				0.28 N.S.
Agriculture	14	24.3(43.3)	3.1	
Caste bound work	4	23.3(44.5)	5.1	
Daily labour	13	22.2(44.3)	7.1	
Non farm work	8	23.3(42.5)	6.8	
Income:				1.27 N.S.
Very low	7	20.9(42.6)	4.0	
Low	17	22.7(44.4)	5.8	
Middle	8	23.7(42.7)	4.7	
High	7	26.6(43.4)	6.0	
All Households	39	23.3(43.6)	5.6	

Figures in brackets indicate percentage of household work hours.

N.S. = Not significant * Significant at .05 level

socioeconomic groups. The averages ranged from 42.4 percent to 47.8 percent of the household work hours. The service caste households, on an average, spent the highest percentage of time in food preparation tasks while the households of the dominating castes spent the lowest. A lower time-use by a household or a specific group was not necessarily accompanied by a lower percentage of time-use on the specific task as the latter values varied according to the other tasks performed by the households and the hours allotted for each. The same was evident with the households of different castes, occupation and income stratum.

Further, to identify the situational factors related to time-use on meal preparation, the type of meals prepared during the study period of 78 days and the time used for preparing each type of meal were examined(Table 25). Totally 154 times, the meal preparation task was performed by the group. Coffee, the common beverage of the area was not included in any meal and its preparation as a beverage was observed 29 times. This beverage was prepared once a day, every morning in 20 percent of the households and twice daily in 7.6 percent of the households. One family prepared it once in two days.

The type I meal comprising of a simple, single cereal preparation with or without an easy to prepare side dish like 'chutney' or 'thuvayal' or 'rasam' was prepared

TABLE 25

Time taken by the Households in the Preparation of the different Types of Meals

Meal and Menu	Number of observation	Average time-use (in hours)	Standard deviation	Range
Type I				
Jowar 'Kali' with/without rasam/chutney	30	1.4	0.12	0.8 -2.3
Bajra kali with/without 'chutney or rasam	10	1.6	0.09	1.2 -2.0
Rice(plain)with/without rasam/chutney	15	1.0	0.08	0.5 -1.4
Uppuma/ragi dosai/ragi roti/wheat dosai	8	0.6	0.02	0.4 -0.8
Type II				
Jowar 'kali' with a side dish.	25	2.1	0.33	1.3 -3.8
Bajra 'Kali' with a side dish	8	2.0	0.10	1.5 -2.3
Rice/ragi 'kali' with a side dish	42	1.7	0.14	1.0 -2.6
Type III				
Rice/Jowar'kali'/bajra 'kali' with 2 side dishes	7	2.7	0.77	1.7 -4.2
Type IV				
Iddli/dosai/'idiappam' with a side dish	9	1.9	0.10	1.5 -2.5
Coffee	29	0.3	0.004	0.2 -0.5

63 times during the study period. The households took, on an average, 1.2 hours for its preparation. Plain jowar 'kali' took 1.4 hours while the same dish with bajra took 1.6 hours . Rice which needed not much pre-processing like pounding or breaking took only 1 hour for its preparation. The other cereal preparations under this type of meal were 'uppuma' with suji and dosai and roti prepared of ragi flour. As the cereals had been kept readily processed for immediate use, the time demanded for preparing these simple dishes was the lowest. The households took on an average 0.6 hours for preparing these items.

Type II meals were little more elaborate compared to type I meal and had a side dish added to it. During the whole period of observation, the households prepared this type of meal 75 times. On an average the group took 1.8 hours for preparing this meal. Rice with a side dish took 1.7 hours while similar meals with jowar/bajra took 2 hours or more.

The type III meals comprising type I meal plus two side dishes were less popular among the households. This type of meal was prepared only 7 times during the study period. The meal took on an average 2.7 hours for its preparation.

Type IV meals consisting of iddli, dosai or 'idiappam' with chutney as the side dish were prepared once a day for breakfast or twice including for supper by 18 percent of the households, counting altogether its preparation 9 times during the survey period. The average time taken for preparing this type of meal was 1.9 hours. On an average 0.8 hours were spent in preparing the batter for the dishes by manual grinding of the ingredients.

The mealwise analysis of the time-use in food preparation revealed that the amount of time spent in food preparation varied greatly according to the complexity of the meals - the number of dishes prepared at a time and the type and amount of work involved in the pre-preparatory process. Meals with rice demanded comparatively less time than that with jowar and bajra. In the preparation of 'kali' these preparational tasks took on an average 0.5 hours.

The range of time spent by the households in preparing each type of meal indicated that in addition to the complexity of the meals there were other factors also contributing to variations in time demands in meal preparation. For example for preparing type II meal, the time taken ranged from 1.0 to 3.8 hours. Part of the variability could be accounted because of the variations in the grains used while the rest might be due to the differences in the time demands of the side dishes chosen, simultaneous performance of tasks, speed of the worker,

TABLE 26

Average Time-use of Households on Meal Preparation Based on Selected Situational Factors

Situational Factors	Average Hours per day	Standard Deviation	F Value
Frequency of meal preparation.			8.68**
Once	2.5	0.7	
Twice	3.3	2.5	
Thrice	4.3	0.9	
Type of menu(whole day's)			14.35**
Very simple	2.4	0.7	
Simple	3.3	0.8	
Elaborate	4.6	0.6	
All observations	3.3	1.3	

**Significant at .01 level

variations in the quantity of food prepared based on family size and whether the dish was prepared for one, two or more meals, the quality of firewood used and variations in stocks of food grains. These variations could not be controlled in a normal home setting. Only through randomisation of the households, could these variables be normalized.

Families preparing meals once a day spent on an average 2.5 hours per day on meal preparation while those preparing the same thrice a day spent 4.3 hours (Table 26). The majority of the households used to prepare the meals

twice a day and their average time-use on food preparation was 3.3 hours a day. The difference in the mean hours of meal preparation was significant ($F = 8.68 > .01$ level, d.f. = 2.75). It was observed that the majority of the families preparing meals thrice a day had a fairly elaborate menu while those preparing meals once a day had only type I or type II meals except in one case. So this too in a way indicated that complexity of the meals was attributing to variations to time-use.

Categorisation of the whole day's menu into very simple, simple and elaborate ones based on the number and types of meals prepared each day, enabled comparison of the day's time-used based on this factor (Table 26). The average time-use of households in preparing different types of meals indicated a significant difference at .01 level as indicated by the F Value of 14.35 for a d.f of 2,75. The households preparing very simple menu spent on an average 2.4 hours a day while those preparing elaborate menu spent nearly double the time on this task.

The single household of the dhobi in the selected group had spent, in addition to the time spent in actual meal preparation 1.1 hours a day to collect cooked food from the clients. This was reported as their routine practice and was noticed on both the days of observation. This time-use was included under food preparation task for this household.

Thus the major situational factors allied to time-use in food preparation was the complexity of the meals prepared by a family. This was confirmed at 99 percent level of confidence with the data collected from the present sample. As none of the socio-economic factors had indicated highly significant differences in the time-use of the families, the group mean could be accepted as the time norm for the task.

Variables Affecting Time-Use in Fetching Water

The time spent, on an average, by the households of different types and sizes differed significantly (Table 27). The nuclear households spent 4.3 hours a week on this task while the extended households spent 6.1 hours. A similar difference was noticed in the average time-use of small and large sized households. The percentage comparison of the household work hours spent in this task also indicated a similar difference between the nuclear and extended households and the small sized and large sized households. None of the other socio-economic variables indicated any significant differences in the time-use of families in fetching water.

The situational factors linked to fetching water were the source of water supply - tap or well and the quantity of water collected daily. The mean time-use of

households in fetching water from wells or taps did not differ significantly. The households collecting daily 100 litres or less quantity of water spent 4.4 hours a week i.e. 8.2 percent of their total household work hours while those collecting 101-200 litres of water spent 5.4 hours a week, i.e. 9.8 percent of their household work hours. The households collecting more than 200 litres of water a day were very few and their average timings on the task was the highest-7.0 hours a week or 13.3 percent of the total household work timings. The difference in means was found to be significant at .05 level and indicated that the quantity of water collected daily affected the time-use of households on the task, irrespective of the source from which it was collected.

Observations in the study area revealed that the time-use of households collecting water from taps did not differ much from those collecting the same from wells. The waiting in queues along the water taps during the restricted hours of water supply and larger quantum of water collection was common when collected it from taps. The array of water pitchers placed in front of taps just before the commencement of water supply helped them in saving time for filling the first set of water pitchers. But for the subsequent filling, one had to wait for her turn again. The scarcity problem arose because of the

TABLE 27

Average Time-Use of Households in Fetching Water for Domestic Use

Variables	Number of households	Average hours per week	Standard deviation	F Value
Social Variables				
Type of Household				7.48**
Nuclear	30	4.3 (8.3)	2.1	
Extended	9	6.1(10.2)	1.4	
Size of Household				6.18*
Small	29	4.3 (8.4)	1.5	
Large	10	6.0(10.0)	2.3	
Situational Variables				
Source of water supply				0.21N.S.
Tap	8	4.5 (8.9)	4.8	
Well	31	4.8 (8.8)	1.8	
Amount of water consumed daily (in litres)				4.51*
Upto 100	28	4.4 (8.2)	1.8	
101 - 300	11	5.7(10.5)	1.6	
All Households	39	4.7 (8.9)	1.9	

Figures in brackets indicate percentage of household work time.

N.S.=Not Significant

* Significant at .05 level

** Significant at .01 level

electricity cut at state level, at the time of data collection.

Variables Affecting Time-use in Care of Utensils

On care of utensils, the extended households spent, on an average 4.4 hours as against 3.2 hours a week by the nuclear households (Table 28). The difference in means was found to be significant at .05 level ($F=6.17 > .05$ level, d.f. = 1,37). The percentage of time spent on the task also indicated the same trend of higher apportioning of time by extended households.

Neither the percentage of time allocated for the task nor the average time-use on the task differed much for the small and large sized households. The average time-use of the households of the different occupational groups differed significantly ($F = 3.87 > .05$ level, d.f. = 3,35). The agricultural households spent on an average 4.1 hours a week i.e. 7.3 percent of their total household work duration while the households of the caste bound workers spent 2.8 hours a week or 5.4 percent of their household work duration per week. The averages of daily labourers' households and non-farm workers' households were in-between that of the two groups' averages.

TABLE 28

Time-use of Households in Care of Utensils as related to specific variables

Variables	No.of house-holds	Average hours per week	Standard deviation	F value
A. Socioeconomic variables				6.19*
Type of Household				
Nuclear	30	3.2(6.1)	1.3	
Extended	9	4.4(7.4)	1.6	
Size of household				0.35^{NS}
Small	29	3.4(6.5)	1.4	
Large	10	3.7(6.2)	1.5	
Occupation				3.87*
Agriculture	14	4.1(7.3)	0.7	
Castebound work	4	2.8(5.4)	1.2	
Daily labour	13	3.0(6.1)	1.6	
Non-farm work	8	3.6(6.5)	1.3	
Income				3.30*
Very low	7	2.9(6.0)	1.4	
Low	17	2.9(5.7)	1.6	
Middle	8	4.4(7.9)	1.3	
High	7	4.2(6.9)	1.3	
B. Situational Variable				7.78**
Number of utensils washed daily				
Less than 20	14	2.6(5.0)	1.1	
21 - 30	20	3.8(6.8)	1.3	
31 and more	5	4.8(8.8)	1.2	
All households	39	3.4(6.5)	1.5	

** Significant at .01 level * significant at .05 level
Figures in brackets indicate percentage of total household work time.

The average time-use on care of utensils varied significantly for different income groups ($F=3.30 > .05$ level, d.f. = 3,35). The lower income groups spent on an average 2.9 hours a week on this task while the households in the middle income group spent 4.4 hours and the high income group 4.2 hours. The percentage of time spent on the task ranged for each of the groups from 5.7 to 7.9 with the lowest values for low income group households and vice-versa.

Depending on the number of utensils washed daily in the house, the time taken for the task differed. The households cleaning fewer than 20 pieces a day spent 2.6 hours a week as against 3.8 hours for those washing 21-30 pieces of utensils and 4.8 hours for those washing more than 30 utensils. The proportionate time-use on the task also ascended from 5.0 percent to 8.8 percent of the total household work time along with increase in the number of utensils cleaned during the days' of observation. The difference in means was significant ($F = 7.78 > 0.1$ level, d.f. = 2,36).

Research studies have shown that time required for cleaning and care of utensils varied for different base materials (Sugirathavathi, 1964). This could not be studied with the present data as the number, size, shape and base materials of the utensils used for meal preparation and service differed a lot from one house to another.

Many other variables like the efficiency of worker, standards of cleanliness, the type of soiling and deposits on the utensils to be washed, the differences in the facilities for dish washing - all played a part in producing variability in the time cost of dish washing and their care. The association of any of these factors could not be examined with the present data on account of the difficulty in measuring these variables without a valid measuring instrument. Further, the variables are randomly distributed in a sample and so do not affect differences in time-use or the time norm as such when a large population is randomly chosen.

The group's average, as such could be referred to as the norm of the task on account of low variability in the task timings and closeness of the same to the other measures of central tendency - median and mode. Based on the data 3.4 hours a week which constituted 6.5 percent of the total household work hours could be accepted as the households' norm for the task.

Variables Associated with Time Used in Care of House

Income and caste difference showed significant differences in the average time-use of the households on the care of house (Table 29).For caste groups the F value was significant at .05 level for d.f.= 2,36.The lowest two

income groups had significantly lower averages compared to those in the two higher income categories ($F = 3.27 > .05$ level, d.f. = 3,35). Other variables had not shown any significant difference in the time-use for the task.

The survey findings showed that the situational factors related to time-use in care of a house were the type of house in which the family lived and the area of the house. Both the factors also showed significant differences in the time-use of households on care of house when assessed through observations. As the floor area of the house increased, the average time-use in care of house also increased. However, the households living in pucca houses had spent more time in care of house compared to those living in huts and kutcha buildings.

Examination of the housing condition of the households of the different caste groups revealed that all the households of Harijan caste were living in kutcha houses and 80 percent of the service caste households in either huts or kutcha houses. Nearly one half of the households (46.4 percent) of the dominating castes were living in pucca houses that demanded generally more time on their care. Further analysis of the floor space of the dwellings of different caste groups revealed that only dominating

TABLE 29

Average Time Spent in Care of House as Related to Specific Variables

Variables	Number of house-holds.	Average hours per week.	Standard deviation	F Value
A. Socio-economic variables				
Caste				3.35*
Dominating castes	28	4.7(8.5)	1.5	
Service castes	5	3.0(5.8)	0.5	
Scheduled castes	6	4.1(8.2)	0.8	
Income				3.27*
Very low	7	3.9(6.0)	0.9	
Low	17	3.8(5.7)	2.1	
Middle	8	5.2(7.9)	1.3	
High	7	5.2(11.5)	1.3	
B. Situational Factors				
Type of house				3.57*
Hut	5	3.2(6.6)	1.3	
Kutcha.	20	4.2(8.1)	1.1	
Pucca	14	5.0(8.8)	1.5	
Floor area (in sq.ft.)				6.15**
250 and less	25	2.4(5.0)	1.0	
251 - 500	9	4.3(8.0)	1.6	
501 and above	5	6.3(9.8)	0.6	
All households	39	4.4(8.2)	1.4	

Figures in brackets indicate percentage of house-hold work

* Significant at .05 level ** Significant at .01 level

castes lived in houses having a floor space of more than 500 sq.ft. The proportion of households occupying houses with 250 - 500 sq.ft. floor area was also considerably high among the dominating caste groups.

Incomewise analysis of the housing condition of the households revealed that occupancy of large pucca houses with 500 and more sq.ft. floor area was common among the high income group. The majority of the low income group households lived in kutcha houses with a floor space of 100 - 250 sq.ft. Thus the situational factors causing significant differences in time-use of households on care of house were found to be contributing also to the differences in the time-use of households of different socioeconomic groups.

The higher the average hours reported by a group, the higher was their percentage of time-use out of total household work hours in this task. The different categories of households spent on an average, 5.0 to 11.5 percent of their total household work hours on the task. The group average of 8.2 was exactly the mid point of the subgroup's mean interval and hence was a representative central measure.

Variables Associated with Time-use in Care of Family

The comparison of means had shown a higher time-use by (1) the households of the dominating castes,

compared to the other two caste groups, (2) extended households compared to nuclear households, (3) large sized households compared to small sized ones (4) non-farm workers' households and farming families compared to the other occupational groups, (5) high income group households compared to the lower income group households, (6) families with more than three children compared to single child households and childless households and (7) households with younger children compared to those having older child (Table 30). But in none of these cases the difference in means was statistically significant. The analysis thus revealed that the task timings varied from household to household but not specifically based on the socio-economic or demographic variations of the families.

Variables Associated with Time-Use in Care of Clothing

The households of the dominating caste spent spending 2.3 hours a day as against 1.1 hours a week by the households of the service caste and Harijan community. (Table 31). A difference of 0.3 hours was noticed in the average time-use of households of different types and sizes. The non-farm workers' households on the whole reported 3.6 hours a week as against 1.1 and 1.6 hours a week by the households of the other three occupational groups. The households in the highest income range were

TABLE 30

Average Time Taken by the Households on Care of Family as related to Selected Variables

Variables	Number of households	Average hours/ week	Standard deviation	F Value
Caste				1.36 N.S.
Dominating caste	28	11.6	6.1	
Service caste	5	9.9	6.8	
Harijans	6	7.3	2.1	
Type of household				0.45 N.S.
Single	30	10.4	5.4	
Extended	9	12.0	7.4	
Size of Household				
Small	29	10.1	5.7	
Large	10	12.5	6.4	
Occupation				0.69 N.S.
Agriculture	14	11.6	6.1	
Caste bound work	4	10.0	7.6	
Daily labour.	13	9.1	4.9	
Non farm work	8	12.4	5.6	
Income				0.21 N.S.
Very low	7	9.7	4.1	
Low	17	10.4	7.7	
Middle	8	11.2	4.3	
High	7	12.1	3.2	

TABLE 30 (Cont'd)

Variables	Number of house-holds	Average hours/ week	Standard deviation	F Value
Number of Children				0.51 N.S.
None	5	10.3	3.8	
One	9	9.9	6.0	
Two	13	10.4	5.3	
Three plus	12	12.0	6.9	
Age of youngest child				1.97 N.S.
Upto 1 year	6	14.8	9.4	
1 - 3 years	7	13.0	4.8	
4 - 6 years	7	10.0	2.6	
7 - 10 years	7	7.6	2.8	
10 - 15 years	7	9.4	6.2	
All Households	39	10.7	6.0	

N.S. Not significant

using on an average 3.7 hours a week as against one-fourth of the time by the middle income group households and one-half of the time by the lower income groups. The difference in the mean time-use of the households of the four income categories alone was found to be statistically significant.

The middle income group households were found to be relying highly on the dhobi for washing of clothes probably due to a high level of conservatism. The households

TABLE 31

Average Time-use of Households on Care of Clothing as related to Selected Variables

Variables	Number of house-holds	Average hours/ week	Standard deviation	F value
Caste				$1.48^{N.S.}$
Dominating	28	2.3(4.2)	2.1	
Service	5	1.1(2.2)	0.2	
Scheduled	6	1.1(2.3)	0.5	
Type of family				$0.14^{N.S.}$
Single	30	2.0(4.2)	2.3	
Extended	9	1.8(2.9)	1.9	
Size of family				$0.18^{N.S.}$
Small	29	2.1(4.0)	1.9	
Large	10	1.8(3.0)	1.8	
Occupation				$2.83^{N.S.}$
Agriculture	14	1.6(2.9)	1.4	
Caste bound work	4	1.1(2.1)	0.2	
Daily labour	13	1.6(3.3)	1.7	
Non-farm work	8	3.6(6.6)	2.5	
Income				$3.2^{N.S.}$
Very low	7	1.6(3.2)	0.7	
Low	17	1.9(3.7)	1.7	
Middle	8	0.9(1.7)	1.3	
High	7	3.7(6.0)	2.5	
All Households	39	2.0(3.7)	1.9	

Figures in brackets indicate percentage of hours spent

* N.S. Not significant

of the highest income stratum were resorting to home washing for the children's garments and garments made of synthetic fibres. Only those used for regular wear and the ones which required special washing like silk sarees were given to the washermen for proper cleaning. The lower income groups were found to deviate partly from the traditional practice of getting clothes washed by the dhobi on account of rising demands from washermen and non-availability of washermen in the majority of the villages to wash Harijan's clothing.

The mean interval of the percentage of time spent on care of clothing by different sub-groups with socio-economic differences was 1.7 to 6.6. The highest averages were found for the households of the high income groups and non-farm workers. The lowest percentage of time-use was reported for the middle income group households. Thus the findings with reference to the actual time-use was applicable to the proportionate time allotment also.

Variables Associated with Time-use in Shopping

None of the socioeconomic variables except caste difference showed significant differences in the time-use of the households on this task(Table 32). The households of the service and scheduled caste spent 1.0 to 1.1 hours more a week on regular shopping compared to the households

of the dominating castes who practised mostly monthly purchases and combining of household purchases with occupational visits to the market.

The percentage of household work time spent on shopping was the lowest for the dominant castes and highest for scheduled castes. This also indicated the same trend as that of actual hours spent.

TABLE 32

Average Time-use of Households on Shopping Related to Caste

Caste groups	Number of house-holds.	Average hours/ week	Standard deviation	F value
Dominating	28	2.2(4.1)	1.5	
Service	5	3.2(6.2)	0.6	
Scheduled	6	3.3(6.7)	0.5	
All households	39	2.5(4.7)	1.4	4.28*

Figures in brackets indicate percentage of household work hours.

* Significant at .05 level

Variables Associated with Time-use in Collection of Fire-wood

Average time spent on the collection of firewood showed significant variation among households of different occupational groups(Table 33). The non-farm workers'

TABLE 33

Average Time-use of Households on collection of Firewood related to Family Occupation

Occupation	Number of house-holds	Average hours/ week	Standard deviation	F Value
Agriculture	14	2.6(4.6)	3.0	
Caste bound work	4	4.9(9.4)	1.2	
Daily labour	13	2.2(4.5)	2.2	
Non-farm work	8	0.9(1.6)	2.3	
All households	39	2.4(4.4)	2.1	3.82*

Figures in brackets indicate percentage of household work hours.

*Significant at .05 level

households except one engaged in a very low income yielding job were in the habit of purchasing firewood and hence spent a considerably low time on the task. The caste-bound workers' households spent the highest time on the task because of the need for specific allocation of a day's time for performance of this task compared to the daily wage earners' and agricultural households' who could partly club the task with their occupation. None of the other demographic variables - caste, family type and size and income showed any significant difference in the time-use of households on these tasks.

The non-farm workers' households spent the lowest percentage of their household work hours in collecting firewood for domestic use. The agricultural households and daily wage earners' households spent an almost similar percentage of time on this task while the caste-bound workers' households spent more than double this duration. They spent 9.4 percent of their household work time in collecting firewood. As their proportion was too small in the sample, no generalisation could be made on the basis of this finding.

Summary of the Variables Associated with Household Work Time

The analysis of the variables significantly associated with the time-use on household tasks showed that family type was the single variable that showed significant differences in time-use on 3 major tasks and the activity in total. The average time-use of households of nuclear and extended families differed significantly for household work in totoal, food preparation, fetching water and care of utensils (Tables 23, 24, 27, 28).

Significant differences were found in the time-use of small sized and large-sized households in the case of total households work and fetching water (Tables 23 and 27). Incomewise, differences were significant in the households' time-use on care of utensils, care of house and care of

clothing (28,29,31). Caste, the dominant factor affecting the life of people in a rural setting had shown significant differences in the households' time-use on care of house and shopping (29,32). Occupationwise, significant differences were noticed in the time expenditure of households on care of utensils and collection of firewood(29,32).

The situational factors specifically found to be associated with time-use on food preparation were the type of menu and frequency of meal preparation (Table 26). Time spent in fetching water was significantly associated with the amount of water consumed daily (Table 27). Time spent on care of utensils varied significantly according to the number of utensils washed (Table 28). On care of house, the average time spent by the groups varied significantly according to the floor area of the house (Table 29).

The estimated F-values indicated how highly associated each of the variables examined was with time-use in performing household tasks. The greater the estimated value than the corresponding table values at .01 level of significance, the higher is the significance of the variable to the dependent variable : time-use in household work. None of the socio-economic variables indicated a significant difference with very high estimated values. Rather, all values, except one estimated for time-use in fetching water related to household type, were not

significant at 99 percent level. So the entire group's average time-use on each of the task can be very well referred to as the norm of the task.

The fact that situational factors were very significantly associated with time-use in specific household tasks indicates the need for establishing time norms of a task with reference to the work load. Time norms of meal preparation need to be stated for different types of meals. Similarly the time norms for cleaning and care of house have to be stated in relation to the area of the house. Time norms of care of utensils can be validly stated with reference to the number of utensils washed. This sort of estimetes gives a very clear view of the tasks involved .

Technique III : Simulation

The data collected through observation of the food preparation experiments performed in a simulated house environment, were analysed to study in detail the extent and pattern of time-use of the chosen group on this task. The analysis was done worker-wise and task-component-wise for each type of meal to get a clearer view of the situational factors that produce variations in time-use in meal preparation. The environment was simulated through adoption of the most typical type of

choola, kitchen arrangement, cooking utensils and equipment, the type and amount of food stuffs and the method of preparation so as to obtain the time budgets very similar to that of the group.

Time Taken for Preparing Type I Meal

To prepare type I meal comprising a single cereal preparation - boiled rice, bajra 'kali' or jowar 'kali' with one kilogram of raw ingredients, it took, on an average 70 minutes (Table 34). The average time taken for each of the cereal preparations varied considerably. Plain rice preparation took 60.5 minutes while bajra 'kali' with equivalent quantity of raw ingredients took 67.2 minutes. 'Kali' prepared out of jowar took 82.6 minutes. This time variation indicated variability in time-use in the preparation of type I meal with changes in the grains used. The time variation occured here in spite of using the same stock of bajra, rice or jowar for each experiment.

The time taken for the preparation of each item, when examined in terms of the subtasks like pre-preparatory tasks, cooking, and post-cooking tasks, revealed that for each variety of cereal, the time required for these operations varied. For rice, 14.2 percent of the total time was spent in pre-preparatory tasks while for jowar it was 44.74 percent

TABLE 34

Time Taken for Preparing Type I meal Based on Four Observations for Each Item

Subtasks and elements	Average time in minutes.				Percentage of time spent			
	Plain rice	Bajra 'kali'	Jowar 'kali'	Type I meal	Plain rice	Bajra 'kali'	Jowar 'kali'	Type I meal
Preparatory tasks:								
Collecting the requirements.	2.7	3.4	1.7	2.6	4.46	5.06	2.06	3.71
Cleaning of grains	5.9	4.7	4.1	4.9	9.75	6.99	4.96	6.99
Pounding and sorting	-	13.9	31.2	15.0	-	20.68	37.77	21.40
Totaling	8.6	22.0	37.0	22.6	14.22	32.74	44.79	31.95
Cooking tasks:								
Boiling	53.7	40.3	40.6	44.8	88.76	59.97	49.15	63.91
Post cooking tasks:								
Cleaning the area and utensils.	4.1	4.9	5.0	4.7	6.78	7.29	6.05	6.70
Total for the whole meal	60.5	67.2	82.6	70.1	100.00	100.00	100.00	100.00

of the total time. For bajra, nearly one-third of the total time was taken just for preparing the cereal by cleaning, pounding, sorting and the like. The additional element in the preparatory task namely pounding, winnowing and sorting in the preparation of 'kali' accounted for the increase in the time demands of the cereal preparations with jowar and bajra.

Dovetailing of certain elements of the cooking task with other elements reduced the total meal preparation time. In the case of rice, cleaning of grains while water was being warmed up for its cooking enabled the workers to reduce the total time demand. With bajra and jowar, no such dovetailing was possible and so whatever time the workers spent on each element had to be just added to compute the total time-use on the work.

It was also noticeable that each time, just before cooking, one had to spend 2 to 5% of the total time i.e. 4.1 to 5.9 minutes on an average for cleaning the grains especially for separating the stones and foreign materials.

The time required for cooking varied for different grains as well as for the same grain especially in the case of 'kali', depending on how finely the grains were broken by pounding and grinding. Workers who had spent more time in pounding the cereal spent less time on its cooking.

Cooking time for each variety of cereal also varied- jowar and bajra took almost the same cooking time while rice took more time.

Post-cooking tasks comprising cleaning of the work area and cleaning of the utensils consumed around 4.1 to 5 minutes per preparation. In spite of the less number of utensils used for preparing this simplest dish, the time spent in cleaning accounted for 6.7% of the total time.

Further analysis of the time budgets of the four different workers revealed that there were variations in their time-use even in the preparation of the same dish. The simpler the preparation, the less was the time variation and vice-versa. In the preparation of rice, the time variations between the workers was of 0.6 to 3.0 minutes while it was much more (3.9 - 10.2 minutes) in the case of bajra 'kali' and 4.3 to 9.3 minutes for jowar 'kali'. The variations in the time-use of each worker were specifically noticed in specific elementary tasks like cleaning, pounding and sorting and cooking. The differences in the standards of the endproduct and the speed of the worker accounted for the variability in time-use.

In the preparation of a type I meal that took 70.1 minutes on an average, only one-third of the time was spent in its actual cooking. The rest of the time was

spent in performing mainly the pre-preparatory tasks. The greater share of time expenditure on the prepreparatory tasks in these simple preparations indicated the need for eliciting details on this part of the task while estimating time demands of food preparation.

The analysis, on the whole, revealed that even for the simplest meal preparation, variability in time-use was quite possible. Factors associated with worker and the work appeared to have brought in the major share of variations in the time-use on the meal.

The type II meal comprised one of the cereal preparations in the type I meal and a side dish - a vegetable preparation (Table 35). As the side dishes reported by a large share of the respondents of the survey sample were sambar, tamarind gravy, dhal gravy and 'keerai massial', these items were chosen as the side dishes. Each worker prepared a full meal comprising a cereal dish - plain rice/bajra 'kali'/ jowar'kali' and one of the side dishes.

To prepare a meal comprising rice and a side dish, the workers took, on an average, 97.5 minutes, i.e. 37 minutes in excess compared to what they took to prepare plain rice. The time taken by the workers ranged from 89 to 120 minutes. This broad variation in time-use was partly due to the simultaneous cooking of the main and side dishes and partly due to the

TABLE 35

Time Taken for Preparing TypeII Meal based on Four Observations for Each Item

Subtasks and elements	Average time in minutes (a)	(b)	(c)	(d)	Percentage of time spent (a)	(b)	(c)	(d)
Prepreparatory tasks:								
Collecting requirements	4.8	3.7	11.0	6.5	4.13	3.24	11.28	5.95
Cleaning the ingredients	4.5	12.0	11.0	9.2	3.87	10.33	11.28	8.42
Chopping of vegetables	4.9	3.6	6.0	4.8	4.22	3.15	6.15	4.39
Pounding, winnowing and sorting	30.3	20.2	-	16.8	26.07	17.69	-	15.37
Total	44.5	39.6	28.0	37.4	38.30	34.68	28.72	34.22
Preparatory tasks:								
Boiling	68.9	64.5	73.5	69.0	59.29	56.48	75.38	63.13
Roasting	3.8	1.2	2.5	2.5	3.27	1.05	2.56	22.28
Grinding	10.2	6.0	9.5	8.6	8.78	5.25	9.74	7.87
Seasoning.	3.8	2.6	2.0	2.8	3.27	2.27	2.05	2.56
Total	86.7	74.3	87.3	82.8	74.61	65.06	99.54	75.75
Post-cooking tasks:								
Cleaning utensils	6.5	8.1	5.5	6.7	5.59	7.09	5.64	6.13
Cleaning work area	2.9	2.9	6.5	4.1	2.50	2.54	6.67	3.75
Total	9.4	11.0	12.0	10.8	8.09	9.63	12.31	9.89
Total for the whole meal	116.2	114.2	97.5	109.3	100.00	100.00	100.00	100.00

(a) Jowar 'kali'with a side dish (b) Bajra 'kali' with a side dish (c) Rice with a side dish (d) Type II meal.

dovetailing of certain elements of the task. Each worker had her own way of dovetailing and hence their time-use also differed. It also indicated the possibility for reducing the time taken on the task.

Part of the variations in the workers' time-use on this meal preparation was due to the differences in the preparation of the side dishes. Additional elements like chopping of vegetables, roasting and grinding of masala and seasoning of the dish necessitated by the side dish chosen, took different timings for each preparation. For preparing 'keerai massial', cleaning of the greens took more time while chopping took considerably less time. In the preparation of tamarind gravy, peeling and chopping of small sized onions took considerably more time. So variability in time demands on different elements of a task was inescapable for different dishes, whether it was the main one or a side dish. This in turn brought in minor variations in the time demands of a complex meal.

As type II meal was more elaborate compared to type I, more than double the time had to be spent in post cooking tasks. The increase in cleaning work load due to increase in the number of utensils used was the main reason for this variation. This in turn partly contributed to the increase in time-use on the meal

preparation.

'Kali' with a side dish, just like in the case of type I meal, took a comparatively more time than that taken by the same type of meal with rice as the staple food. The meals with bajra as well as jowar took almost the same timings because cooking of the single dish'kali' alone that demanded different timings was not accounted separately in the total time-use. Simultaneous cooking of the dishes was done by only three of the workers. This enabled them to reduce the total time taken for the meal preparation considerably.

On the whole, it could be understood that variability in time-use on type II meal preparation was greater than that of the type I meal. The variations in time-use on the whole task were partly due to the raw materials used for the main dish as well as the side dish, the method of preparation and the work habits of the worker. Dovetailing and speed of performance seemed to be the main factors associated with the worker that accelerated or retarded the speed of performance in each case.

Preparation of type III meal comprising rice with two side dishes - a gravy and a dry vegetable took on an average 115.7 minutes (Table 36). The total time taken by the workers ranged from 98 to 130 minutes. A range of 33 minutes for 4 observations, that too when the work was

TABLE 36

Time taken for Preparing a Type III Meal based on Four Observations

Subtasks and elements	Average time in minutes	Percentage of time
Pre-Preparatory tasks:		
Setting the work area	6.0	5.18
Cleaning of raw ingredients	11.9	10.28
Chopping of vegetables	9.1	7.87
	27.0	23.33
Preparatory tasks:		
Boiling	90.2	77.96
Grinding	10.0	8.64
Roasting	3.5	3.02
Seasoning	3.5	3.02
	107.0	92.48
Post-cooking tasks:		
Cleaning the utensils	11.0	9.51
Cleaning the work area	2.5	2.16
	13.5	11.67
Total	115.7	100.00

carried out in a controlled environment restricting possibilities for much variations in time-use, indicated how variable the task timings would be when assessed in a natural home setting. With the exception of the cleaning of the work area, wider variations in time-use were observed in carrying out each element of the task.

The average time taken for a type III meal was not much higher than that spent on the type II meal. The observations revealed that when the job content was very simple as in the case of type I meal, the work prolonged till the single item got cooked. When more items were there, one could cut short the total cooking time by using both the cooking points of the hearth. So, as the number of items in a meal increased, eventhough the total time on food preparation increased, the rate of increase in the duration was less. In a home environment, this might not be possible in all cases because of the limitations in the cooking arrangement like single cooking burner, lack of adequate fuel and also use of inferior quality firewood that burns off rapidly with low heat generation.

Type IV meal comprising the common breakfast dishes of South India - Iddli or dosai with a side dish - sambar or chutney eventhough appeared to be very simple according to the number of items in the menu, was found

TABLE 37

Time Taken for Preparing a Type IV Meal
Based on Four Observations

Subtasks & elements	Average time in minutes		Percentage of time	
Pre-Preparatory tasks:				
Soaking grains	2.4		1.50	
Cleaning grains	16.2		10.15	
Setting work area for grinding	1.5		0.94	
Cleaning the grinding stone	2.3		1.44	
Grinding batter	43.8	66.2*	27.44	41.48*
Setting work area for cooking	3.7		2.32	
Chopping vegetables/ grating coconut	11.7		7.33	
	81.6		51.13	
Preparatory tasks:				
Cooking	61.3		38.41	
Grinding chutney/masala	10.9		6.83	
	72.2		45.24	
Post-cooking tasks:				
Cleaning of work area	5.3		3.32	
Cleaning of utensils	9.5		5.95	
	14.8		9.27	
Total	159.6		100.00	

* Total time spent in prepreparatory task overnight.

to be the most elaborate and time consuming meal (Table 37). The complexity of the preparatory tasks made the meal elaborate in terms of time consumption. The prepreparation of the batter took 66.2 minutes because the water soaked rice and dhal had to be ground finely on the grinding stone by hand, which is a tiring job and needs time. It was almost nearer to what was taken for preparing a type I meal. After fermenting the batter for 6 to 8 hours, the dishes were prepared. These tasks consumed on an average 93.4 minutes eventhough many of the prepreparatory tasks related to the side dish were performed simultaneously while the main dish was being cooked. The average time spent for post-preparatory tasks was similar to that spent on type II and III meals. Constant attention was needed for preparing dosai and so the workers could not dovetail its preparation with the side dish, chutney.

Because the preparation of iddli or dosai for a family of 5 members demanded on an average 2.7 hours' full time attention from a worker, there were deliberate attempts among households to reduce the frequency of cooking of these dishes. Dovetailing of food preparation with other household tasks also was not much possible with this meal and so naturally, inclusion of this complex meal increased one's total time-use on household work.

Time-use on each meal increased in all cases as the meal became more elaborate from type I to type IV (Tables 34, 35, 36, 37). In none of these cases, the total time spent for preparing a meal was exactly the totals of the time spent on the component sub-tasks. As meals became more complex, the actual time used for food preparation became less than the sum of the time needed for parts of the task because of dovetailing of certain elements of the component tasks and simultaneous cooking of the dishes. Worker variations were noticed in the pattern and extent of time-use. Mealwise also the pattern of time-use differed greatly. The highest range of time-use on pre-preparatory tasks was observed in respect of type IV meals while in cooking, the largest range of time was observed in type III meals. Post-cooking tasks also consumed considerably the highest time in the case of type IV meals, as cleaning of the work area, equipment and utensils had to be performed twice - after preparing the batter and after the meal preparation.

In none of the cases, any specific labour saving equipment was used. Except for mashing of half cooked dhal with a wooden pestle, hardly had used any mechanical or automatic equipment. Ofcourse, dovetailing of tasks and simultaneous cooking helped to reduce the total

cooking time but not much. This indicated the need for standardisation of the typical activities of the rural households adopting scientific procedures so as to improve upon their existing work practices.

Evaluation of the Techniques

The three techniques - interview, observation and simulation were evaluated in terms of dependability of the time norms derived and the feasibility of each technique for establishing time norms of household work of rural families.

Comparison of the Time Norms

The time norms established by Technique I and II differed significantly at .01 level for total household work as well as tasks like fetching water, care of house, physical care of family members, care of clothing and collection of fire wood (Table 38). The difference in means in these cases, ranged from 1.1 to 7.2 hours a week. Out of these tasks, only for one task-care of clothing, the mean of the observed timings (Technique II) indicated a significantly higher time-use than the mean of the reported values (Technique I). For three tasks : food preparation, care of utensils and shopping, the differences between the two averages were not significant. The data are presented through a bar graph (Figure 5).

TABLE 38

Comparison of the Time Norms of Household Work Established by Technique I & II

Household tasks	Mean hours per week		t Values
	Technique I (N=120 house holds)	Technique II (N=39 house-holds)	
Food preparation	23.9	23.3	.499^{NS}
Fetching water	6.9	4.7	4.526**
Care of utensils	3.0	3.4	1.558^{NS}
Care of House	5.5	4.4	4.044**
Care of family	14.4	10.7	3.150**
Care of clothing	0.9	2.0	1.982*
Marketing	2.5	2.5	-
Collection of fire-wood	4.1	2.4	2.044**
All tasks	61.2	53.4	3.255**

N.S. = Not significant *Significant at .05 level
** Significant at .01 level

As the two time estimates were made with two different samples, both representative of the same population, the differences in the averages may however be due to (a) sampling bias or sampling error (b) errors in the data collection and analysis procedure and(c) the true variations in the work and work timings. Each of these factors was looked into critically to judge the dependability of the time norms established by the two techniques.

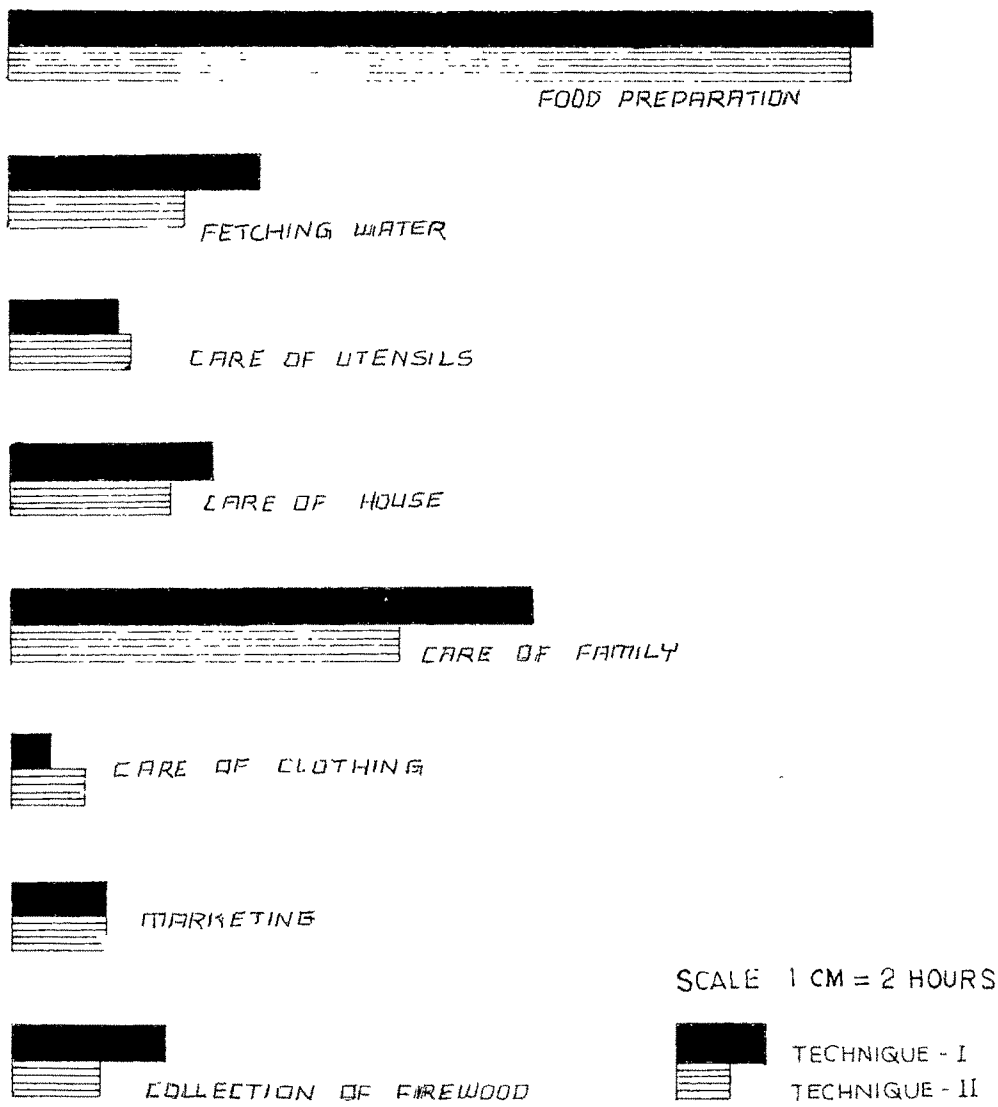


Fig 5.. Comparison of the time norms of household tasks established by Technique I and Technique II

Sampling Bias or Errors

The chances of sampling bias were controlled by selecting samples for each technique from the same population. Also, a Chi-square test was applied to check whether the samples chosen were similar or different with regard to the main variable i.e. time-use in household work. As the Chi-square value was not found to be significant (χ^2 = 10.683 < .05 level, d.f. = 4), the samples were confirmed as sub-samples of the same population with reference to time used for household work.

Further analysis was done by superimposition of the frequency curves showing the distribution of households of sample I and II according to the total hours reported for household work (Technique I). The similarity of the samples was apparent in this graphical presentation (Figure 6). It could therefore be concluded that there was no significant error due to sampling bias. Whatsoever little difference one may find between the two curves, it may probably be due to random fluctuation in the two samples.

Errors in Data Collection and Analysis Procedure

Errors in data collection and analysis occur in Social Science Research mainly due to factors that affect the validity and reliability of the techniques used at each level. These factors are categorised under

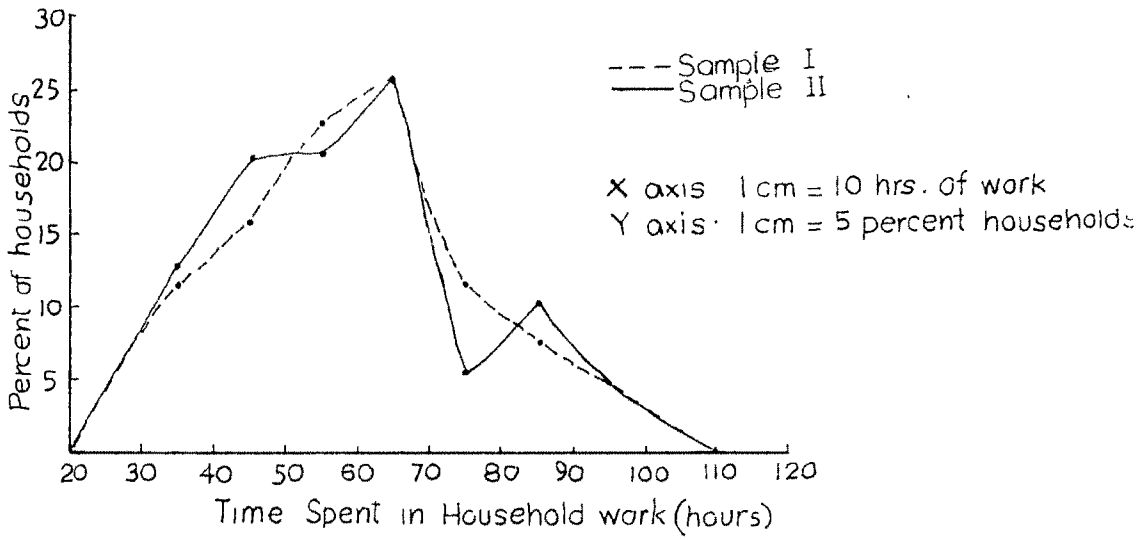


Fig **6**: Percentage distribution of the households (Sample I and the Sample II) by their time-use on total household work based on interview data

four heads: "the test and its contents" (for the present study there will be tools and their contents) "environmental factors, personal factors and researcher interpretations" (Black and Champion, 1974,p.254).

The Tools and Their Contents: The instruments used for data collection were mainly the interview schedule and the observation proforma. To make a valid and reliable estimate of time used in household work, it was essential to scrutinize their content with reference to the following: (i) tasks to be included under household work (ii) the starting and end points of each task(iii) the computation of time taken for a task when (a) two or more persons performed a single task at a time and (b) two or more tasks were dovetailed or simultaneously attended by a single person. These were made clear by reviewing the literature and a pilot study and the tasks were operationally defined prior to the administration of the tool.

The pilot study and pretesting were helpful for both the techniques to check the suitability of the methods of assessment of time taken for a task and the difficulties in eliciting and recording the data. Accordingly steps were taken to overcome the difficulties and thereby improve the validity and reliability of the data collected.

Considering the busy work schedule of a majority of the respondents and the resulting constraints on their free time, the interview instrument was made as brief as possible by utilising other data collection tools. The whole instrument was translated into Tamil, the mother tongue of the respondents for ease of administration and further to avoid interpretative errors.

The interview schedule comprised mostly open ended questions to enable the investigator to record in detail the information in the words of the respondents and also to record the observations simultaneously. To improve reliability in recording, details of the lengthy answers to certain questions like the time schedule of each of the members of the household, were recorded by tape - recorder.

In the case of observation proforma, validity was improved by the adoption of a time recording chart which enabled workerwise recording of time-use on each task and subtask. The administration of this also was pretested and checked for validity and reliability.

Environmental Factors: Maintaining a proper rapport with the village headman was essential to make the data collection work socially acceptable. With the approved leaders' consent, the families could be approached without any social resistance even in late evenings for gathering the data.

Proper rapport maintenance with the family members facilitated a pleasant atmosphere at the time of data collection. Internal resistance within a family could also be minimised.

Further, uniformity in the predetermined administration procedure and the structured design of the instruments minimised the investigator bias.

In-depth interview was made possible by choosing the timings most convenient to the families. Presence of the family members other than the homamaker at the time of interview helped to improve reliability of the responses as it enabled on spot cross checking of the information gathered.

Personal factors: Lack of a clear concept of clock timings among the respondents was foreseen and some reliable time signals which could be used as cues by the respondents in recording time-use were identified for each village. The respondents who expressed their inability to state the clock timings were informed of the time signals they could rely on. Prior appeals were made to the respondents to make a special note of the following day's time-use on household work. The data from the families were collected on the evenings of specified days. This enabled them to give a realistic data on household work.

In the case of observation, the second technique, two days' observations were helpful to check the reliability of the recorded tasks and their timings, and also the reasons for variability in time-use, if found.

Researcher interpretations: Defining the terms and concepts used in the instrument for data collection and categorisation and reporting of the findings at the planning stage of the study helped in reducing interpretative errors. A uniform procedure was drawn up for coding and analysis of the data after a thorough scrutiny of the methodology used in previous studies and further based on the findings of the pilot study. So the chances of errors due to researcher interpretations were minimised.

On the whole, sufficient precautions were taken to reduce the chances for errors in data collection and analysis procedure.

Actual Variations in Household Work and Work Timings

Differences in the average time-use in household work occur in every house due to variability of the task from day to day. Further, from house to house also variability is inevitable as the task is influenced by many socio-economic and situational

factors. This variability characteristic of the task could be confirmed by comparing the averages estimated from the two days' observations(Table 39).

TABLE 39

Mean time Spent on Daily Tasks(Technique II)

Task	Mean Hours (N = 39) 1st day	2nd day
Food preparation	3.25	3.25
Fetching water	0.66	0.68
Care of utensils	0.49	0.47
Physical care of family members.	1.56	1.58
All tasks	7.72	7.62

The average time estimated for food preparation was the same on both the days of observation. However, variations were noticed in almost all families and the differences averaged to ± 0.63 hours a day.

A narrower range of difference in the two days' time-use was noticed for fetching water, care of utensils and physical care of family members. In none of the households the time spent in household work was the same on both the days. The differences in the time spent

in household work ranged from 0.1 hour to 2.8 hours with an average of ± 1.05 hours a day. The observations thus revealed that day to day variations in time-use in household tasks were natural.

In spite of the deviations in time-use on each task, the means of the two days' observations were quite closer. So eventhough time-use variations are inherent from day to day in household task performance the variability seen in the group can be minimised by the systematic randomisation of the households of a population. Thereby a more homogenous and accurate average can be estimated for establishing the time norms of the task by observing the daily tasks performed in families for a single day, but collecting the data from a fairly large number of households.

From the above discussions, it can be concluded that the differences in the time norms of household work established by Technique I and II (Table 38) might be partly due to the day to day differences in the tasks performed and partly due to the inaccuracies in the time reporting on the tasks by the homemakers. The trend was for over estimation of the time spent in a task when verbally reported by the respondents. As, in the second technique, the time spent in the daily tasks was observed and measured using a time piece, the chances of making

errors in time estimate were minimised. Hence the time norms established by the second method (observation) were more dependable than the norms estimated from the reported time data (Technique I).

The time signals could be of practical use only for those tasks that took fixed hours of the day and a fairly long duration. For food preparation, dish washing and marketing, the time norms established by Technique I and II did not vary significantly because of the regular use of fixed time on all days. The intermittent performance of tasks(followed in many cases) with short time spans made time signals less applicable to measure the time spent.

In the case of fetching water, some homemakers were purposely reporting a very large amount of time-use to publicise the fact that collection of water from well was a very tedious and time consuming job, and they badly needed tap facility to improve upon the situation. With repeated enquiries, the exact time value could not be gathered as the over-estimation of time-use was intentional.

Similar was the case with care of clothing. As many of the homemakers were tradition bound and not in the regular habit of washing clothes at home, denied fully any time-use on the task when interviewed. During the observation of the task performance, it was noticed

that only 10.3 percent of the households as against 52.5 percent of the interviewed households did not set aside specific time for the task. It was true that the families spent considerably less time on this task but it did not mean complete neglect of the task. Actually, observation showed that time spent in washing clothes was two times greater than that was reported.

The differences in the time span reported for collection of firewood might be partly due to the seasonal differences. The interview data were collected during the rainy season. The habit of a majority of the population was to collect large quantity of firewood and store the same before the rainy season as it might not be possible to get dry twigs for immediate use during the rainy season.

On care of house as well as the care of family members, a lesser time-use was observed as compared to that reported. Probably because of dovetailing of this task with other tasks, the respondents could not make an accurate estimate of the time-use on these tasks while reporting. Time spent on total household work, showed a difference of 7.8 hours a week in the averages of Technique I and II and it was significant at .01 level ($t=3.255 > .01$ level, $d.f. = 119$) overestimation of the time-use on tasks performed for a short time span

and or assessing the total time-use from the totally fragmented estimates might have brought in the differences, eventhough care was taken during the data collection to minimise such errors.

Time spent in tasks like care of family that required less of physical exertion and extreme distortion was difficult to account for. Many homemakers were hesitant to consider care of family members as work on account of the pschological satisfaction they gained out of the job. Further, these tasks were dovetailed with other tasks and also were performed at times by more than one member of the family.

Thus, it becomes clear that (1) time used in tasks having definite starting and finishing points and involving physical exertion are more easily measurable than the distorted and light tasks (2) less fragmented tasks constitute a continuum that is perceivable to the worker as well as the observer as in the case of food preparation, dish washing, fetching water and so forth. Physical care of family members, as defined for this study, being highly dispersed or manifested with some other household tasks (as for example feeding the family) lacks in a continuum and distorts the time estimates unless keenly assessed with precision.

Projection of Population Mean Interval from the Sample Mean

Since the samples for techniques I and II were chosen at random, the sample mean is an unbiased estimate of the population mean. Making necessary corrections for bias in the estimate of the standard deviations (standard error of the mean as estimated from the samples), the 99 percent confidence interval of the population mean was computed using the data gathered by technique I and II.

The population mean interval projected from Technique I data had a narrower range compared to that projected by Technique II (Table 40). In the case of food preparation, care of utensils, care of clothing and marketing, the mean interval estimated by Technique I fell within the range estimated by Technique II. For the remaining tasks, as well as the household work in total, the mean interval projected with the interview data, eventhough it had a narrower range, indicated a higher range. Thus the tendency for over-estimation of selected tasks and thereby the total work also was made explicit by this comparison.

The analysis, further, indicates the need for specific precautions in measurement of time-use on tasks like fetching water, care of house and physical

TABLE 40

Population Mean Intervals at 99 Percent Confidence Level for Time-use in Household Work as well as the Tasks

Household tasks	Population mean interval(hours per week)	
	Technique I (N = 120)	Technique II (N = 39)
Food preparation	22.0 -25.8	20.8 - 25.8
Fetching water	5.9 - 7.9	3.9 - 5.5
Care of utensils	2.7 - 3.3	2.8 - 4.0
Care of house	5.1 - 5.9	3.4 - 4.6
Physical care of family members	12.6 -16.2	8.2 - 13.2
Care of clothing	0.6 - 1.2	0.6 - 3.4
Marketing	2.1 - 2.9	1.2 - 3.8
Firewood collection	3.5 - 5.0	0.4 - 4.0
All household tasks	56.7 -65.0	48.7 - 58.1

care of family members in which the intervals deviated much. So with sufficient precautions in measurement of time-use on these tasks, a closer and representative population mean interval can be projected with interview technique. Hence Technique I seems to be the best for establishing time norms of household work of rural families, especially for use as a population parameter.

The average time spent in preparing the typical meals of the population, estimated by the

three techniques could be compared to examine the dependability factor with reference to all the three methods used (Table 41).

TABLE 41

Comparison of the Time-use Data gathered by Technique I, II and III on Preparation of the Typical Meals

Meal Type	Techniques		
	Interview	Observation	Simulation
	(Mean Hours / Meal)		
I	1.5(0.5-2.8)	1.2(0.4-2.3)	1.2(1.15-1.2)
II	1.7(0.8-3.8)	1.8(1.0-3.8)	1.8(1.7 -1.9)
III	1.8(1.0-3.0)	2.7(1.7-4.2)	1.9(1.6 -2.2)
IV	1.3(0.5-3.0)	1.9(1.5-2.5)	2.7(2.5 -2.8)
V	2.3(1.8-2.5)	-	-

Figures in brackets indicate the range of hours

Probably because food preparation is a strenuous job with less distortion of time-use and denoted by specific starting and finishing points, the means did not indicate much difference. The differences between the means were only in minutes in the case of Type I and II meals but as they became complex, the deviations increased. For Type III meals comprising a cereal and two side dishes and Type

IV meals comprising iddli/dosai with sambar/chutney, the average time-use differed to an extent when estimated by the different techniques. In the case of Type III meal, the mean worked out from the observed data denoted the highest averages, because of the variations in workers and work environment. Variations might also have occured because the standards expected, the raw materials used and the amenities the respondent families enjoyed in connection with this task were not the same.

In the preparation of iddli or dosai, time spent on pre-preparatory tasks was not accounted by observation, rather was estimated by recall method. So probably, the reported as well as the observed time-use indicated a lesser time demand compared to that actually estimated by the laboratory simulation.

The review of the findings indicated that even with simulation, the exact time-use of households could not be worked out, especially when the task was complex and influenced by a larger number of variables. So this technique would be valuable in establishing the standard or expected time norms of selected tasks rather than the actual average of the time spent in the task.

The comparison of the time norms established by the three techniques on preparation of the different

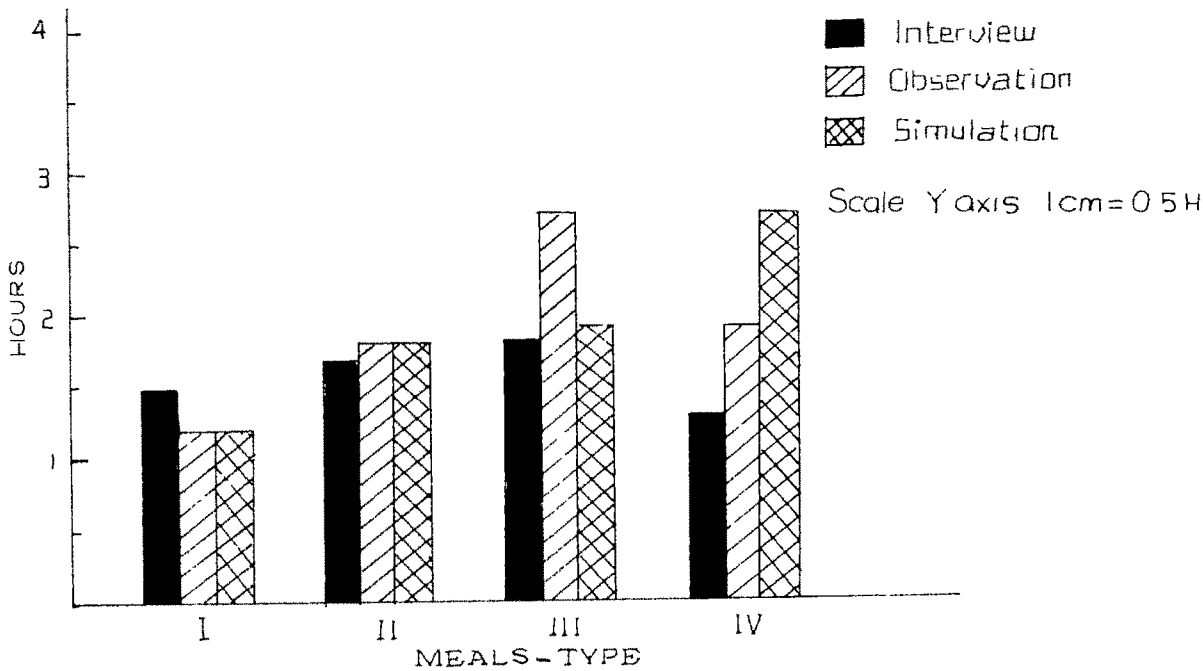


Fig. 7 Comparison of the mean time-use estimated for each type of meal by the three techniques

types of meals is depicted by a bar diagram(Figure 7).

Limitations of the Techniques

Technique I

None of the women reported reference to a clock while performing household tasks. Only 8.3 percent of the respondents reported occasional reference to a wrist watch for judging the hour of the day. Hence, the population were not clock bound.

There were some cases who in spite of being informed of the time signals, could not state their time-use on some of the fragmented tasks owing to their inability to relate the time signals with tasks and further, lack of a clock time concept while reporting the tasks performed. Often they needed cross checking with other members of the family. However, a clearer estimate of time-use on lengthy tasks having definite starting and finishing points could be confirmed with the time signals.

Natural environmental signals did not occur regularly in fixed time intervals of 10 or 15 minutes. Hence suggesting the same for such short intervals was not possible. Further, even if such time signals were suggested, it would not have been that easy to remember and relate the same with the task performed while

reporting the time data in the evenings.

Since no estimate of the possible range of time demanded for the tasks was available for ready reference neither over-estimation nor under-estimation of time-use on selected tasks could be checked.

In spite of clear instructions on accounting of time when different tasks were dovetailed by a single worker, confusions cropped up in the minds of people and hence they gave different answers while cross questioning.

Since the villages had clustered settlements, at the time of interviewing, the next door neighbours also were attracted. As, all of them had home experiences, often there were tendencies among the observers to interfere with the conversations. Appeals to them not to interfere did not prove to be of any use in some cases.

After listening to the conversation especially on time-use in tasks and task performance, some women respondents had a tendency to repeat whatever they heard next doors rather than relating their families' time budget. This had to be checked by cross checking with other members of the household which in a few cases lead to still more confusion.

Intentional effort was noticed to inflate time-use on specific tasks like fetching water and collection of firewood to reveal that they were hard

toiling people having no time for rest or relaxation. For fetching water, mainly, those using well as the source of supply inflated the time-use for highlighting the need for tap facility.

For tasks like firewood picking exact duration spent could not be elicited from workers, on account of dovetailing of tasks with grazing of livestock or collection of fodder or with farm work. Due to constant interuptions, the time reported could not be accepted at prima facie.

Similarly for marketing also, clubbing of the task with occupational visits to the market or with recreational visits brought in confusion as to how much of the time spent should be accounted for marketing for household purchases. This demanded constant cross-checking of the time span with that of the previous two to three visits.

Technique II:

Two days' observations were felt inadequate to cover all tasks performed in the house. Chances for observing weekly and periodical tasks were comparatively less. For the same reason, recall had to be resorted to and hence the limitations of recall method partly crept in.

Even two days' observation hindered the privacy of the households very much. In three cases, the

investigator had to select the next households in the category when the selected families raised objections to observation of performance of all tasks on the second day of data gathering.

In certain tasks like food preparation and serving, feeding of children and the like, objections were raised to very close observation conducted by the investigator. Similarly, objections were raised to entering the kitchen to observe clearly how the tasks were performed. Some were also hesitant to perform the same tasks outside the kitchen fearing casting of 'evil eye'.

The poor condition of the house and the kitchen, too congested for even one person to move about, with facilities lacking for smoke outlet, adequate light and ventilation, posed problems for the observer in examining the elements of the tasks in a detailed manner. Only the starting and finishing points of the subtasks could be noted down in spite of spending two days with each of the households.

In the presence of the observer, intentional attempts were made by some homemakers to avoid natural interruptions and speed up the work to the maximum. Personal delays and family interruptions were also minimised by intentional systematisation of work.

When more than one member of the family attended to different household tasks at different work spots, a very intensive observation could not be done by one observer. For example fetching of water when attended to by one person while another performed cooking, the two tasks could not be observed in detail by one observer. So more than one observers were needed.

Observations were limited to the measurement of clock time-use on various tasks with attention to particulars upto the sub-task level.

Technique III

The typicalities of a task should be identifiable and assessable for replication of the same in a laboratory set-up. It is difficult to simulate interdependent tasks like dish washing singly. So it might not be possible to simulate all household tasks.

Tasks influenced by too many variables and those that lack in some sort of uniformity would be difficult to simulate unless data were collected from a very large population. For example, in dish washing the number of utensils used, its base-materials, combinations of size and shape, cleansing agents used, standards of performance, amount of soiling on the utensil and many other minor factors influence this task and so standardisation of the

task for performing it in a laboratory is difficult and need very intensive data collection.

Tasks like physical care of family members which varied a lot from situation to situation and involved a good amount of mental activity can not be simulated. Unless the work is replicated in the natural manner, the data cannot be used for establishing time norms of the group. Therefore, only one task- food preparation could be simulated to study its suitability for time-use estimate of households.

Advantages of the Techniques

Testing of the Hypothetical Model

Technique I enabled data collection on all household tasks and so provided a comprehensive data on the work and its time-use. All tasks could be described upto subtask level as identification of components was possible upto this level. Time estimates could be made partly at subtask level. In the case of meal preparation, time taken for preparing each meal could be measured while for some tasks as the in between stage of subtask level was not identified, like in the case of marketing, care of clothing, collection of firewood and the like in which measurement could be made only attask level.

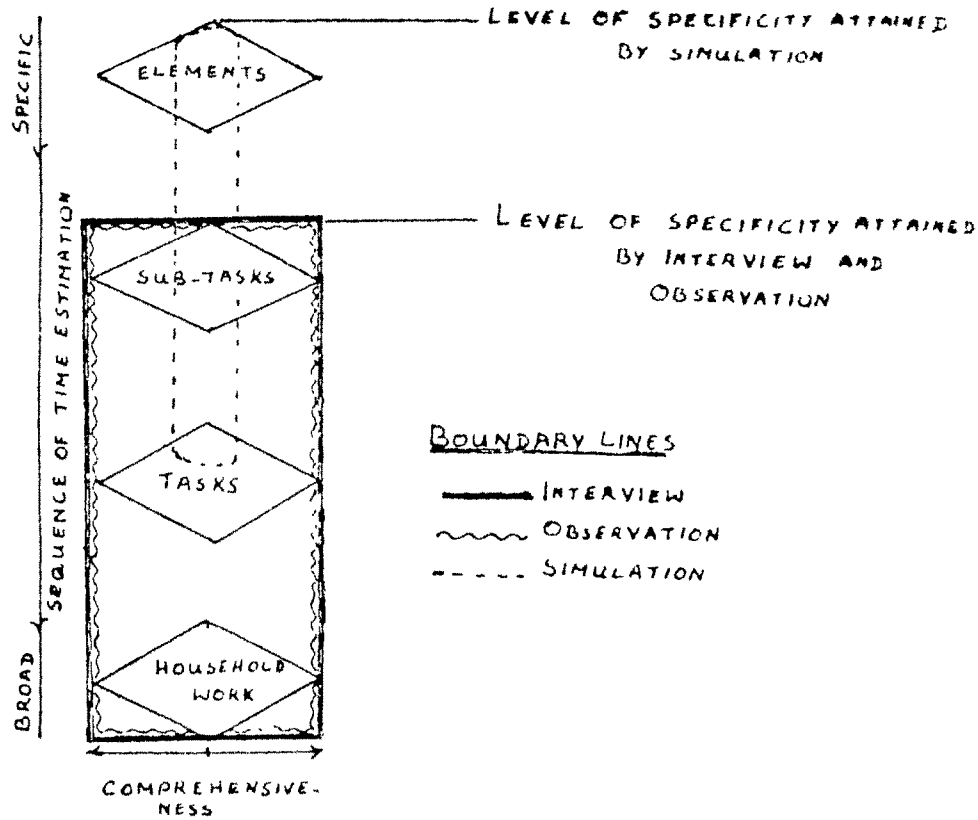


FIG. 8 MODEL DEPICTING THE LEVEL OF SPECIFICITY AND COMPREHENSIVENESS ATTAINED IN THE ESTIMATION OF TIME-USE ON HOUSEHOLD WORK BY THE CHOSEN TECHNIQUES.

Technique II enabled task description with better precision especially on daily chores that were observed. As part of the data were recalled, the level of specificity attained was brought down to the level of the interview method for such tasks. With reference to the tasks that were observed, the reliability and validity of task description and measurement were improved. Some tasks could be measured at a still more specific level but in general the cutting off line denoting specificity was brought down to the subtask level.

Simulation, the third method provided a specific and comprehensive data on the selected subtasks. The validity and reliability of the technique depended on how well the task was simulated. If simulated properly, measurement and task description both would be possible upto the most specific level of that of elements. On account of the limitations discussed earlier, all tasks could not be simulated. Further, for tasks, if fragmented and lengthy, measurement process might start at subtask level while for less fragmented tasks, it would start at task level. However, a comprehensive picture of the entire household work cannot be got by this method. Further, as the whole process demands a very typical environment, for providing the simulated work situation, a base-line

data covering a large population is needed. The boundary line indicating the limits of the technique remains at the same level as is in the hypothetical model (Figure2).

The level of specificity and comprehensiveness that could be attained by the techniques is depicted through the model (Figure 8).

Feasibility of the Techniques

Technique I: enabled collection of a comprehensive data on household work from a large population in a shorter time span. One hundred and twenty families could be covered by two months' of field study. On an average, the contact time with a family was 1.8 hours distributed as follows:

Prior visits	(rapport and instructions)	-40 minutes
Interview		-35 "
Informal interview (tape recording)		-20 "
House plan measurement and related observations.		-15 "
	Total	110 "

The busy schedule of the majority of the homemakers and their non-availability at homes during the day time and the problems of eliciting valid and

reliable time data on household tasks from illiterate persons relying not at all on any clock time indicators posed additional demands on the investigator's time. The coverage of families was at the most three per day. Rapport maintenance with each of the family members was essential and hence prior visits and instruction took away 0.7 hours i.e. 35 percent of the total time required for a family.

Technique II relying mainly on observation of household work performance in houses demanded three months' continuous field work for gathering two days' data from 39 households. With each family, the contact hours averaged to eight and a half hours a day (17 hours for two days) distributed in the morning, noon and evening. The observer had to be at the work spot before the households started their household operations. Prior contacts and rapport maintenance with the whole family was necessary to win the families' confidence and cooperation.

So, on the whole, the investigator had to spend time as follows:

Rapport maintenance and prior instructions	1 hour
Data collection(observation of task pefformance)	17 "
Total	18 hours

So more than two days' contact was needed per household. The data were more reliable and valid but only

at a high cost of time in data gathering. Moreover, the method affected the privacy of the householders to a great extent. On account of these problems coverage of a large population was less feasible.

In addition to these problems, the method of observation could not independently provide adequate data on all household tasks. So part of the data had to be recalled. Observation for a longer duration of one week or more is advisable to solve the problem of comprehensiveness but is less practical on account of too much hinderance to the private life of families and the expected social resistance.

Technique III : gives a very detailed picture of a selected task upto the level of elements of selected task components. Its adequacy is highlighted by the depth analysis of the specific tasks for detailed work study designing.

Considering the limitations and advantages of the techniques explained so far, the interview method seems to be the best for establishing time norms of household work. The method needs to be supported with selective observation of task performance within the community to be studied and further simulation to have a clear picture of the task and its time dimension. Thus the techniques II and III may have to be used for providing supportive data for planning and implementation of time budget surveys among rural households.